

Little Rock Wastewater Utility

Collection System Management Plan (CSMP)

Table of Contents

Letter of Transmittal

<u>Volume</u>	<u>Tab</u>	<u>Description</u>
1	A	Major Goals of CSMP
	B	Personnel Responsible for Implementing CSMP
2		Legal Authority of LRWU:
	A	Control of Private Inflow Sources
	B	Design/ Construction of Sewers & Connections
	C	Installation, Testing, & Inspection of New & Rehabilitated Sewers
	D	Address Flows from Satellite Municipal Collection Systems
	F	Implementation of Prohibitions of National Pretreatment Program
3		Lift Station Maintenance Division General Procedures
4		Collection System Maintenance Division General Procedures <i>The following are included within Volume 4:</i> <ul style="list-style-type: none">• Maintenance Procedures to Prioritize Collection System Activities• Collection System Preventive Maintenance• Identification, Prioritization, Rehabilitation of Structural Deficiencies• Equipment and Replacement Inventories• Sanitary Sewer Overflow Response Plan
5	A	Geographic Information System (GIS)
	B	Computerized Maintenance Management System
	C	Collection System Employee Training
6		Standard Specifications for Installation and Testing of New Collection System Facilities (Draft)
7		Trap Control Program
8		Typical Specifications for Rehabilitation of Collection System Facilities
9		System Evaluation and Capacity Assurance Plan <i>The following is included within Volume 9:</i> <ul style="list-style-type: none">• Current Capacity of Collection System and Treatment Facilities

Little Rock Wastewater Utility Collection System Management Plan (CSMP)

Volume 1, Tab A - Major Goals for Collection System Management Plan (CSMP)

The mission of the Little Rock Wastewater Utility is to provide low cost, safe, high quality sanitary sewer service to the residents of Little Rock, and, through planning, support the orderly growth of the city with the overall objective of preserving the health and well-being of the residents and the environment.

The major goals of the collection system management plan supplement the above mission statement of the Utility. The goals of the CSMP help provide focus for the Utility staff to:

- To properly manage, operate, and maintain all parts of the wastewater collection system
- To provide adequate capacity to convey peak flows
- To minimize the frequency of SSOs
- To mitigate the impact of SSOs

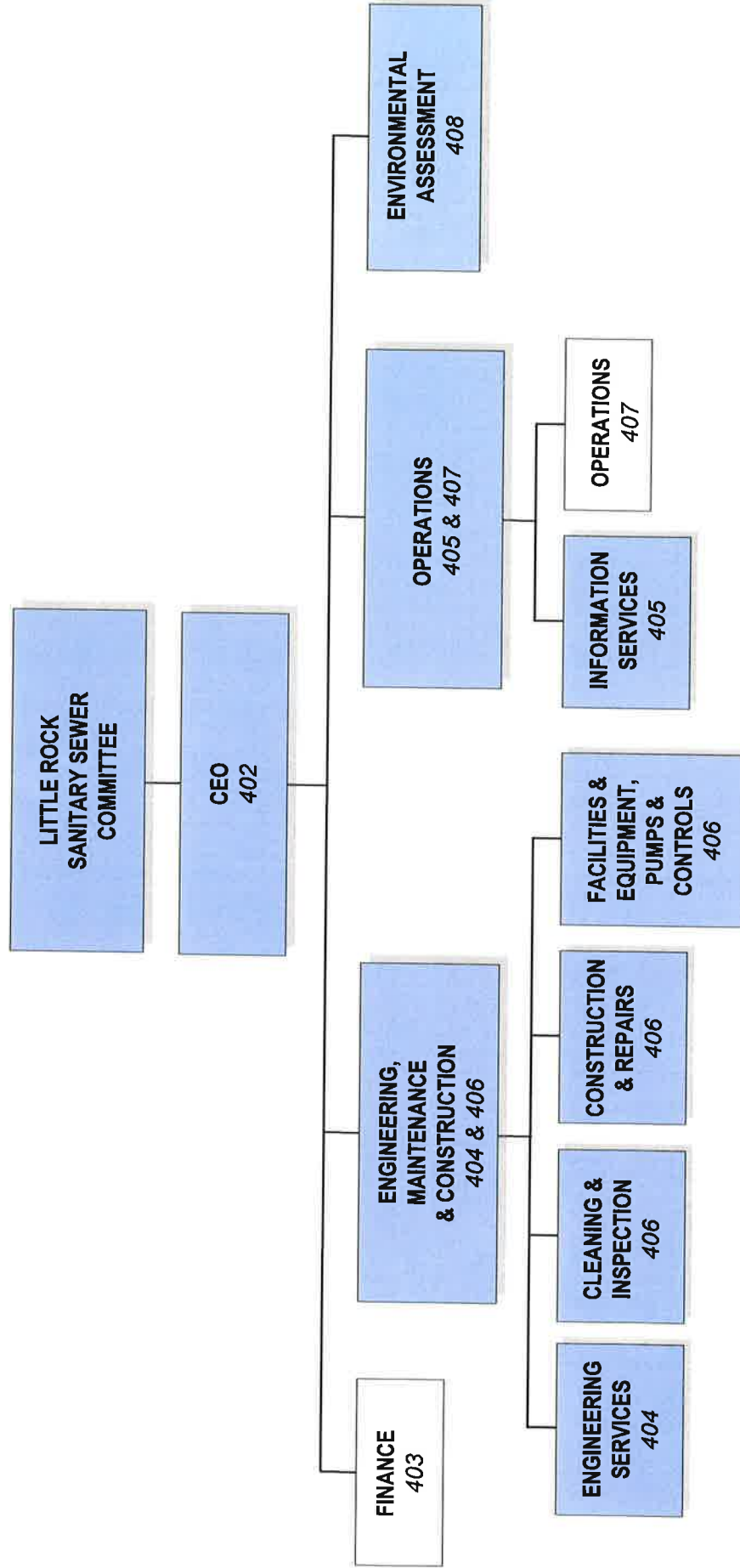
The CSMP, as submitted, is a compilation of the existing programs that the Utility employs to manage Little Rock's sanitary sewer collection system. The goals listed above are being addressed by the on-going implementation of the existing programs. All components of the CSMP that are outlined in the Consent Administrative Order (CAO) are covered by the documents presented herein. Some of the CSMP documents are in the process of being updated and the draft versions are included. The draft documents are awaiting formal adoption by the proper level of authority. The capital improvement projects are presented in the System Evaluation and Capacity Assurance Plan (SECAP – Volume 9) with the schedule updated as required. Revisions to this CSMP will be made as necessary with updates submitted to the Arkansas Department of Environmental Quality with the annual report.

Little Rock Wastewater Utility Collection System Management Plan (CSMP)

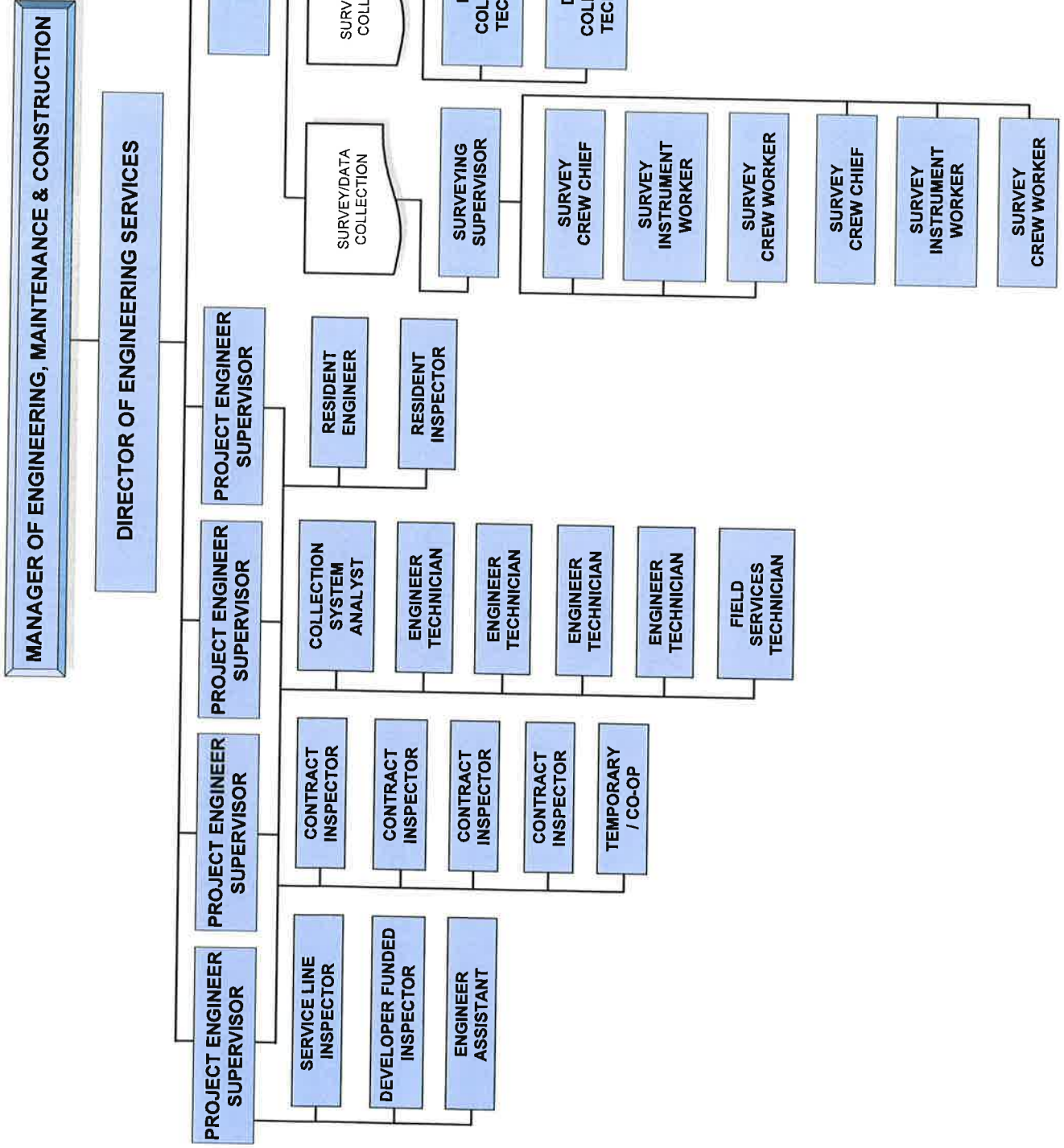
Volume 1, Tab B – Personnel Responsible for Implementing CSMP

The following organizational chart identifies Utility staff responsible for implementing, managing, and updating the CSMP. The department or positions shaded in blue are those responsible for the requirements of the CSMP. The actual communication plan for reporting sanitary sewer overflows (SSOs) is outlined in the Sanitary Sewer Overflow Response Plan included in Volume 4.

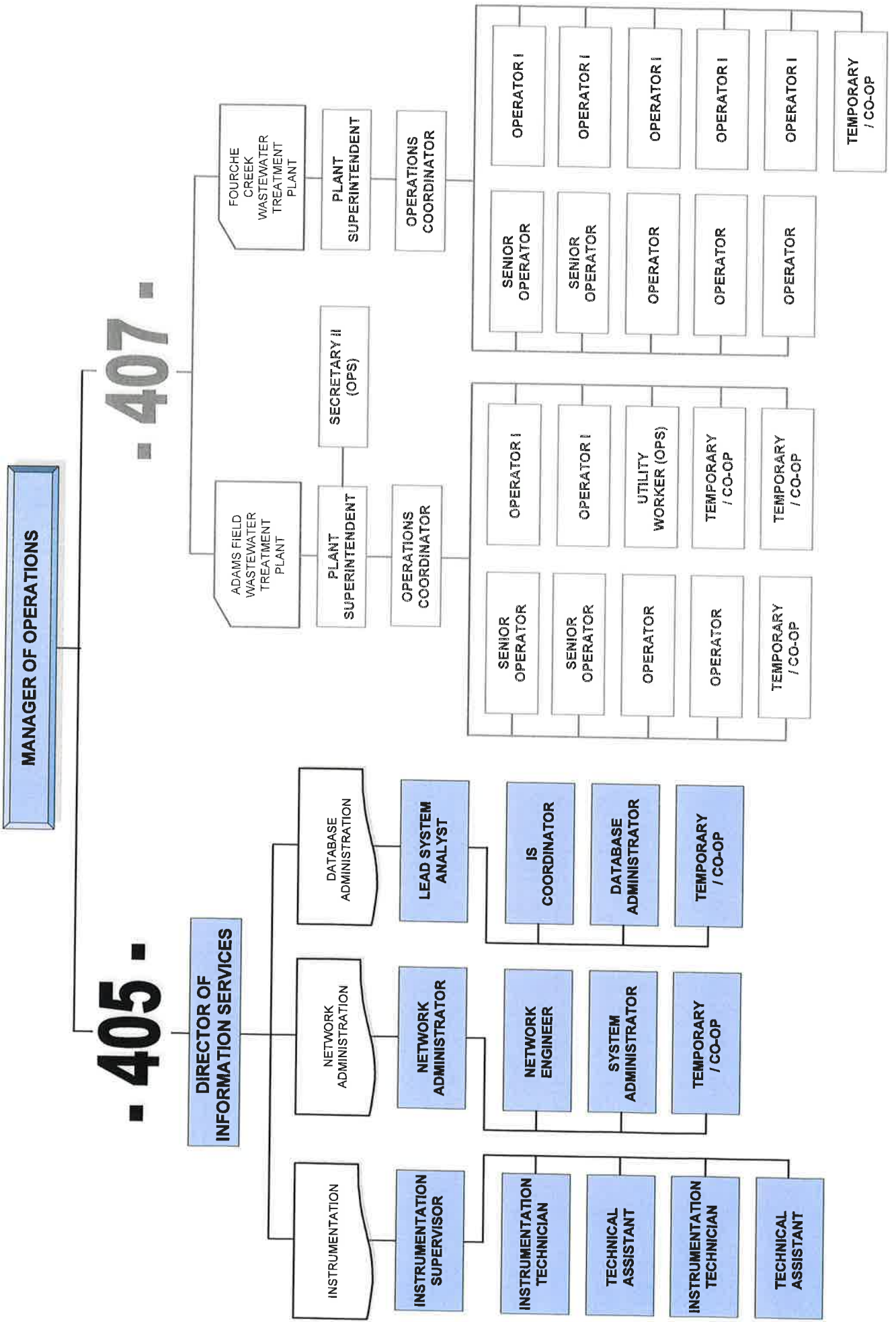
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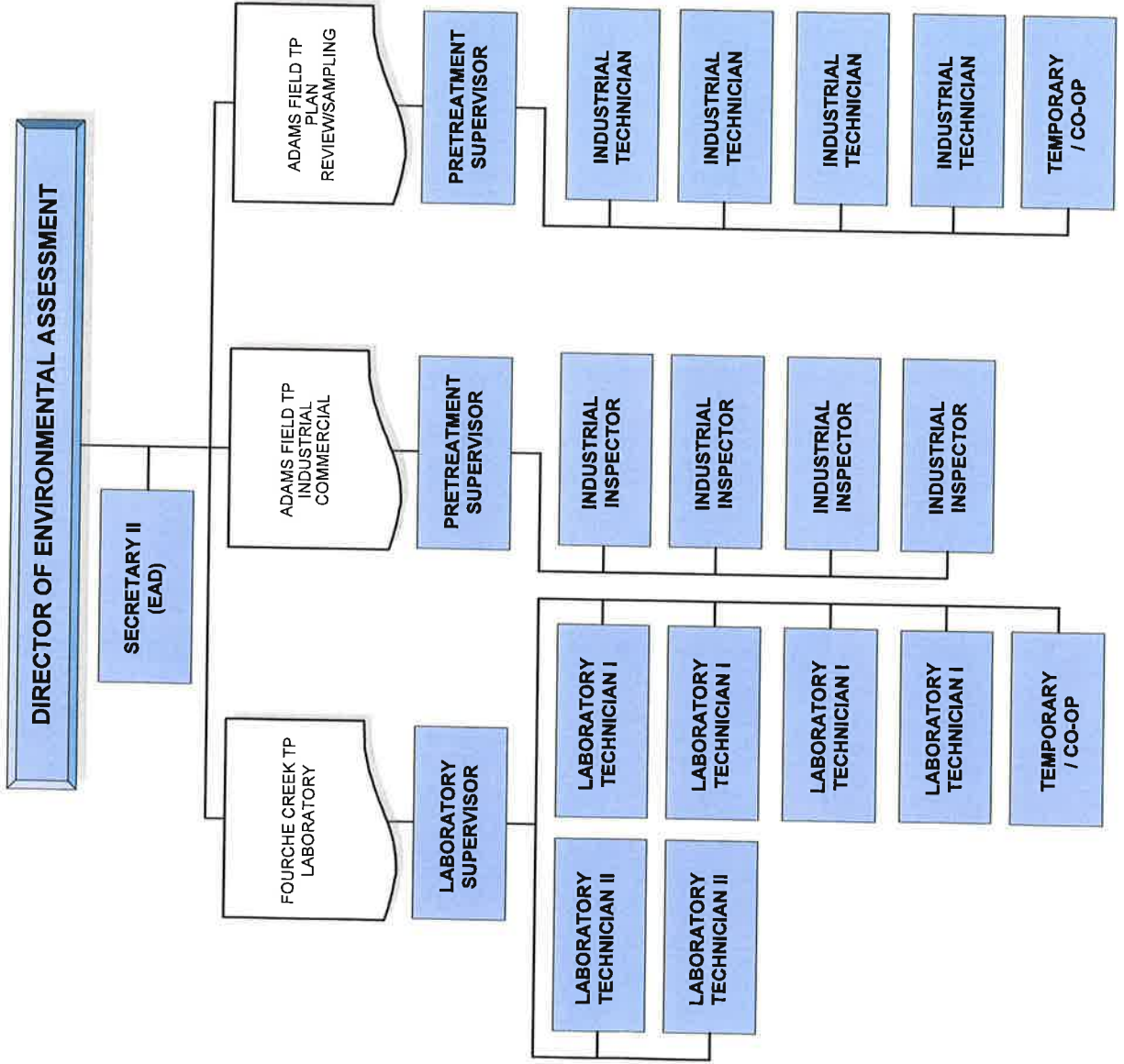
ENGINEERING SERVICES - 404 -



OPERATIONS



ENVIRONMENTAL ASSESSMENT - 408 -



Little Rock Wastewater Utility Collection System Management Plan (CSMP)

Volume 2 – Legal Authority of LRWU

<u>Tab</u>	<u>Description</u>
A	Control of Private Inflow Sources <ol style="list-style-type: none">(1) City of Little Rock Sewer Use Ordinance #17,965, dated March 16, 1999(2) Little Rock Code §35-121, <i>et seq.</i>
B	Design/ Construction of Sewers & Connections <ol style="list-style-type: none">(1) City of Little Rock Sewer Use Ordinance #17,965, dated March 16, 1999(2) Little Rock Wastewater Utility Specification Requirements for Sanitary Sewers, 1986
C	Installation, Testing, & Inspection of New & Rehabilitated Sewers <i>The specification requirements for Installation, Testing, & Inspection of New & Rehabilitated Sewers are included in the Little Rock Wastewater Utility Specification Requirements for Sanitary Sewers, 1986, as produced in B(2) above</i>
D	Address Flows from Satellite Municipal Collection Systems <ol style="list-style-type: none">(1) Contract between the City of Little Rock, the Little Rock Sanitary Sewer Committee, and the City of Shannon Hills, Arkansas, dated September 22, 1995(2) Contract between the City of Little Rock, the Little Rock Sanitary Sewer Committee, and the City of Cammack Village, Arkansas, dated November 7, 1977(3) Contract between the City of Little Rock, the Little Rock Sanitary Sewer Committee, and the City of Alexander, Arkansas, dated November 7, 1977(4) Sewer Service Contract for College Station Unincorporated Area between College Station Suburban Sewer Improvement District No. 243 and City of Little Rock, Arkansas/Little Rock Sanitary Sewer Committee, dated October 15, 1998(5) Sewer Service Contract for College Station Unincorporated Area between Pulaski County, Arkansas and City of Little Rock, Arkansas/Little Rock Sanitary Sewer Committee, dated October 15, 1998
E	Implementation of Prohibitions of National Pretreatment Program <ol style="list-style-type: none">(1) City of Little Rock Pretreatment Ordinance #17,966, dated March 16, 1999(2) Little Rock Code §35-161, <i>et seq.</i>

ORDINANCE NO. 17,965

AN ORDINANCE REGULATING THE USE OF PUBLIC AND PRIVATE SEWERS, PRIVATE SEWAGE DISPOSAL, THE INSTALLATION, CONSTRUCTION, MAINTENANCE, AND CONNECTION OF BUILDING SEWERS; THE DISCHARGE OF WATERS AND WASTES INTO THE PUBLIC SEWER SYSTEM; PROVIDING PENALTIES FOR THE VIOLATION THEREOF; REPEALING ALL ORDINANCES AND PROVISIONS THEREOF IN CONFLICT THEREWITH INCLUDING ARTICLES I, II, III, IV, V, X, XI, AND XII OF ORDINANCE NO. 15,344, PASSED ON SEPTEMBER 1, 1987; AND FOR OTHER PURPOSES, ALL PERTAINING TO THE SEWER LINES AND SYSTEM WITHIN THE JURISDICTION OF THE CITY OF LITTLE ROCK, ARKANSAS, AND DECLARING AN EMERGENCY.

WHEREAS, Ordinance No. 15,344, passed on September 1, 1987, currently regulates the use of public and private sewers and specifically, Articles I, II, III, IV, V, X, XI, and XII of said Ordinance contain general provisions regarding the use, disposal, connection, protection, inspections, and penalties in connection with the use of public sewers and these provisions should be repealed, and revised and expanded provisions in a new Ordinance should be adopted to enable the LRWU to effectively operate the sewer system of the City of Little Rock; and,

WHEREAS, the provisions as hereinafter set forth contain the revisions and additions necessary to enable the LRWU to more effectively and efficiently operate the sewer system in the City of Little Rock, by inclusion in this Ordinance the following provisions, the titles to which are hereinafter set forth in the following table of contents for convenience of reference only, and not to define or limit any of the terms or provisions hereinafter set forth in this Ordinance:

TABLE OF CONTENTS OF THIS ORDINANCE

SECTION 1	GENERAL PROVISIONS	3
	1.1 Title, Purpose and Policy	
	1.2 Definitions	
SECTION 2	USE OF PUBLIC SEWERS REQUIRED	5
	2.1 Unsanitary Conditions	
	2.2 Stormwater Discharge	
	2.3 Discharge to Natural Outlets	
	2.4 Septic Tanks, Privys, Cesspools	
	2.5 Connection to Public Sewer Required	
	2.6 Dischargers Outside City	
SECTION 3	PRIVATE SEWAGE DISPOSAL	7
	3.1 Private Sewage Disposal Systems Allowed	
	3.2 Permits Required	

3.3	Compliance with Regulations	
3.4	Connection to Public Sewer Required	
3.5	Owner Responsibilities	
3.6	Additional Requirements Govern	
SECTION 4	BUILDING SEWERS AND CONNECTIONS	8
4.1	Authorizations Required	
4.2	Building Sewer Permits/Fees Required	
4.3	Costs, Expenses, and Indemnification	
4.4	Separate Building Sewers Required	
4.5	Use of Old Building Sewers	
4.6	Construction Requirements/Specifications	
4.7	Building Sewer Elevations/Lift Stations	
4.8	Prohibited Connections	
4.9	Conformance to Rules and Regulations	
4.10	Notification-Inspection and Connection	
4.11	Protection of the Public	
4.12	Restoration of Public Property	
4.13	Operation and Maintenance Requirements	
SECTION 5	PROTECTION FROM DAMAGE	10
5.1	Damage, Destruction, and Tampering	
5.2	Unauthorized Covering	
5.3	Removal of Cover	
5.4	Applicable Penalties	
SECTION 6	DISCONNECTING SEWERS	11
6.1	Disconnection and Sealing Required	
6.2	Application and Fee Required	
6.3	Notification Requirements	
SECTION 7	POWER AND AUTHORITY OF INSPECTORS	11
7.1	Right of Entry	
7.2	Adoption of Rules and Regulations Pertaining to Sewers	
SECTION 8	ADMINISTRATIVE ENFORCEMENT REMEDIES	13
8.1	Enforcement Procedure	
8.2	Show Cause Hearing	
8.3	Emergency Suspension of Service	
SECTION 9	JUDICIAL ENFORCEMENT REMEDIES	15
9.1	Injunctive Relief	
9.2	Civil Penalties	
9.3	Criminal Prosecution	
9.4	Remedies Nonexclusive	
9.5	Initiation of Criminal or Civil Action	
SECTION 10	SUPPLEMENTAL ENFORCEMENT ACTIONS	17
10.1	Performance Bonds	

10.2 Liability Insurance
10.3 Public Nuisance

SECTION 11 SEVERABILITY 18
11.1 Repeal of Prior Ordinances

**SECTION 12 AUTHORITY OF LITTLE ROCK SANITARY SEWER COMMITTEE,
EFFECTIVE DATE, AND DECLARING AN EMERGENCY** 19

WHEREAS, it is essential that the Little Rock Sanitary Sewer Committee should have the authority to perform all acts as provided in the ordinance in order to effectively regulate the use and operation of the public sewer system of the City of Little Rock and the provisions of this ordinance are necessary for the immediate protection of the public health, safety and welfare;

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE CITY:

SECTION 1 - GENERAL PROVISIONS

1.1 Title, Purpose and Policy

This Ordinance shall be known as the "General Sewer Use Ordinance" and sets forth uniform general requirements regulating the use of the public sewers for the City of Little Rock, Arkansas. The objectives of this Ordinance are:

- A. To regulate the general use of both public and private sewers within the jurisdiction of the City of Little Rock, Arkansas;
- B. To regulate private sewage disposal within the jurisdiction of the City of Little Rock, Arkansas;
- C. To regulate the installation, construction, maintenance, connection, and protection of building sewers within the jurisdiction of the City of Little Rock, Arkansas;
- D. To regulate the disconnection and sealing of building sewers within the jurisdiction of the City of Little Rock, Arkansas;
- E. To repeal all existing Ordinances in conflict therewith.

1.2 Definitions

Unless a provision explicitly states otherwise, the following terms and phrases, as used in this Ordinance, shall have the meanings hereinafter designated.

- A. And/Or shall mean one item or the other or a combination of both or all.
- B. Building Drain shall mean that part of the lowest horizontal piping of a drainage system which receives the discharge from all drains which carry waste or water-borne waste inside the walls of a building and conveys it to the building sewer, beginning five (5) feet outside the inner face of the building.
- C. Building Sewer shall mean the extension from the building drain to the public sewer or other place of disposal.
- D. Manager shall mean the manager of Little Rock Wastewater Utility, or his authorized deputy, agent, or representative.
- E. Natural Outlet shall mean any outlet, including storm sewers and combined sewer overflows, into a water course, ditch, lake, or other body of surface or ground water.
- F. Objectionable Waste shall mean any wastes that can harm either the sewers, sewer treatment processes or equipment, have an adverse effect on the receiving stream or otherwise endanger life, health, or property, or constitutes a nuisance.
- G. Person shall mean any individual, firm, company, association, society, corporation, or group.
- H. POTW shall mean Publicly Owned Treatment Works
- I. Private Sewage Disposal System shall mean that facility owned, operated, and maintained by any person for the purpose of collecting and disposing of sewage within the property of said person.
- J. Public Sewer shall mean a common sewer in which all owners of abutting properties have equal rights, and is controlled by public authority.
- K. Sanitary Sewer shall mean a sewer in which sewage is carried, and to which storm, surface, and ground water are not intentionally admitted.

- L. Sewage shall mean a combination of the water-carried wastes from residences, business buildings, institutions, commercial establishments, and industries.
- M. Sewer shall mean a pipe or conduit for carrying sewage.
- N. Sewer Committee shall mean the Little Rock Sanitary Sewer Committee of the City of Little Rock Wastewater Utility.
- O. Sewer System shall mean the City of Little Rock Wastewater Utility as operated by the Sewer Committee of the City of Little Rock, Arkansas.
- P. Shall is mandatory; May is permissive.
- Q. Storm Drain shall mean a drain or sewer for conveying water, ground water, subsurface water, or unpolluted water from any source.
- R. Utility shall mean the Little Rock Sanitary Sewer Committee.
- S. User shall mean a source of indirect discharge
- T. Wastewater shall mean the spent water of a community, including the combination of the liquid and water carried wastes from residences, commercial establishments, industrial plants, and institutions, together with any ground water, surface water, and storm water that may be present.
- U. Water Course shall mean a channel in which a flow of water occurs, either continuously or intermittently.

SECTION 2 - USE OF PUBLIC SEWERS REQUIRED

2.1 Unsanitary Conditions

It shall be unlawful for any person to place, deposit, or permit to be deposited in any unsanitary manner on public or private property within the City of Little Rock, Arkansas, or in any area under the jurisdiction of said City, any human or animal excrement, or other objectionable wastes.

2.2 Stormwater Discharge

No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, subsurface drainage, non-contact cooling water or other such waters into any sanitary sewer.

2.3 Discharge to Natural Outlets

It shall be unlawful to discharge to any natural outlet within the City of Little Rock, Arkansas, or in any area under the jurisdiction of said City, any sewage or other polluted waters, except where suitable treatment has been provided as required by law.

2.4 Septic Tanks, Privys, Cesspools

Except as herein provided under Section 3 below, it shall be unlawful for any person to construct or maintain any privy, privy vault, septic tank, cesspool, or other facility intended to be used for the disposal of sewage.

2.5 Connection to Public Sanitary Sewer Required

The owner of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes, situated within the City of Little Rock and abutting on any street, alley, or right-of-way in which there is now located or may in the future be located a public sanitary sewer of the City, is hereby required, at his expense, to install suitable toilet facilities therein, and to connect such facilities directly with the proper public sewer in accordance with the provisions of this Ordinance, within thirty (30) days after date of official notice to do so, provided that said property is within three hundred (300) feet of any accessible public sanitary sewer.

2.6 Dischargers Outside City

All dischargers to the City of Little Rock POTW, who are outside the jurisdiction and are not part of another incorporated city, shall be required to agree by written contract to abide by the conditions set forth in this ordinance, subsequent revisions and amendments to this ordinance, and any rules and/or regulations promulgated by the Sewer Committee of the City of Little Rock in accordance with this ordinance. All incorporated cities which discharge to the City of Little Rock POTW shall agree by written contract to adopt an ordinance which meets the requirements of 40CFR403, General Pretreatment Regulations, and will be at least as stringent as the conditions set forth in this ordinance. This agreement must also contain a provision that allows for the adoption of any and all rules and/or regulations promulgated by the provisions of the Sewer Committee of the City of Little Rock in accordance with this ordinance and shall delegate to the City of Little Rock the powers to enforce the provisions of all laws, rules and/or regulations adopted in accordance with this section.

SECTION 3 - PRIVATE SEWAGE DISPOSAL

3.1 Private Sewage Disposal Systems Allowed

Where a public sanitary sewer is not available, under the provisions of Section 2.4, the building sewer shall be connected to a private sewage disposal system complying with the provisions of this Section.

3.2 Permits Required

Before commencement of construction of a private sewage disposal system, the owner shall first obtain a written permit from the office of the Arkansas Department of Health and/or the Arkansas Department of Environmental Quality. The application for such permit(s) shall be supplemented by such plans, specifications, test results, and other information as deemed necessary by the permitting authority.

3.3 Compliance with Regulations

The type, capacities, locations, and layout of private sewage disposal systems shall comply with all requirements and recommendations of the Arkansas Department of Health and/or the Arkansas Department of Environmental Quality.

3.4 Connection to Public Sewer Required

When a public sewer becomes available, the building sewer shall be connected to said sewer within thirty (30) days after date of official notice to do so, and the private sewage disposal system shall be cleaned of all sludge and solids, and filled with suitable materials.

3.5 Owner Responsibilities

The owner shall operate and maintain the private sewage disposal facilities in a sanitary manner at all times, at no expense to Little Rock Wastewater Utility.

3.6 Additional Requirements Govern

No statement contained in this Section shall be construed to supersede any additional requirements that may be imposed by the Arkansas Department of Health or the Arkansas Department of Environmental Quality, and in the event of any conflict between this section and any such additional requirements, the latter shall govern.

SECTION 4 - BUILDING SEWERS AND CONNECTIONS

4.1 Authorizations Required

No unauthorized person shall uncover, make any connection with or opening into, use, alter, or disturb, a public sewer or appurtenance thereof without first obtaining a written permit from the Manager of Little Rock Wastewater Utility.

4.2 Building Sewer Permits/Fees Required

A building sewer permit shall be required for all residential, commercial, and industrial connections to the sanitary sewer system. The owner or agent shall make application on a special form provided by the Utility. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the Manager. A permit and inspection fee for residential, commercial, and industrial building sewer connections shall be paid to Little Rock Wastewater Utility at the time the application is filed. Coincident with application for a permit, a connection fee shall be paid to Little Rock Wastewater Utility. Said fee shall be in proportion to the sewage treatment capacity required by the connected facility in accordance with a schedule adopted by the Sewer Committee of Little Rock Wastewater Utility.

4.3 Costs, Expenses, and Indemnification

All costs and expenses incident to the installation and connection of the building sewer shall be borne by the owner. The owner shall indemnify the City from any loss or damage that may directly be occasioned by the installation of the building sewer.

4.4 Separate Building Sewers Required

A separate and independent building sewer shall be provided for every building except as follows:

- A. Where multiple buildings are constructed in an apartment complex or condominium on a single lot or tract of land which cannot be subsequently subdivided and sold in parcels, the individual buildings may be connected to a collector building sewer provided that only one person is responsible for maintenance of the building sewer.
- B. Temporary buildings, mobile homes, or similar portable structures may be connected to a building sewer installed to serve a previously constructed permanent building provided

that both the permanent and temporary buildings are located on the same lot.

4.5 Use of Old Building Sewers

Old building sewers may be used in connection with new buildings only when they are found, upon examination and testing by the Manager, to meet all requirements of this Ordinance and other rules and regulations of Little Rock Wastewater Utility.

4.6 Construction Requirements and Specifications

The size, slope, alignment, and materials of construction of a building sewer and the methods to be used in excavating, placing of pipe, joining, testing, and backfilling the trench, shall all conform to the rules and regulations of Little Rock Wastewater Utility, the building and plumbing codes, or other applicable rules or regulations of the City of Little Rock, Arkansas. In the absence of code provisions or in amplification thereof, the materials and procedures set forth in appropriate specifications of the American Standard Testing Material (A.S.T.M.) and the Water Environment Federation (W.E.F.) Manual of Practice No. 9 shall apply.

4.7 Building Sewer Elevations/Lift Stations

Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sanitary sewage carried by such building drain shall be lifted by a means approved by the Manager and discharged to the building sewer.

4.8 Prohibited Connections

No person shall make, permit to be made, own, use or be in possession of a connection of roof drains, downspouts, exterior foundation drains, areaway drains, or other sources of surface runoff or groundwater to a building sewer or building drain which is directly or indirectly connected to a public sanitary sewer. If such connection is found to exist, the Owner shall be notified and given thirty (30) days to disconnect the prohibited cross connection. If disconnection is not made, sewer service will be discontinued until such repair is made.

4.9 Conformance to Rules and Regulations

The connection of a building sewer into a public sewer shall conform to the rules and regulations of Little Rock Wastewater Utility, the building and plumbing codes or other applicable

rules of the City of Little Rock, Arkansas, or the procedures set forth in appropriate specifications of the A.S.T.M. and W.E.F. Manual of Practice No. 9. All such connections shall be made gas tight and water tight. Any deviation from the prescribed procedures and materials must be approved by the Manager before installation.

4.10 Notification-Inspection and Connection

The applicant for the building sewer permit shall notify the Manager of Little Rock Wastewater Utility when the building sewer is ready for inspection and connection to the public sewer. All portions of the building sewer from the foundation to the connection to the public sewer shall be inspected and approved by the Manager before backfilling.

4.11 Protection of the Public

All excavations for building sewer installation shall be adequately guarded with barricades and lights so as to protect the public from hazard.

4.12 Restoration of Public Property

Streets, sidewalks, parkways, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the City of Little Rock Public Works Department.

4.13 Operation and Maintenance Requirements

The owner of any building or buildings which is (are) connected to the public sanitary sewer shall be required to operate and properly maintain the building drains and building sewer in accordance with all provisions of this Article at no expense to Little Rock Wastewater Utility.

SECTION 5 - PROTECTION FROM DAMAGE

5.1 Damage, Destruction, and Tampering

No person shall maliciously, willfully, or negligently break, damage, destroy, uncover, deface, or tamper with any structure, appurtenance, or equipment which is a part of the sewage works.

5.2 Unauthorized Covering

No unauthorized person shall cover any manhole on a public sewer with earth or paving, or otherwise render it inaccessible.

5.3 Removal of Cover

No unauthorized person shall remove the earth cover from a public sewer so that less than two (2) feet of earth cover remains over the pipe bells. Approval to remove subsequent cover shall require written consent from the Manager of the Little Rock Wastewater Utility.

5.4 Applicable Penalties

Violation of any provision of this Section is a Class C misdemeanor.

SECTION 6 - DISCONNECTING SEWERS

6.1 Disconnection and Sealing Required

Before any dwelling or other building being served by the public sewer is moved or demolished, the building sewer serving said building shall be disconnected from the public sewer at the property line and the remaining building sewer sealed to prevent the entrance of stormwater, groundwater, and debris into the public sewer. The Manager shall inspect all disconnect and seals.

6.2 Application and Fee Required

Prior to the demolition or moving of any building served by a public sewer, application shall be made to the office of Little Rock Wastewater Utility for disconnect and seal of the building sewer by the Utility and the sewer seal fee, as set by the Sewer Committee, shall be paid to the Utility at that time.

6.3 Notification Requirements

At least three (3) days before the building is moved or demolished, but after it is no longer occupied, the party making the application outlined in Section 6.2, above, shall notify the Utility that the building sewer is ready for inspection of disconnection and sealing.

SECTION 7 - POWER AND AUTHORITY OF INSPECTORS

7.1 Right of Entry

The Manager and other duly authorized employees of the Little Rock Wastewater Utility bearing proper credentials and

identification shall be permitted to enter all properties connected to the sanitary sewer system for the purposes of inspection, observation, measurement, sampling, and testing in accordance with the provisions of this Ordinance. The Manager or other duly authorized employee of the Little Rock Wastewater Utility bearing proper credentials and identification shall be permitted to enter all private properties through which the City holds a duly negotiated easement for the purposes, but not limited to, inspection, observation, measurement, sampling, repair, and maintenance of any portion of the sewage works lying within said easement. Any entry in and subsequent work on any such easement shall be done in full accordance with the terms of the duly negotiated easement pertaining to the private property involved.

7.2 Adoption of Rules and Regulations Pertaining to Services

In addition to the provisions of this Ordinance, the Sewer Committee of the City of Little Rock is specifically authorized to make such other reasonable rules and regulations in regard to the construction, use, and operation of sanitary sewers to be connected to, or connecting into, the mains of the Little Rock Wastewater Utility system. Such rules and regulations so made and adopted at a regular meeting of the Sewer Committee shall become effective as follows:

- (a) A public notice of intent to enact and intention of proposed rules and regulations shall be placed in a daily newspaper in the City of Little Rock, Arkansas, one (1) day for each of two (2) successive weeks with a brief summary of the proposed rules and regulations.
- (b) The proposed rules and regulations shall be available for inspections and reproduction at the office of the Manager of the Wastewater Utility for thirty (30) days following the first publication of the public notice.
- (c) A correct copy of those rules and regulations shall be filed for permanent record with the City Clerk of the City of Little Rock together with any written objections to the proposed rules and regulations at the end of the thirty (30) day public review period.
- (d) Said rules and regulations shall become effective on the filing of said copy for permanent record with the City Clerk.

SECTION 8 - ADMINISTRATIVE ENFORCEMENT REMEDIES

8.1 Enforcement Procedure

Whenever the Manager finds that any person has violated or is violating any provision of this Ordinance, or any prohibition, limitation, or requirement contained herein, he shall serve upon such person a written notice via certified mail or personal service stating the nature of the violation and providing a reasonable time, not to exceed thirty (30) days, for the satisfactory correction thereof.

8.2 Show Cause Hearing

- A. If the violation is not corrected by timely compliance, the Manager shall order any person who violates any provision of this Ordinance or causes or allows an unauthorized discharge to show cause before the Manager why service should not be terminated. A notice shall be served on the offending party, specifying the time and place of a hearing to be held by the Manager regarding the violation, and directing the termination of service. The notice of the hearing shall be served personally or by registered or certified mail (return receipt requested) at least ten (10) days before the hearing. Service may be made on any agent or officer of a corporation.
- B. The Manager shall conduct the hearing, take the evidence, and the Manager is further authorized to do any and all of the following:
 1. Issue notices of hearings requesting the attendance and testimony of witnesses and the production of evidence relevant to any matter involved in any such hearings and conduct such hearing for the purpose of making a determination of the existence of violations and recommendation to the Sewer Committee for appropriate action.
 2. Transmit a report of the evidence and hearing, including transcripts and other evidence, together with the recommendations and/or findings of the Manager to the Sewer Committee for final action by the Sewer Committee subject to any further information which the Sewer Committee may request or any party to the action may desire to submit for further consideration.
 3. At any public hearing, testimony taken before the Manager must be under oath and recorded by cassette tape or stenographically. The transcript, so recorded,

will be made available to any member of the public or any party to the hearing upon payment of the cost of production.

- C. After the Sewer Committee has reviewed the evidence, and the Manager's recommendation it may issue an order to the party responsible for the discharge or violation directing that, following a specified time period, the sewer service be discontinued unless adequate treatment facilities, devices, or other related appurtenances shall have been installed or existing treatment facilities, devices, or other related appurtenances are properly operated or the violation is corrected, and such further orders and directives as are necessary and appropriate. Such order shall be subject to review by appeal to the Circuit Court of Pulaski County, Arkansas, in accordance with the law of Arkansas.
- D. A discharge in violation of the provisions of this Ordinance shall be considered a public nuisance. In addition to the procedures outlined in Sections 6 and 7, nothing herein shall be deemed to prevent the Sewer Committee and/or the Utility from seeking appropriate legal and/or equitable relief in the Courts of Arkansas in the event of a violation or discharge in violation of the provisions of this Ordinance.

8.3 Emergency Suspension of Service

The Sewer Committee may for good cause shown, after notice, suspend the receipt of wastewater discharge to the POTW, subject to a hearing within five (5) days, and, thereafter, revoke the Wastewater Discharge Permit of a discharger when it appears to the Sewer Committee that an actual or threatened discharge presents or threatens an imminent and substantial danger to the health or welfare of persons, substantial danger to the environment, interferes with the operation of the POTW, or violates any of the provisions of this Ordinance. Any Discharger notified of the suspension of service and/or discharge permit, shall within a reasonable period of time, as determined by the Sewer Committee or its representative, cease all discharges. In the event of failure of the discharger to comply voluntarily with the suspension order within the time specified, the Sewer Committee shall take all lawful actions necessary to immediately suspend the access of the User to the POTW. The Sewer Committee shall reinstate the service and/or Discharge Permit upon proof by the Discharger of the elimination of the non-complying discharges or conditions creating the threat of imminent or substantial danger as set forth above. The Discharger shall be charged with reimbursing the LRWU all costs incurred in the suspension of service before the service will be reinstated.

SECTION 9 - JUDICIAL ENFORCEMENT REMEDIES

9.1 Injunctive Relief

Whenever a User has violated any provision of this Ordinance or continues to violate any provision of this Ordinance, wastewater discharge permits or orders issued hereunder, the Sewer Committee may commence action for appropriate legal and/or equitable relief in any court of competent jurisdiction for the issuance of a temporary or permanent injunction, as appropriate, which restrains or compels compliance, performance of a Sewer Committee order, or other requirement imposed by this Ordinance on activities of the User. A petition for injunctive relief need not be filed as a prerequisite to taking any other action against a User.

9.2 Civil Penalties

- A. Any person or other entity found to be violating any provision of this Ordinance or regulations promulgated by the Sewer Committee shall be subject to a fine in an amount of not less than one hundred dollars (\$100.00) nor more than five hundred dollars (\$500.00) for any one (1) specified offense or violation of such ordinance, and not less than one hundred dollars (\$100.00) nor more than one thousand dollars (\$1,000.00) for each repetition of such offense or violation. If a thing prohibited or rendered unlawful is, in its nature, continuous in respect to time, the fine or penalty for allowing the continuance thereof shall not exceed two hundred and fifty dollars (\$250.00) per day for each continuing offense or violation.
- B. Any person or other entity who knowingly makes any false statements, representations or certification of any record, report, plan, or other document filed or required to be maintained pursuant to this Ordinance, regulations, or laws referred to herein, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this Ordinance, regulations or laws referred to herein, shall be subject to a fine in an amount not less than one hundred dollars (\$100.00) nor more than five hundred dollars (\$500.00) for any one (1) specified offense or violation of such ordinance, and not less than one hundred dollars (\$100.00) nor more than one thousand dollars (\$1,000.00) for each repetition of such offense or violation. If a thing prohibited or rendered unlawful is, in its nature, continuous in respect to time, the fine or penalty for allowing the continuance thereof, in violation

of such ordinance, shall not exceed two hundred and fifty dollars (\$250.00) per day for each offense or violation.

- C. Any person or other entity violating any of the provisions of this Ordinance shall become liable to the Utility for any expense, loss, or damage occasioned the Utility by reason of such violation.
- D. In addition to the civil penalties provided for herein, the Sewer Committee may recover, on behalf of the Utility, from a person or other entity(ies) determined to be in violation of the provisions of this Ordinance any damages suffered, costs, and other expenses of litigation in an action at law or equity which may be permitted by the laws of Arkansas.
- E. The Sewer Committee shall petition a Court of competent jurisdiction to impose, assess and recover all civil penalties, legal fees, and costs together with damages if appropriate. In determining the amount of the penalty, the Sewer Committee in its recommendation for civil penalties, the City Board of Directors and the Court may take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration of the violation, any economic benefit gained by the User in allowing the violation, the timing and nature of any corrective actions taken by the User, the compliance history of the User, and any other facts as justice requires.
- F. Filing a suit for civil penalties shall not be a prerequisite for taking any other action against a User.

9.3 Criminal Prosecution

- A. The Sewer Committee may criminally prosecute in a court of competent jurisdiction any User who knowingly or negligently violates any provision of this Ordinance, its Wastewater Discharge Permit or any orders issued hereunder. If so prosecuted the User shall, upon conviction, be guilty of a misdemeanor, and be punished by a fine not to exceed five hundred dollars (\$500.00) per violation or imprisonment for such term as allowed by law.
- B. The Sewer Committee may criminally prosecute in a court of competent jurisdiction any User who knowingly or negligently makes any false statement, representation or certification in any application, record, report, plan or other document filed or required to be maintained pursuant to this Ordinance or its Wastewater Discharge Permit, or who falsifies, tampers with, or knowingly or negligently renders

inaccurate any monitoring or sampling device, wastewater sample or other methods required by this Ordinance. If so prosecuted, the User shall, upon conviction, be guilty of a misdemeanor, and be punished by a fine of not more than five hundred dollars (\$500.00) per violation or by imprisonment for such term as allowed by law.

- C. Each day on which a violation shall occur or continue shall be a separate and distinct offense. In the case of monthly or other long-term average discharge limits, penalties shall accrue for each business or operational day during the period of violation.

9.4 Remedies Nonexclusive

The provisions in Sections 7 through 9 are not exclusive remedies. The Utility reserves the right to take any, all, or any combination of these actions against a noncompliant User. The Utility shall be authorized to take other action against any User when the circumstances warrant. Further, the Utility is empowered to take more than one (1) enforcement action against any noncompliant User. These actions may be taken concurrently.

9.5 Initiation of Criminal or Civil Action

Any criminal or civil action for violation of this Ordinance may be initiated only after a majority vote of the Sewer Committee resolves to pursue such action.

- A. For Users with properties located within the corporate limits of the City of Little Rock, no suit to collect civil or criminal penalties or fines may be initiated until after such time that a resolution authorizing the suit is duly adopted by the Sewer Committee, as the governing body.
- B. For Users with properties located outside the corporate limits of the City of Little Rock, the Board of Directors of the City of Little Rock hereby delegates authority to the Sewer Committee to be the governing body to authorize, by resolution, legal actions to collect civil or criminal penalties or fines.

SECTION 10 - SUPPLEMENTAL ENFORCEMENT ACTION

10.1 Performance Bonds

The Manager may decline to issue a wastewater discharge permit to any User who has failed to comply with the provisions

of this Ordinance, any orders, or a previous wastewater discharge permit issued hereunder, unless such User first files a satisfactory bond, payable to the Little Rock Sanitary Sewer Committee or the Utility, in a sum not to exceed a value determined by the Manager to be necessary to achieve compliance.

10.2 Liability Insurance

The Manager may decline to issue a wastewater discharge permit to any User who has failed to comply with the provisions of this Ordinance, or violated any order, or a previous wastewater discharge permit issued hereunder, unless that User first submits proof that it has obtained financial assurances sufficient to restore or repair damage to the POTW caused by its discharge.

10.3 Public Nuisances

Any violation of this Ordinance, wastewater discharge permit, or orders issued hereunder, is declared a public nuisance and shall be corrected or abated as directed by the Manager or his designee. Any person(s) creating a public nuisance shall be subject to the provisions of the City Code § 20-2 governing such nuisances, including reimbursing the Utility for any costs incurred in removing, abating, or remedying said nuisance. Any discharger which makes, causes, or allows a prohibited discharge which causes additional expense or costs to handle and treat such discharge or to correct damages caused by such discharge shall be required to reimburse the Utility for such cost or expense.

SECTION 11 - SEVERABILITY

The provisions of this Ordinance are severable, and if any provision, paragraph, word, section, or article of this Ordinance is invalidated by any court of competent jurisdiction it shall not affect the remainder of this Ordinance and the remaining provisions, paragraphs, words, sections, and articles shall not be affected and shall continue in full force and effect.

11.1 Repeal of Prior Ordinances

All Ordinances and parts of Ordinances inconsistent or conflicting with any part of this Ordinance are hereby repealed to the extent of such inconsistency or conflict, including but not limited to Articles I, II, III, IV, V, X, XI, and XII of Ordinance No. 15,344 passed on September 1, 1987.

**SECTION 12 - AUTHORITY OF LITTLE ROCK SANITARY SEWER COMMITTEE,
EFFECTIVE DATE, AND DECLARING AN EMERGENCY**

The City Board of Directors of the City of Little Rock has determined that it is essential that the Little Rock Sanitary Sewer Committee should have the authority to regulate the use of public and private sewers in accordance with the provisions contained in this Ordinance in order to accomplish the purposes thereof. Therefore, an emergency is hereby declared to exist, and this Ordinance, being necessary for the immediate preservation of the public peace, health and safety, shall be in full force and effect immediately after its passage and approval.

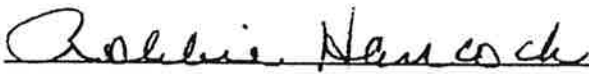
PASSED: **March 16, 1999**

APPROVED:



MAYOR **JIM DAILEY**

ATTEST:



CITY CLERK **ROBBIE HANCOCK**
APPROVED:



TOM CARPENTER, CITY ATTORNEY

PREPARED BY:

Don F. Hamilton, General Counsel
Little Rock Wastewater Utility
221 E. Capitol
Little Rock, AR 72202
Ark. Sup. Ct. #63022
(501) 688-1403

CERTIFICATE

**STATE OF ARKANSAS)
COUNTY OF PULASKI) SS
CITY OF LITTLE ROCK)**

I, Robbie Hancock, City Clerk within and for the City aforesaid, do hereby certify that the foregoing is a true and correct copy of Ordinance No. 17,965 of the Ordinances of the City of Little Rock, Arkansas, entitled: "AN ORDINANCE REGULATING THE USE OF PUBLIC AND PRIVATE SEWERS, PRIVATE SEWAGE DISPOSAL, THE INSTALLATION, CONSTRUCTION, MAINTENANCE, AND CONNECTION OF BUILDING SEWERS; THE DISCHARGE OF WATERS AND WASTES INTO THE PUBLIC SEWER SYSTEM; PROVIDING PENALTIES FOR THE VIOLATION THEREOF; REPEALING ALL ORDINANCES AND PROVISIONS THEREOF IN CONFLICT THEREWITH INCLUDING ARTICLES I, II, III, IV, V, X, XI, AND XII OF ORDINANCE NO. 15,344, PASSED ON SEPTEMBER 1, 1987; AND FOR OTHER PURPOSES, ALL PERTAINING TO THE SEWER LINES AND SYSTEM WITHIN THE JURISDICTION OF THE CITY OF LITTLE ROCK, ARKANSAS, AND DECLARING AN EMERGENCY"; passed by the Board of Directors of said City on March 16, 1999, said Ordinance now appearing of record in this office.

IN WITNESS WHEREOF, I have hereunto set my hand and seal of office on this 5th day of April, 1999.



Robbie Hancock
City Clerk
City of Little Rock, Arkansas

ARTICLE III. SEWERS AND SEWAGE DISPOSAL*

DIVISION 1. GENERALLY

Secs. 35-101, 35-102. Reserved.

Sec. 35-103. Sanitary sewer committee.

(a) The sanitary sewer committee shall consist of five (5) members to be appointed by the city manager subject to the approval of the board of directors for terms of four (4) years. Each member shall be a citizen of the city with knowledge and experiences fitting to his responsibility as a member of said committee. The committee shall perform all the duties of the sanitary sewer committee abolished by Ordinance No. 8062, adopted by the city on July 25, 1949.

(b) The sanitary sewer committee is subject to all fiscal procedures of the city.

(Code 1961, § 35-1)

Cross reference—Boards and commissions generally, § 2-261 et seq.

State law reference—Sewer committees, A.C.A. § 14-235-206 et seq.

Secs. 35-104—35-120. Reserved.

DIVISION 2. SEWER USE

Sec. 35-121. Title, purpose and policy.

This division shall be known as the "General Sewer Use Ordinance" and sets forth uniform general requirements regulating the use of the public sewers for the City of Little Rock, Arkansas. The objectives of this Ordinance are:

- (a) To regulate the general use of both public and private sewers within the jurisdiction of the City of Little Rock, Arkansas;
- (b) To regulate private sewage disposal within the jurisdiction of the City of Little Rock, Arkansas;

***Cross reference**—Hazardous waste disposal, § 11-4(11).

State law reference—Municipal sewage systems, A.C.A. § 14-235-101 et seq.

- (c) To regulate the installation, construction, maintenance, connection, and protection of building sewers within the jurisdiction of the City of Little Rock, Arkansas;
- (d) To regulate the disconnection and sealing of building sewers within the jurisdiction of the City of Little Rock, Arkansas;
- (e) To repeal all existing ordinances in conflict therewith.

(Ord. No. 17,965, § 1.1, 3-16-99)

Sec. 35-122. Definitions.

Unless a provision explicitly states otherwise, the following terms and phrases, as used in this division, shall have the meanings hereinafter designated:

And/or shall mean one item or the other or a combination of both or all.

Building drain shall mean that part of the lowest horizontal piping of a drainage system which receives the discharge from all drains which carry waste or water-borne waste inside the walls of a building and conveys it to the building sewer, beginning five (5) feet outside the inner face of the building.

Building sewer shall mean the extension from the building drain to the public sewer or other place of disposal.

Manager shall mean the manager of Little Rock Wastewater Utility, or his authorized deputy, agent, or representative.

Natural outlet shall mean any outlet, including storm sewers and combined sewer overflows, into a water course, ditch, lake, or other body of surface or ground water.

Objectionable waste shall mean any wastes that can harm either the sewers, sewer treatment processes or equipment, have an adverse effect on the receiving stream or otherwise endanger life, health, or property, or constitutes a nuisance.

Person shall mean any individual, firm, company, association, society, corporation, or group.

POTW shall mean publicly owned treatment works.

Private sewage disposal system shall mean that facility owned, operated, and maintained by any person for the purpose of collecting and disposing of sewage within the property of said person.

Public sewer shall mean a common sewer in which all owners of abutting properties have equal rights, and is controlled by public authority.

Sanitary sewer shall mean a sewer in which sewage is carried, and to which storm, surface, and ground water are not intentionally admitted.

Sewage shall mean a combination of the water-carried wastes from residences, business buildings, institutions, commercial establishments, and industries.

Sewer shall mean a pipe or conduit for carrying sewage.

Sewer committee shall mean the Little Rock Sanitary Sewer Committee of the City of Little Rock Wastewater Utility.

Sewer system shall mean the City of Little Rock Wastewater Utility as operated by the sewer committee of the City of Little Rock, Arkansas.

Shall is mandatory; *may* is permissive.

Storm drain shall mean a drain or sewer for conveying water, ground water, subsurface water, or unpolluted water from any source.

Utility shall mean the Little Rock Sanitary Sewer Committee.

User shall mean a source of indirect discharge.

Wastewater shall mean the spent water of a community, including the combination of the liquid and water carried wastes from residences, commercial establishments, industrial plants, and institutions, together with any ground water, surface water, and storm water that may be present.

Water course shall mean a channel in which a flow of water occurs, either continuously or intermittently.

(Ord. No. 17,965, § 1.2, 3-16-99)

Sec. 35-123. Use of public sewers required.

(a) *Unsanitary conditions.* It shall be unlawful for any person to place, deposit, or permit to be deposited in any unsanitary manner on public or private property within the City of Little Rock, Arkansas, or in any area under the jurisdiction of said city, any human or animal excrement, or other objectionable wastes.

(b) *Stormwater discharge.* No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, subsurface drainage, noncontact cooling water or other such waters into any sanitary sewer.

(c) *Discharge to natural outlets.* It shall be unlawful to discharge to any natural outlet within the City of Little Rock, Arkansas, or in any area under the jurisdiction of said city, any sewage or other polluted waters, except where suitable treatment has been provided as required by law.

(d) *Septic tanks, privies, cesspools.* Except as herein provided under section 35-124 below, it shall be unlawful for any person to construct or maintain any privy, privy vault, septic tank, cesspool, or other facility intended to be used for the disposal of sewage.

(e) *Connection to public sanitary sewer required.* The owner of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes, situated within the City of Little Rock and abutting on any street, alley, or right-of-way in which there is now located or may in the future be located a public

sanitary sewer of the city, is hereby required, at his expense, to install suitable toilet facilities therein, and to connect such facilities directly with the proper public sewer in accordance with the provisions of this division, within thirty (30) days after date of official notice to do so, provided that said property is within three hundred (300) feet of any accessible public sanitary sewer.

(f) *Dischargers outside city.* All dischargers to the City of Little Rock POTW, who are outside the jurisdiction and are not part of another incorporated city, shall be required to agree by written contract to abide by the conditions set forth in this division, subsequent revisions and amendments to this division, and any rules and/or regulations promulgated by the sewer committee of the City of Little Rock in accordance with this division. All incorporated cities which discharge to the City of Little Rock POTW shall agree by written contract to adopt an ordinance which meets the requirements of 40 CFR 403, General Pretreatment Regulations, and will be at least as stringent as the conditions set forth in this division. This agreement must also contain a provision that allows for the adoption of any and all rules and/or regulations promulgated by the provisions of the sewer committee of the City of Little Rock in accordance with this article and shall delegate to the City of Little Rock the powers to enforce the provisions of all laws, rules and/or regulations adopted in accordance with this section. (Ord. No. 17,965, §§ 2.1—2.6, 3-16-99)

Sec. 35-124. Private sewage disposal.

(a) *Private sewage disposal systems allowed.* Where a public sanitary sewer is not available, under the provisions of section 35-123(d), the building sewer shall be connected to a private sewage disposal system complying with the provisions of this section.

(b) *Permits required.* Before commencement of construction of a private sewage disposal system, the owner shall first obtain a written permit from the office of the Arkansas Department of Health and/or the Arkansas Department of Environmental Quality. The application for such permit(s)

shall be supplemented by such plans, specifications, test results, and other information as deemed necessary by the permitting authority.

(c) *Compliance with regulations.* The type, capacities, locations, and layout of private sewage disposal systems shall comply with all requirements and recommendations of the Arkansas Department of Health and/or the Arkansas Department of Environmental Quality.

(d) *Connection to public sewer required.* When a public sewer becomes available, the building sewer shall be connected to said sewer within thirty (30) days after date of official notice to do so, and the private sewage disposal system shall be cleaned of all sludge and solids, and filled with suitable materials.

(e) *Owner responsibilities.* The owner shall operate and maintain the private sewage disposal facilities in a sanitary manner at all times, at no expense to Little Rock Wastewater Utility.

(f) *Additional requirements govern.* No statement contained in this section shall be construed to supersede any additional requirements that may be imposed by the Arkansas Department of Health or the Arkansas Department of Environmental Quality, and in the event of any conflict between this section and any such additional requirements, the latter shall govern. (Ord. No. 17,965, §§ 3.1—3.6, 3-16-99)

Sec. 35-125. Building sewers and connections.

(a) *Authorizations required.* No unauthorized person shall uncover, make any connection with or opening into, use, alter, or disturb, a public sewer or appurtenance thereof without first obtaining a written permit from the manager of the Little Rock Wastewater Utility.

(b) *Building sewer permits/fees required.* A building sewer permit shall be required for all residential, commercial, and industrial connections to the sanitary sewer system. The owner or agent shall make application on a special form provided by the utility. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the manager. A permit and

inspection fee for residential, commercial, and industrial building sewer connections shall be paid to the Little Rock Wastewater Utility at the time the application is filed. Coincident with application for a permit, a connection fee shall be paid to the Little Rock Wastewater Utility. Said fee shall be in proportion to the sewage treatment capacity required by the connected facility in accordance with a schedule adopted by the sewer committee of Little Rock Wastewater Utility.

(c) *Costs, expenses, and indemnification.* All costs and expenses incident to the installation and connection of the building sewer shall be borne by the owner. The owner shall indemnify the city from any loss or damage that may directly be occasioned by the installation of the building sewer.

(d) *Separate building sewers required.* A separate and independent building sewer shall be provided for every building except as follows:

- (1) Where multiple buildings are constructed in an apartment complex or condominium on a single lot or tract of land which cannot be subsequently subdivided and sold in parcels, the individual buildings may be connected to a collector building sewer provided that only one person is responsible for maintenance of the building sewer.
- (2) Temporary buildings, mobile homes, or similar portable structures may be connected to a building sewer installed to serve a previously constructed permanent building provided that both the permanent and temporary buildings are located on the same lot.

(e) *Use of old building sewers.* Old building sewers may be used in connection with new buildings only when they are found, upon examination and testing by the manager, to meet all requirements of this division and other rules and regulations of the Little Rock Wastewater Utility.

(f) *Construction requirements and specifications.* The size, slope, alignment, and materials of construction of a building sewer and the methods to be used in excavating, placing of pipe, joining, testing, and backfilling the trench, shall all con-

form to the rules and regulations of the Little Rock Wastewater Utility, the building and plumbing codes, or other applicable rules or regulations of the City of Little Rock, Arkansas. In the absence of code provisions or in amplification thereof, the materials and procedures set forth in appropriate specifications of the American Standard Testing Material (A.S.T.M.) and the Water Environment Federation (W.E.F.) Manual of Practice No. 9 shall apply.

(g) *Building sewer elevations/lift stations.* Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sanitary sewage carried by such building drain shall be lifted by a means approved by the manager and discharged to the building sewer.

(h) *Prohibited connections.* No person shall make, permit to be made, own, use or be in possession of a connection of roof drains, downspouts, exterior foundation drains, areaway drains, or other sources of surface runoff or groundwater to a building sewer or building drain which is directly or indirectly connected to a public sanitary sewer. If such connection is found to exist, the owner shall be notified and given thirty (30) days to disconnect the prohibited cross connection. If disconnection is not made, sewer service will be discontinued until such repair is made.

(i) *Conformance to rules and regulations.* The connection of a building sewer into a public sewer shall conform to the rules and regulations of the Little Rock Wastewater Utility, the building and plumbing codes or other applicable rules of the City of Little Rock, Arkansas, or the procedures set forth in appropriate specifications of the A.S.T.M. and W.E.F. Manual of Practice No. 9. All such connections shall be made gas tight and water tight. Any deviation from the prescribed procedures and materials must be approved by the manager before installation.

(j) *Notification—Inspection and connection.* The applicant for the building sewer permit shall notify the manager of the Little Rock Wastewater Utility when the building sewer is ready for inspection and connection to the public sewer. All

portions of the building sewer from the foundation to the connection to the public sewer shall be inspected and approved by the manager before backfilling.

(k) *Protection of the public.* All excavations for building sewer installation shall be adequately guarded with barricades and lights so as to protect the public from hazard.

(l) *Restoration of public property.* Streets, sidewalks, parkways, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the City of Little Rock Public Works Department.

(m) *Operation and maintenance requirements.* The owner of any building or buildings which is (are) connected to the public sanitary sewer shall be required to operate and properly maintain the building drains and building sewer in accordance with all provisions of this article at no expense to the Little Rock Wastewater Utility.

(Ord. No. 17,965, §§ 4.1—4.13, 3-16-99)

Sec. 35-126. Protection from damage.

(a) *Damage, destruction, and tampering.* No person shall maliciously, willfully, or negligently break, damage, destroy, uncover, deface, or tamper with any structure, appurtenance, or equipment which is a part of the sewage works.

(b) *Unauthorized covering.* No unauthorized person shall cover any manhole on a public sewer with earth or paving, or otherwise render it inaccessible.

(c) *Removal of cover.* No unauthorized person shall remove the earth cover from a public sewer so that less than two (2) feet of earth cover remains over the pipe bells. Approval to remove subsequent cover shall require written consent from the manager of the Little Rock Wastewater Utility.

(d) *Applicable penalties.* Violation of any provision of this section is a Class C misdemeanor. (Ord. No. 17,965, §§ 5.1—5.4, 3-16-99)

Sec. 35-127. Disconnecting sewers.

(a) *Disconnection and sealing required.* Before any dwelling or other building being served by the public sewer is moved or demolished, the building sewer serving said building shall be disconnected from the public sewer at the property line and the remaining building sewer sealed to prevent the entrance of stormwater, groundwater, and debris into the public sewer. The manager shall inspect all disconnect and seals.

(b) *Application and fee required.* Prior to the demolition or moving of any building served by a public sewer, application shall be made to the office of the Little Rock Wastewater Utility for disconnect and seal of the building sewer by the Utility and the sewer seal fee, as set by the sewer committee, shall be paid to the utility at that time.

(c) *Notification requirements.* At least three (3) days before the building is moved or demolished, but after it is no longer occupied, the party making the application outlined in subsection (b), above, shall notify the utility that the building sewer is ready for inspection of disconnection and sealing.

(Ord. No. 17,965, §§ 6.1—6.3, 3-16-99)

Sec. 35-128. Power and authority of inspectors.

(a) *Right of entry.* The manager and other duly authorized employees of the Little Rock Wastewater Utility bearing proper credentials and identification shall be permitted to enter all properties connected to the sanitary sewer system for the purposes of inspection, observation, measurement, sampling, and testing in accordance with the provisions of this division. The manager or other duly authorized employee of the Little Rock Wastewater Utility bearing proper credentials and identification shall be permitted to enter all private properties through which the city holds a duly negotiated easement for the purposes, but not limited to, inspection, observation, measurement, sampling, repair, and maintenance of any portion of the sewage works lying within said easement. Any entry in and subsequent work on any such easement shall be done in full accor-

dance with the terms of the duly negotiated easement pertaining to the private property involved.

(b) *Adoption of rules and regulations pertaining to services.* In addition to the provisions of this division, the sewer committee of the City of Little Rock is specifically authorized to make such other reasonable rules and regulations in regard to the construction, use, and operation of sanitary sewers to be connected to, or connecting into, the mains of the Little Rock Wastewater Utility system. Such rules and regulations so made and adopted at a regular meeting of the sewer committee shall become effective as follows:

- (1) A public notice of intent to enact and intention of proposed rules and regulations shall be placed in a daily newspaper in the City of Little Rock, Arkansas, one (1) day for each of two (2) successive weeks with a brief summary of the proposed rules and regulations.
- (2) The proposed rules and regulations shall be available for inspections and reproduction at the office of the manager of the wastewater utility for thirty (30) days following the first publication of the public notice.
- (3) A correct copy of those rules and regulations shall be filed for permanent record with the city clerk of the City of Little Rock together with any written objections to the proposed rules and regulations at the end of the thirty (30) day public review period.
- (4) Said rules and regulations shall become effective on the filing of said copy for permanent record with the city clerk.

(Ord. No. 17,965, §§ 7.1, 7.2, 3-16-99)

Sec. 35-129. Administrative enforcement remedies.

(a) *Enforcement procedure.* Whenever the manager finds that any person has violated or is violating any provision of this division, or any prohibition, limitation, or requirement contained herein, he shall serve upon such person a written notice via certified mail or personal service stat-

ing the nature of the violation and providing a reasonable time, not to exceed thirty (30) days, for the satisfactory correction thereof.

(b) *Show cause hearing.*

- (1) If the violation is not corrected by timely compliance, the manager shall order any person who violates any provision of this division or causes or allows an unauthorized discharge to show cause before the manager why service should not be terminated. A notice shall be served on the offending party, specifying the time and place of a hearing to be held by the manager regarding the violation, and directing the termination of service. The notice of the hearing shall be served personally or by registered or certified mail (return receipt requested) at least ten (10) days before the hearing. Service may be made on any agent or officer of a corporation.
- (2) The manager shall conduct the hearing, take the evidence, and the manager is further authorized to do any and all of the following:
 - a. Issue notices of hearings requesting the attendance and testimony of witnesses and the production of evidence relevant to any matter involved in any such hearings and conduct such hearing for the purpose of making a determination of the existence of violations and recommendation to the sewer committee for appropriate action.
 - b. Transmit a report of the evidence and hearing, including transcripts and other evidence, together with the recommendations and/or findings of the manager to the sewer committee for final action by the sewer committee subject to any further information which the sewer committee may request or any party to the action may desire to submit for further consideration.

- c. At any public hearing, testimony taken before the manager must be under oath and recorded by cassette tape or stenographically. The transcript, so recorded, will be made available to any member of the public or any party to the hearing upon payment of the cost of production.
- (3) After the sewer committee has reviewed the evidence, and the manager's recommendation it may issue an order to the party responsible for the discharge or violation directing that, following a specified time period, the sewer service be discontinued unless adequate treatment facilities, devices, or other related appurtenances shall have been installed or existing treatment facilities, devices, or other related appurtenances are properly operated or the violation is corrected, and such further orders and directives as are necessary and appropriate. Such order shall be subject to review by appeal to the Circuit Court of Pulaski County, Arkansas, in accordance with the law of Arkansas.
- (4) A discharge in violation of the provisions of this division shall be considered a public nuisance. In addition to the procedures outlined in sections 35-127 and 35-128, nothing herein shall be deemed to prevent the sewer committee and/or the utility from seeking appropriate legal and/or equitable relief in the Courts of Arkansas in the event of a violation or discharge in violation of the provisions of this division.

(c) *Emergency suspension of service.* The sewer committee may for good cause shown, after notice, suspend the receipt of wastewater discharge to the POTW, subject to a hearing within five (5) days, and, thereafter, revoke the wastewater discharge permit of a discharger when it appears to the sewer committee that an actual or threatened discharge presents or threatens an imminent and substantial danger to the health or welfare of persons, substantial danger to the environment, interferes with the operation of the POTW, or violates any of the provisions of this division. Any

discharger notified of the suspension of service and/or discharge permit, shall within a reasonable period of time, as determined by the sewer committee or its representative, cease all discharges. In the event of failure of the discharger to comply voluntarily with the suspension order within the time specified, the sewer committee shall take all lawful actions necessary to immediately suspend the access of the user to the POTW. The sewer committee shall reinstate the service and/or discharge permit upon proof by the discharger of the elimination of the non-complying discharges or conditions creating the threat of imminent or substantial danger as set forth above. The discharger shall be charged with reimbursing the LRWU all costs incurred in the suspension of service before the service will be reinstated. (Ord. No. 17,965, §§ 8.1—8.3, 3-16-99)

Sec. 35-130. Judicial enforcement remedies.

(a) *Injunctive relief.* Whenever a user has violated any provision of this division or continues to violate any provision of this division, wastewater discharge permits or orders issued hereunder, the sewer committee may commence action for appropriate legal and/or equitable relief in any court of competent jurisdiction for the issuance of a temporary or permanent injunction, as appropriate, which restrains or compels compliance, performance of a sewer committee order, or other requirement imposed by this division on activities of the user. A petition for injunctive relief need not be filed as a prerequisite to taking any other action against a user.

(b) *Civil penalties.*

- (1) Any person or other entity found to be violating any provision of this division or regulations promulgated by the sewer committee shall be subject to a fine in an amount of not less than one hundred dollars (\$100.00) nor more than five hundred dollars (\$500.00) for any one (1) specified offense or violation of such ordinance, and not less than one hundred dollars (\$100.00) nor more than one thousand dollars (\$1,000.00) for each repetition of such offense or violation. If a thing prohibited or rendered unlawful is, in its

nature, continuous in respect to time, the fine or penalty for allowing the continuance thereof shall not exceed two hundred fifty dollars (\$250.00) per day for each continuing offense or violation.

- (2) Any person or other entity who knowingly makes any false statements, representations or certification of any record, report, plan, or other document filed or required to be maintained pursuant to this division, regulations, or laws referred to herein, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this division, regulations or laws referred to herein, shall be subject to a fine in an amount not less than one hundred dollars (\$100.00) nor more than five hundred dollars (\$500.00) for any one (1) specified offense or violation of such ordinance, and not less than one hundred dollars (\$100.00) nor more than one thousand dollars (\$1,000.00) for each repetition of such offense or violation. If a thing prohibited or rendered unlawful is, in its nature, continuous in respect to time, the fine or penalty for allowing the continuance thereof, in violation of such ordinance, shall not exceed two hundred fifty dollars (\$250.00) per day for each offense or violation.
- (3) Any person or other entity violating any of the provisions of this division shall become liable to the utility for any expense, loss, or damage occasioned the utility by reason of such violation.
- (4) In addition to the civil penalties provided for herein, the sewer committee may recover, on behalf of the utility, from a person or other entity(ies) determined to be in violation of the provisions of this division any damages suffered, costs, and other expenses of litigation in an action at law or equity which may be permitted by the laws of Arkansas.
- (5) The sewer committee shall petition a court of competent jurisdiction to impose, assess and recover all civil penalties, legal

fees, and costs together with damages if appropriate. In determining the amount of the penalty, the sewer committee in its recommendation for civil penalties, the city board of directors and the court may take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration of the violation, any economic benefit gained by the user in allowing the violation, the timing and nature of any corrective actions taken by the user, the compliance history of the user, and any other facts as justice requires.

- (6) Filing a suit for civil penalties shall not be a prerequisite for taking any other action against a user.
- (c) *Criminal prosecution.*
 - (1) The sewer committee may criminally prosecute in a court of competent jurisdiction any user who knowingly or negligently violates any provision of this division, its wastewater discharge permit or any orders issued hereunder. If so prosecuted the User shall, upon conviction, be guilty of a misdemeanor, and be punished by a fine not to exceed five hundred dollars (\$500.00) per violation or imprisonment for such term as allowed by law.
 - (2) The sewer committee may criminally prosecute in a court of competent jurisdiction any user who knowingly or negligently makes any false statement, representation or certification in any application, record, report, plan or other document filed or required to be maintained pursuant to this division or its wastewater discharge permit, or who falsifies, tampers with, or knowingly or negligently renders inaccurate any monitoring or sampling device, wastewater sample or other methods required by this division. If so prosecuted, the user shall, upon conviction, be guilty of a misdemeanor, and be punished by a fine of not more than five hundred

dollars (\$500.00) per violation or by imprisonment for such term as allowed by law.

- (3) Each day on which a violation shall occur or continue shall be a separate and distinct offense. In the case of monthly or other long-term average discharge limits, penalties shall accrue for each business or operational day during the period of violation.

(d) *Remedies nonexclusive.* The provisions in sections 35-128 through 35-130 are not exclusive remedies. The utility reserves the right to take any, all, or any combination of these actions against a noncompliant user. The utility shall be authorized to take other action against any user when the circumstances warrant. Further, the utility is empowered to take more than one (1) enforcement action against any noncompliant user. These actions may be taken concurrently.

(e) *Initiation of criminal or civil action.* Any criminal or civil action for violation of this division may be initiated only after a majority vote of the sewer committee resolves to pursue such action.

- (1) For users with properties located within the corporate limits of the City of Little Rock, no suit to collect civil or criminal penalties or fines may be initiated until after such time that a resolution authorizing the suit is duly adopted by the sewer committee, as the governing body.
- (2) For users with properties located outside the corporate limits of the City of Little Rock, the Board of Directors of the City of Little Rock hereby delegates authority to the sewer committee to be the governing body to authorize, by resolution, legal actions to collect civil or criminal penalties or fines.

(Ord. No. 17,965, §§ 9.1—9.5, 3-16-99)

Sec. 35-131. Supplemental enforcement action.

(a) *Performance bonds.* The manager may decline to issue a wastewater discharge permit to any user who has failed to comply with the

provisions of this division, any orders, or a previous wastewater discharge permit issued hereunder, unless such User first files a satisfactory bond, payable to the Little Rock Sanitary Sewer Committee or the utility, in a sum not to exceed a value determined by the manager to be necessary to achieve compliance.

(b) *Liability insurance.* The manager may decline to issue a wastewater discharge permit to any user who has failed to comply with the provisions of this division, or violated any order, or a previous wastewater discharge permit issued hereunder, unless that user first submits proof that it has obtained financial assurances sufficient to restore or repair damage to the POTW caused by its discharge.

(c) *Public nuisances.* Any violation of this division, wastewater discharge permit, or orders issued hereunder, is declared a public nuisance and shall be corrected or abated as directed by the manager or his designee. Any person(s) creating a public nuisance shall be subject to the provisions of the City Code section 20-2 governing such nuisances, including reimbursing the utility for any costs incurred in removing, abating, or remedying said nuisance. Any discharger which makes, causes, or allows a prohibited discharge which causes additional expense or costs to handle and treat such discharge or to correct damages caused by such discharge shall be required to reimburse the utility for such cost or expense.
(Ord. No. 17,965, §§ 10.1—10.3, 3-16-99)

Secs. 35-132—35-150. Reserved.

DIVISION 3. RATES AND CHARGES*

Sec. 35-151. Generally.

The following monthly rates are hereby established [in this division] as rates to be charged for services furnished by the utility, which rates the board of directors hereby find and declare to be reasonable and necessary minimum rates to be charged.

*Cross reference—Approval of utility rate increases, § 2-170.

State law reference—Sewer rates and charges, A.C.A. § 14-235-223 et seq.

(a) The sewer committee shall compute separately for each customer (customer being hereby defined as any landowner whose building or premises are connected with and use the sewer system or otherwise discharge sanitary sewage, industrial waste, water or other liquids, either directly or indirectly into the sewer system) the monthly water consumption of each customer.

(b) In case of customers obtaining water exclusively from the Little Rock Municipal Water Works, the computation shall be based upon the water consumption records of the Little Rock Municipal Water Works.

(c) In the case of customers obtaining water from sources other than the Little Rock Municipal Water Works, the sewer committee shall determine the amount of water obtained by such customers from other sources and the amount so determined shall be used (together with the amount reflected by the Little Rock Municipal Water Works' records, if any said customer also obtained water from the Little Rock Municipal Water Works) in making the computation.

(d) In the case of customers whose water use is such that an appreciable quantity does not reach the sewer system, then the customer may be permitted by the utility, upon written request to the utility, to have a meter installed for the purpose of determining the amount of such quantity not reaching the sewer system, provided, however, the meter shall be inspected and approved by the utility. Upon written application to the sewer committee, if a customer can show by such an approved and inspected meter that an appreciable quantity of the water used by the customer did not reach the sewer system, then the computation upon which that customer's sewage charge is based shall be adjusted and determined in accordance with the measurement as indicated by the meter, but the burden of showing that an appreciable quantity of water usage does not reach the sewer system shall be upon the customer, and in no event shall the customer be entitled to any adjustment for such water usage beyond twelve (12) months from the date of the written application to the sewer committee.

(e) In the case of water used for irrigation or lawn sprinkling purposes, the customer shall have an additional service meter installed by the Little Rock Municipal Water Works to deliver the water in such a way that the water is billed separately without a sewer charge being computed.

(Code 1961, § 35-2(a)-(d); Ord. No. 16,018, § 4, 3-5-91; Ord. No. 16,456, §§ 1, 4, 7-6-93; Ord. No. 18,232, § 1(a)-(d), 3-21-00)

Sec. 35-152. General rates.

The following rates shall be effective April 1, 2000, and shall be applied to the monthly water consumption of each customer, as above determined, to arrive at the monthly charge for each customer:

(1) *Service availability charge:*

<i>Size Water Meter Furnishing Water</i>	<i>Inside City Limits</i>	<i>Outside City Limits</i>
5/8"	\$ 3.00	\$ 4.50
3/4"	4.45	6.70
1"	7.40	11.10
1 1/2"	14.85	22.30
2"	23.75	35.60
3"	44.50	66.75
4"	74.20	111.30
6" or larger	148.40	222.60

(2) *Volumetric charge (for all water consumed):*

<i>Volume of Water Consumed</i>	<i>Inside City Limits</i>	<i>Outside City Limits</i>
Per 100 cu. ft.	\$1.50	\$2.25

(3) *Billing charge.* Customers whose usage requires rendering a bill by means other than the municipal water works' data processing facilities shall pay a service charge of five dollars (\$5.00) per bill in addition to all other charges.

(4) *Delinquent accounts.* All accounts for sewer service not paid within thirty (30) days of

the billing date shall bear interest at the maximum rate permitted by law until paid in full.

(Code 1961, § 35-2(e); Ord. No. 15,242, § 1, 2-3-87; Ord. No. 16,018, § 1, 3-5-91; Ord. No. 16,080, § 1, 8-6-91; Ord. No. 16,456, § 1, 7-6-93; Ord. No. 18,232, § 1(e), 3-21-00)

Sec. 35-153. Surcharge for discharge of certain wastes.

The following rates for extra strength charges and liquid waste haulers are also established as rates which the board of directors further find and declare to be reasonable and minimum rates to be charged:

- (1) The discharge of wastewaters having an excessive biochemical oxygen demand (BOD) or total suspended solids content (TSS) or oil and grease content (O&G) constitute an added expense in the operation and maintenance of the utility's treatment facilities and should be accompanied by payment of an extra strength surcharge to compensate for this added expense. Excessive BOD and/or TSS is hereby defined as in excess of two hundred fifty (250) milligrams per liter, for either parameter, and excessive O&G is hereby defined as in excess of fifty (50) milligrams per liter, as determined in accordance with test methods approved under 40 CFR Part 136. The extra strength surcharge shall be ten cents (\$0.10) per pound of BOD in excess of two hundred fifty (250) milligrams per liter, nine cents (\$0.09) per pound of TSS in excess of two hundred fifty (250) milligrams per liter, and ten cents (\$0.10) per pound of O&G in excess of fifty (50) milligrams per liter. The extra strength surcharge shall be computed separately for BOD, TSS, and O&G on the total discharge (consumption).
- (2) There shall be a charge paid on all domestic liquid waste (septage) delivered to Adams Field Treatment Plant which is discharged into the sewer system at the plant as follows:

Cost Base Charge	<1,000 Gal.	1,000+ Gal.
	\$30.00	\$60.00

- (3) There shall be a charge paid on all approved sources of landfill leachate delivered to the Adams Field or pumped into the collection system of ten cents (\$0.10) per gallon.
- (4) There shall be a charge paid on all approved sources of other liquid waste delivered to the Adams Field or pumped into the collection system of twenty cents (\$0.20) per gallon.
- (5) The following parameters are limited in concentration by the sanitary sewer committee through regulation and/or significant industrial users discharge permits: arsenic, cadmium, chromium, copper, cyanide, lead, pH, mercury, nickel, selenium, silver, TTO, zinc, and any other parameter limited by a discharge permit issued to the user.

(Code 1961, § 35-2.1; Ord. No. 15,242, § 2, 2-3-87; Ord. No. 16,018, § 2, 3-5-91; Ord. No. 16,456, § 2, 7-6-93; Ord. No. 18,232, § 2, 3-21-00)

Sec. 35-154. Vacant property.

Vacant, unoccupied property not actually using the sewer system shall not be subject to a charge, but the burden of showing vacancy and nonuse shall rest upon the owner of the property.

(Code 1961, § 35-3)

Sec. 35-155. Billing; enforcement.

All bills for sewer service shall be rendered monthly. Under the provisions of A.C.A. § 14-235-223, if any sewer charge is not paid within thirty (30) days after the same is due, suit may be brought to collect the amount due, together with a ten (10) percent penalty and a reasonable attorney's fee.

(Code 1961, § 35-4; Ord. No. 15,242, § 3, 2-3-87; Ord. No. 16,018, § 3, 3-5-91; Ord. No. 16,456, § 3, 7-6-93; Ord. No. 18,232, § 3, 3-21-00)

Sec. 35-156. Notification of rate and user charges.

Each user of the sewer system shall be notified, at least annually by publication in a newspaper having wide circulation in Pulaski County, Arkansas, in conjunction with a regular bill, of the rate and the portion of the user charges which are attributable to waste water treatment services, in compliance with 40 C.F.R. §35.929-2(f). (Ord. No. 18,232, § 4, 3-21-00)

Secs. 35-157—35-160. Reserved.

ARTICLE IV. PRETREATMENT

DIVISION 1. GENERALLY

Sec. 35-161. Title, purpose and policy.

This article shall be known as "the Pretreatment Ordinance" and sets forth uniform requirements for users of the publicly owned treatment works for the City of Little Rock and enables the Little Rock Wastewater Utility, hereafter utility, to comply with all applicable state and federal laws, including the Clean Water Act (33 United States Code § 1251 *et seq.*) and the General Pretreatment Regulations (40 Code of Federal Regulations Part 403). The objectives of this article are:

- (a) To prevent the introduction of pollutants into the publicly owned treatment works that will interfere with its operation, contaminate the resulting biosolids, or interfere with the use and disposal of wastewater or biosolids in compliance with applicable statutes and regulations;
- (b) To prevent the introduction of pollutants into the publicly owned treatment works that will pass through the publicly owned treatment works, inadequately treated, into receiving waters, or otherwise be incompatible with the publicly owned treatment works;
- (c) To protect both publicly owned treatment works personnel who may be affected by

wastewater and sludge in the course of their employment and the general public;

- (d) To promote re-use and recycling of wastewater and biosolids from the publicly owned treatment works;
- (e) To enable the utility to comply with its National Pollutant Discharge Elimination System permit conditions, biosolids use and disposal requirements, and any other federal or state laws to which the utility is subject.
- (f) It is in the best interest of the utility to clarify and update the provisions of the existing Sewer Use Ordinance (Ord. No. 15,344) to achieve compliance with the Clean Water Act and regulations pursuant to 40 CFR 403 (General Pretreatment Regulations) as amended July 24, 1990.
- (g) To promote and encourage pollution prevention and waste minimization and waste reduction at Industrial Users prior to their recycling, treatment, or disposal options.

This article shall apply to all users of the publicly owned treatment works. The article authorizes the issuance of wastewater discharge permits; provides for monitoring, compliance, and enforcement activities; establishes administrative review procedures; requires user reporting; and provides for the setting of such fees as necessary for the equitable distribution of costs resulting from the program established herein.

(Ord. No. 17,966, § 1.1, 3-16-99)

Sec. 35-162. Administration.

Except as otherwise provided herein, the manager shall administer, implement, and enforce the provisions of this article. Any powers granted to or duties imposed upon the manager may be delegated by the manager to other utility personnel.

(Ord. No. 17,966, § 1.2, 3-16-99)

Sec. 35-163. Abbreviations.

The following abbreviations, when used in this article, shall have the designated meanings:

BOD - Biochemical Oxygen Demand

ORDINANCE NO. 17,965

AN ORDINANCE REGULATING THE USE OF PUBLIC AND PRIVATE SEWERS, PRIVATE SEWAGE DISPOSAL, THE INSTALLATION, CONSTRUCTION, MAINTENANCE, AND CONNECTION OF BUILDING SEWERS; THE DISCHARGE OF WATERS AND WASTES INTO THE PUBLIC SEWER SYSTEM; PROVIDING PENALTIES FOR THE VIOLATION THEREOF; REPEALING ALL ORDINANCES AND PROVISIONS THEREOF IN CONFLICT THEREWITH INCLUDING ARTICLES I, II, III, IV, V, X, XI, AND XII OF ORDINANCE NO. 15,344, PASSED ON SEPTEMBER 1, 1987; AND FOR OTHER PURPOSES, ALL PERTAINING TO THE SEWER LINES AND SYSTEM WITHIN THE JURISDICTION OF THE CITY OF LITTLE ROCK, ARKANSAS, AND DECLARING AN EMERGENCY.

WHEREAS, Ordinance No. 15,344, passed on September 1, 1987, currently regulates the use of public and private sewers and specifically, Articles I, II, III, IV, V, X, XI, and XII of said Ordinance contain general provisions regarding the use, disposal, connection, protection, inspections, and penalties in connection with the use of public sewers and these provisions should be repealed, and revised and expanded provisions in a new Ordinance should be adopted to enable the LRWU to effectively operate the sewer system of the City of Little Rock; and,

WHEREAS, the provisions as hereinafter set forth contain the revisions and additions necessary to enable the LRWU to more effectively and efficiently operate the sewer system in the City of Little Rock, by inclusion in this Ordinance the following provisions, the titles to which are hereinafter set forth in the following table of contents for convenience of reference only, and not to define or limit any of the terms or provisions hereinafter set forth in this Ordinance:

TABLE OF CONTENTS OF THIS ORDINANCE

SECTION 1	GENERAL PROVISIONS	3
	1.1 Title, Purpose and Policy	
	1.2 Definitions	
SECTION 2	USE OF PUBLIC SEWERS REQUIRED	5
	2.1 Unsanitary Conditions	
	2.2 Stormwater Discharge	
	2.3 Discharge to Natural Outlets	
	2.4 Septic Tanks, Privys, Cesspools	
	2.5 Connection to Public Sewer Required	
	2.6 Dischargers Outside City	
SECTION 3	PRIVATE SEWAGE DISPOSAL	7
	3.1 Private Sewage Disposal Systems Allowed	
	3.2 Permits Required	

3.3	Compliance with Regulations	
3.4	Connection to Public Sewer Required	
3.5	Owner Responsibilities	
3.6	Additional Requirements Govern	
SECTION 4	BUILDING SEWERS AND CONNECTIONS	8
4.1	Authorizations Required	
4.2	Building Sewer Permits/Fees Required	
4.3	Costs, Expenses, and Indemnification	
4.4	Separate Building Sewers Required	
4.5	Use of Old Building Sewers	
4.6	Construction Requirements/Specifications	
4.7	Building Sewer Elevations/Lift Stations	
4.8	Prohibited Connections	
4.9	Conformance to Rules and Regulations	
4.10	Notification-Inspection and Connection	
4.11	Protection of the Public	
4.12	Restoration of Public Property	
4.13	Operation and Maintenance Requirements	
SECTION 5	PROTECTION FROM DAMAGE	10
5.1	Damage, Destruction, and Tampering	
5.2	Unauthorized Covering	
5.3	Removal of Cover	
5.4	Applicable Penalties	
SECTION 6	DISCONNECTING SEWERS	11
6.1	Disconnection and Sealing Required	
6.2	Application and Fee Required	
6.3	Notification Requirements	
SECTION 7	POWER AND AUTHORITY OF INSPECTORS	11
7.1	Right of Entry	
7.2	Adoption of Rules and Regulations Pertaining to Sewers	
SECTION 8	ADMINISTRATIVE ENFORCEMENT REMEDIES	13
8.1	Enforcement Procedure	
8.2	Show Cause Hearing	
8.3	Emergency Suspension of Service	
SECTION 9	JUDICIAL ENFORCEMENT REMEDIES	15
9.1	Injunctive Relief	
9.2	Civil Penalties	
9.3	Criminal Prosecution	
9.4	Remedies Nonexclusive	
9.5	Initiation of Criminal or Civil Action	
SECTION 10	SUPPLEMENTAL ENFORCEMENT ACTIONS	17
10.1	Performance Bonds	

- 10.2 Liability Insurance
- 10.3 Public Nuisance

SECTION 11 SEVERABILITY 18
 11.1 Repeal of Prior Ordinances

**SECTION 12 AUTHORITY OF LITTLE ROCK SANITARY SEWER COMMITTEE,
 EFFECTIVE DATE, AND DECLARING AN EMERGENCY 19**

WHEREAS, it is essential that the Little Rock Sanitary Sewer Committee should have the authority to perform all acts as provided in the ordinance in order to effectively regulate the use and operation of the public sewer system of the City of Little Rock and the provisions of this ordinance are necessary for the immediate protection of the public health, safety and welfare;

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE CITY:

SECTION 1 - GENERAL PROVISIONS

1.1 Title, Purpose and Policy

This Ordinance shall be known as the "General Sewer Use Ordinance" and sets forth uniform general requirements regulating the use of the public sewers for the City of Little Rock, Arkansas. The objectives of this Ordinance are:

- A. To regulate the general use of both public and private sewers within the jurisdiction of the City of Little Rock, Arkansas;
- B. To regulate private sewage disposal within the jurisdiction of the City of Little Rock, Arkansas;
- C. To regulate the installation, construction, maintenance, connection, and protection of building sewers within the jurisdiction of the City of Little Rock, Arkansas;
- D. To regulate the disconnection and sealing of building sewers within the jurisdiction of the City of Little Rock, Arkansas;
- E. To repeal all existing Ordinances in conflict therewith.

1.2 Definitions

Unless a provision explicitly states otherwise, the following terms and phrases, as used in this Ordinance, shall have the meanings hereinafter designated.

- A. And/Or shall mean one item or the other or a combination of both or all.
- B. Building Drain shall mean that part of the lowest horizontal piping of a drainage system which receives the discharge from all drains which carry waste or water-borne waste inside the walls of a building and conveys it to the building sewer, beginning five (5) feet outside the inner face of the building.
- C. Building Sewer shall mean the extension from the building drain to the public sewer or other place of disposal.
- D. Manager shall mean the manager of Little Rock Wastewater Utility, or his authorized deputy, agent, or representative.
- E. Natural Outlet shall mean any outlet, including storm sewers and combined sewer overflows, into a water course, ditch, lake, or other body of surface or ground water.
- F. Objectionable Waste shall mean any wastes that can harm either the sewers, sewer treatment processes or equipment, have an adverse effect on the receiving stream or otherwise endanger life, health, or property, or constitutes a nuisance.
- G. Person shall mean any individual, firm, company, association, society, corporation, or group.
- H. POTW shall mean Publicly Owned Treatment Works
- I. Private Sewage Disposal System shall mean that facility owned, operated, and maintained by any person for the purpose of collecting and disposing of sewage within the property of said person.
- J. Public Sewer shall mean a common sewer in which all owners of abutting properties have equal rights, and is controlled by public authority.
- K. Sanitary Sewer shall mean a sewer in which sewage is carried, and to which storm, surface, and ground water are not intentionally admitted.

- L. Sewage shall mean a combination of the water-carried wastes from residences, business buildings, institutions, commercial establishments, and industries.
- M. Sewer shall mean a pipe or conduit for carrying sewage.
- N. Sewer Committee shall mean the Little Rock Sanitary Sewer Committee of the City of Little Rock Wastewater Utility.
- O. Sewer System shall mean the City of Little Rock Wastewater Utility as operated by the Sewer Committee of the City of Little Rock, Arkansas.
- P. Shall is mandatory; May is permissive.
- Q. Storm Drain shall mean a drain or sewer for conveying water, ground water, subsurface water, or unpolluted water from any source.
- R. Utility shall mean the Little Rock Sanitary Sewer Committee.
- S. User shall mean a source of indirect discharge
- T. Wastewater shall mean the spent water of a community, including the combination of the liquid and water carried wastes from residences, commercial establishments, industrial plants, and institutions, together with any ground water, surface water, and storm water that may be present.
- U. Water Course shall mean a channel in which a flow of water occurs, either continuously or intermittently.

SECTION 2 - USE OF PUBLIC SEWERS REQUIRED

2.1 Unsanitary Conditions

It shall be unlawful for any person to place, deposit, or permit to be deposited in any unsanitary manner on public or private property within the City of Little Rock, Arkansas, or in any area under the jurisdiction of said City, any human or animal excrement, or other objectionable wastes.

2.2 Stormwater Discharge

No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, subsurface drainage, non-contact cooling water or other such waters into any sanitary sewer.

2.3 Discharge to Natural Outlets

It shall be unlawful to discharge to any natural outlet within the City of Little Rock, Arkansas, or in any area under the jurisdiction of said City, any sewage or other polluted waters, except where suitable treatment has been provided as required by law.

2.4 Septic Tanks, Privys, Cesspools

Except as herein provided under Section 3 below, it shall be unlawful for any person to construct or maintain any privy, privy vault, septic tank, cesspool, or other facility intended to be used for the disposal of sewage.

2.5 Connection to Public Sanitary Sewer Required

The owner of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes, situated within the City of Little Rock and abutting on any street, alley, or right-of-way in which there is now located or may in the future be located a public sanitary sewer of the City, is hereby required, at his expense, to install suitable toilet facilities therein, and to connect such facilities directly with the proper public sewer in accordance with the provisions of this Ordinance, within thirty (30) days after date of official notice to do so, provided that said property is within three hundred (300) feet of any accessible public sanitary sewer.

2.6 Dischargers Outside City

All dischargers to the City of Little Rock POTW, who are outside the jurisdiction and are not part of another incorporated city, shall be required to agree by written contract to abide by the conditions set forth in this ordinance, subsequent revisions and amendments to this ordinance, and any rules and/or regulations promulgated by the Sewer Committee of the City of Little Rock in accordance with this ordinance. All incorporated cities which discharge to the City of Little Rock POTW shall agree by written contract to adopt an ordinance which meets the requirements of 40CFR403, General Pretreatment Regulations, and will be at least as stringent as the conditions set forth in this ordinance. This agreement must also contain a provision that allows for the adoption of any and all rules and/or regulations promulgated by the provisions of the Sewer Committee of the City of Little Rock in accordance with this ordinance and shall delegate to the City of Little Rock the powers to enforce the provisions of all laws, rules and/or regulations adopted in accordance with this section.

SECTION 3 - PRIVATE SEWAGE DISPOSAL

3.1 Private Sewage Disposal Systems Allowed

Where a public sanitary sewer is not available, under the provisions of Section 2.4, the building sewer shall be connected to a private sewage disposal system complying with the provisions of this Section.

3.2 Permits Required

Before commencement of construction of a private sewage disposal system, the owner shall first obtain a written permit from the office of the Arkansas Department of Health and/or the Arkansas Department of Environmental Quality. The application for such permit(s) shall be supplemented by such plans, specifications, test results, and other information as deemed necessary by the permitting authority.

3.3 Compliance with Regulations

The type, capacities, locations, and layout of private sewage disposal systems shall comply with all requirements and recommendations of the Arkansas Department of Health and/or the Arkansas Department of Environmental Quality.

3.4 Connection to Public Sewer Required

When a public sewer becomes available, the building sewer shall be connected to said sewer within thirty (30) days after date of official notice to do so, and the private sewage disposal system shall be cleaned of all sludge and solids, and filled with suitable materials.

3.5 Owner Responsibilities

The owner shall operate and maintain the private sewage disposal facilities in a sanitary manner at all times, at no expense to Little Rock Wastewater Utility.

3.6 Additional Requirements Govern

No statement contained in this Section shall be construed to supersede any additional requirements that may be imposed by the Arkansas Department of Health or the Arkansas Department of Environmental Quality, and in the event of any conflict between this section and any such additional requirements, the latter shall govern.

SECTION 4 - BUILDING SEWERS AND CONNECTIONS

4.1 Authorizations Required

No unauthorized person shall uncover, make any connection with or opening into, use, alter, or disturb, a public sewer or appurtenance thereof without first obtaining a written permit from the Manager of Little Rock Wastewater Utility.

4.2 Building Sewer Permits/Fees Required

A building sewer permit shall be required for all residential, commercial, and industrial connections to the sanitary sewer system. The owner or agent shall make application on a special form provided by the Utility. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the Manager. A permit and inspection fee for residential, commercial, and industrial building sewer connections shall be paid to Little Rock Wastewater Utility at the time the application is filed. Coincident with application for a permit, a connection fee shall be paid to Little Rock Wastewater Utility. Said fee shall be in proportion to the sewage treatment capacity required by the connected facility in accordance with a schedule adopted by the Sewer Committee of Little Rock Wastewater Utility.

4.3 Costs, Expenses, and Indemnification

All costs and expenses incident to the installation and connection of the building sewer shall be borne by the owner. The owner shall indemnify the City from any loss or damage that may directly be occasioned by the installation of the building sewer.

4.4 Separate Building Sewers Required

A separate and independent building sewer shall be provided for every building except as follows:

- A. Where multiple buildings are constructed in an apartment complex or condominium on a single lot or tract of land which cannot be subsequently subdivided and sold in parcels, the individual buildings may be connected to a collector building sewer provided that only one person is responsible for maintenance of the building sewer.
- B. Temporary buildings, mobile homes, or similar portable structures may be connected to a building sewer installed to serve a previously constructed permanent building provided

that both the permanent and temporary buildings are located on the same lot.

4.5 Use of Old Building Sewers

Old building sewers may be used in connection with new buildings only when they are found, upon examination and testing by the Manager, to meet all requirements of this Ordinance and other rules and regulations of Little Rock Wastewater Utility.

4.6 Construction Requirements and Specifications

The size, slope, alignment, and materials of construction of a building sewer and the methods to be used in excavating, placing of pipe, joining, testing, and backfilling the trench, shall all conform to the rules and regulations of Little Rock Wastewater Utility, the building and plumbing codes, or other applicable rules or regulations of the City of Little Rock, Arkansas. In the absence of code provisions or in amplification thereof, the materials and procedures set forth in appropriate specifications of the American Standard Testing Material (A.S.T.M.) and the Water Environment Federation (W.E.F.) Manual of Practice No. 9 shall apply.

4.7 Building Sewer Elevations/Lift Stations

Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sanitary sewage carried by such building drain shall be lifted by a means approved by the Manager and discharged to the building sewer.

4.8 Prohibited Connections

No person shall make, permit to be made, own, use or be in possession of a connection of roof drains, downspouts, exterior foundation drains, areaway drains, or other sources of surface runoff or groundwater to a building sewer or building drain which is directly or indirectly connected to a public sanitary sewer. If such connection is found to exist, the Owner shall be notified and given thirty (30) days to disconnect the prohibited cross connection. If disconnection is not made, sewer service will be discontinued until such repair is made.

4.9 Conformance to Rules and Regulations

The connection of a building sewer into a public sewer shall conform to the rules and regulations of Little Rock Wastewater Utility, the building and plumbing codes or other applicable

rules of the City of Little Rock, Arkansas, or the procedures set forth in appropriate specifications of the A.S.T.M. and W.E.F. Manual of Practice No. 9. All such connections shall be made gas tight and water tight. Any deviation from the prescribed procedures and materials must be approved by the Manager before installation.

4.10 Notification-Inspection and Connection

The applicant for the building sewer permit shall notify the Manager of Little Rock Wastewater Utility when the building sewer is ready for inspection and connection to the public sewer. All portions of the building sewer from the foundation to the connection to the public sewer shall be inspected and approved by the Manager before backfilling.

4.11 Protection of the Public

All excavations for building sewer installation shall be adequately guarded with barricades and lights so as to protect the public from hazard.

4.12 Restoration of Public Property

Streets, sidewalks, parkways, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the City of Little Rock Public Works Department.

4.13 Operation and Maintenance Requirements

The owner of any building or buildings which is (are) connected to the public sanitary sewer shall be required to operate and properly maintain the building drains and building sewer in accordance with all provisions of this Article at no expense to Little Rock Wastewater Utility.

SECTION 5 - PROTECTION FROM DAMAGE

5.1 Damage, Destruction, and Tampering

No person shall maliciously, willfully, or negligently break, damage, destroy, uncover, deface, or tamper with any structure, appurtenance, or equipment which is a part of the sewage works.

5.2 Unauthorized Covering

No unauthorized person shall cover any manhole on a public sewer with earth or paving, or otherwise render it inaccessible.

5.3 Removal of Cover

No unauthorized person shall remove the earth cover from a public sewer so that less than two (2) feet of earth cover remains over the pipe bells. Approval to remove subsequent cover shall require written consent from the Manager of the Little Rock Wastewater Utility.

5.4 Applicable Penalties

Violation of any provision of this Section is a Class C misdemeanor.

SECTION 6 - DISCONNECTING SEWERS

6.1 Disconnection and Sealing Required

Before any dwelling or other building being served by the public sewer is moved or demolished, the building sewer serving said building shall be disconnected from the public sewer at the property line and the remaining building sewer sealed to prevent the entrance of stormwater, groundwater, and debris into the public sewer. The Manager shall inspect all disconnect and seals.

6.2 Application and Fee Required

Prior to the demolition or moving of any building served by a public sewer, application shall be made to the office of Little Rock Wastewater Utility for disconnect and seal of the building sewer by the Utility and the sewer seal fee, as set by the Sewer Committee, shall be paid to the Utility at that time.

6.3 Notification Requirements

At least three (3) days before the building is moved or demolished, but after it is no longer occupied, the party making the application outlined in Section 6.2, above, shall notify the Utility that the building sewer is ready for inspection of disconnection and sealing.

SECTION 7 - POWER AND AUTHORITY OF INSPECTORS

7.1 Right of Entry

The Manager and other duly authorized employees of the Little Rock Wastewater Utility bearing proper credentials and

identification shall be permitted to enter all properties connected to the sanitary sewer system for the purposes of inspection, observation, measurement, sampling, and testing in accordance with the provisions of this Ordinance. The Manager or other duly authorized employee of the Little Rock Wastewater Utility bearing proper credentials and identification shall be permitted to enter all private properties through which the City holds a duly negotiated easement for the purposes, but not limited to, inspection, observation, measurement, sampling, repair, and maintenance of any portion of the sewage works lying within said easement. Any entry in and subsequent work on any such easement shall be done in full accordance with the terms of the duly negotiated easement pertaining to the private property involved.

7.2 Adoption of Rules and Regulations Pertaining to Services

In addition to the provisions of this Ordinance, the Sewer Committee of the City of Little Rock is specifically authorized to make such other reasonable rules and regulations in regard to the construction, use, and operation of sanitary sewers to be connected to, or connecting into, the mains of the Little Rock Wastewater Utility system. Such rules and regulations so made and adopted at a regular meeting of the Sewer Committee shall become effective as follows:

- (a) A public notice of intent to enact and intention of proposed rules and regulations shall be placed in a daily newspaper in the City of Little Rock, Arkansas, one (1) day for each of two (2) successive weeks with a brief summary of the proposed rules and regulations.
- (b) The proposed rules and regulations shall be available for inspections and reproduction at the office of the Manager of the Wastewater Utility for thirty (30) days following the first publication of the public notice.
- (c) A correct copy of those rules and regulations shall be filed for permanent record with the City Clerk of the City of Little Rock together with any written objections to the proposed rules and regulations at the end of the thirty (30) day public review period.
- (d) Said rules and regulations shall become effective on the filing of said copy for permanent record with the City Clerk.

SECTION 8 - ADMINISTRATIVE ENFORCEMENT REMEDIES

8.1 Enforcement Procedure

Whenever the Manager finds that any person has violated or is violating any provision of this Ordinance, or any prohibition, limitation, or requirement contained herein, he shall serve upon such person a written notice via certified mail or personal service stating the nature of the violation and providing a reasonable time, not to exceed thirty (30) days, for the satisfactory correction thereof.

8.2 Show Cause Hearing

- A. If the violation is not corrected by timely compliance, the Manager shall order any person who violates any provision of this Ordinance or causes or allows an unauthorized discharge to show cause before the Manager why service should not be terminated. A notice shall be served on the offending party, specifying the time and place of a hearing to be held by the Manager regarding the violation, and directing the termination of service. The notice of the hearing shall be served personally or by registered or certified mail (return receipt requested) at least ten (10) days before the hearing. Service may be made on any agent or officer of a corporation.
- B. The Manager shall conduct the hearing, take the evidence, and the Manager is further authorized to do any and all of the following:
 1. Issue notices of hearings requesting the attendance and testimony of witnesses and the production of evidence relevant to any matter involved in any such hearings and conduct such hearing for the purpose of making a determination of the existence of violations and recommendation to the Sewer Committee for appropriate action.
 2. Transmit a report of the evidence and hearing, including transcripts and other evidence, together with the recommendations and/or findings of the Manager to the Sewer Committee for final action by the Sewer Committee subject to any further information which the Sewer Committee may request or any party to the action may desire to submit for further consideration.
 3. At any public hearing, testimony taken before the Manager must be under oath and recorded by cassette tape or stenographically. The transcript, so recorded,

will be made available to any member of the public or any party to the hearing upon payment of the cost of production.

- C. After the Sewer Committee has reviewed the evidence, and the Manager's recommendation it may issue an order to the party responsible for the discharge or violation directing that, following a specified time period, the sewer service be discontinued unless adequate treatment facilities, devices, or other related appurtenances shall have been installed or existing treatment facilities, devices, or other related appurtenances are properly operated or the violation is corrected, and such further orders and directives as are necessary and appropriate. Such order shall be subject to review by appeal to the Circuit Court of Pulaski County, Arkansas, in accordance with the law of Arkansas.
- D. A discharge in violation of the provisions of this Ordinance shall be considered a public nuisance. In addition to the procedures outlined in Sections 6 and 7, nothing herein shall be deemed to prevent the Sewer Committee and/or the Utility from seeking appropriate legal and/or equitable relief in the Courts of Arkansas in the event of a violation or discharge in violation of the provisions of this Ordinance.

8.3 Emergency Suspension of Service

The Sewer Committee may for good cause shown, after notice, suspend the receipt of wastewater discharge to the POTW, subject to a hearing within five (5) days, and, thereafter, revoke the Wastewater Discharge Permit of a discharger when it appears to the Sewer Committee that an actual or threatened discharge presents or threatens an imminent and substantial danger to the health or welfare of persons, substantial danger to the environment, interferes with the operation of the POTW, or violates any of the provisions of this Ordinance. Any Discharger notified of the suspension of service and/or discharge permit, shall within a reasonable period of time, as determined by the Sewer Committee or its representative, cease all discharges. In the event of failure of the discharger to comply voluntarily with the suspension order within the time specified, the Sewer Committee shall take all lawful actions necessary to immediately suspend the access of the User to the POTW. The Sewer Committee shall reinstate the service and/or Discharge Permit upon proof by the Discharger of the elimination of the non-complying discharges or conditions creating the threat of imminent or substantial danger as set forth above. The Discharger shall be charged with reimbursing the LRWU all costs incurred in the suspension of service before the service will be reinstated.

SECTION 9 - JUDICIAL ENFORCEMENT REMEDIES

9.1 Injunctive Relief

Whenever a User has violated any provision of this Ordinance or continues to violate any provision of this Ordinance, wastewater discharge permits or orders issued hereunder, the Sewer Committee may commence action for appropriate legal and/or equitable relief in any court of competent jurisdiction for the issuance of a temporary or permanent injunction, as appropriate, which restrains or compels compliance, performance of a Sewer Committee order, or other requirement imposed by this Ordinance on activities of the User. A petition for injunctive relief need not be filed as a prerequisite to taking any other action against a User.

9.2 Civil Penalties

- A. Any person or other entity found to be violating any provision of this Ordinance or regulations promulgated by the Sewer Committee shall be subject to a fine in an amount of not less than one hundred dollars (\$100.00) nor more than five hundred dollars (\$500.00) for any one (1) specified offense or violation of such ordinance, and not less than one hundred dollars (\$100.00) nor more than one thousand dollars (\$1,000.00) for each repetition of such offense or violation. If a thing prohibited or rendered unlawful is, in its nature, continuous in respect to time, the fine or penalty for allowing the continuance thereof shall not exceed two hundred and fifty dollars (\$250.00) per day for each continuing offense or violation.
- B. Any person or other entity who knowingly makes any false statements, representations or certification of any record, report, plan, or other document filed or required to be maintained pursuant to this Ordinance, regulations, or laws referred to herein, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this Ordinance, regulations or laws referred to herein, shall be subject to a fine in an amount not less than one hundred dollars (\$100.00) nor more than five hundred dollars (\$500.00) for any one (1) specified offense or violation of such ordinance, and not less than one hundred dollars (\$100.00) nor more than one thousand dollars (\$1,000.00) for each repetition of such offense or violation. If a thing prohibited or rendered unlawful is, in its nature, continuous in respect to time, the fine or penalty for allowing the continuance thereof, in violation

of such ordinance, shall not exceed two hundred and fifty dollars (\$250.00) per day for each offense or violation.

- C. Any person or other entity violating any of the provisions of this Ordinance shall become liable to the Utility for any expense, loss, or damage occasioned the Utility by reason of such violation.
- D. In addition to the civil penalties provided for herein, the Sewer Committee may recover, on behalf of the Utility, from a person or other entity(ies) determined to be in violation of the provisions of this Ordinance any damages suffered, costs, and other expenses of litigation in an action at law or equity which may be permitted by the laws of Arkansas.
- E. The Sewer Committee shall petition a Court of competent jurisdiction to impose, assess and recover all civil penalties, legal fees, and costs together with damages if appropriate. In determining the amount of the penalty, the Sewer Committee in its recommendation for civil penalties, the City Board of Directors and the Court may take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration of the violation, any economic benefit gained by the User in allowing the violation, the timing and nature of any corrective actions taken by the User, the compliance history of the User, and any other facts as justice requires.
- F. Filing a suit for civil penalties shall not be a prerequisite for taking any other action against a User.

9.3 Criminal Prosecution

- A. The Sewer Committee may criminally prosecute in a court of competent jurisdiction any User who knowingly or negligently violates any provision of this Ordinance, its Wastewater Discharge Permit or any orders issued hereunder. If so prosecuted the User shall, upon conviction, be guilty of a misdemeanor, and be punished by a fine not to exceed five hundred dollars (\$500.00) per violation or imprisonment for such term as allowed by law.
- B. The Sewer Committee may criminally prosecute in a court of competent jurisdiction any User who knowingly or negligently makes any false statement, representation or certification in any application, record, report, plan or other document filed or required to be maintained pursuant to this Ordinance or its Wastewater Discharge Permit, or who falsifies, tampers with, or knowingly or negligently renders

inaccurate any monitoring or sampling device, wastewater sample or other methods required by this Ordinance. If so prosecuted, the User shall, upon conviction, be guilty of a misdemeanor, and be punished by a fine of not more than five hundred dollars (\$500.00) per violation or by imprisonment for such term as allowed by law.

- C. Each day on which a violation shall occur or continue shall be a separate and distinct offense. In the case of monthly or other long-term average discharge limits, penalties shall accrue for each business or operational day during the period of violation.

9.4 Remedies Nonexclusive

The provisions in Sections 7 through 9 are not exclusive remedies. The Utility reserves the right to take any, all, or any combination of these actions against a noncompliant User. The Utility shall be authorized to take other action against any User when the circumstances warrant. Further, the Utility is empowered to take more than one (1) enforcement action against any noncompliant User. These actions may be taken concurrently.

9.5 Initiation of Criminal or Civil Action

Any criminal or civil action for violation of this Ordinance may be initiated only after a majority vote of the Sewer Committee resolves to pursue such action.

- A. For Users with properties located within the corporate limits of the City of Little Rock, no suit to collect civil or criminal penalties or fines may be initiated until after such time that a resolution authorizing the suit is duly adopted by the Sewer Committee, as the governing body.
- B. For Users with properties located outside the corporate limits of the City of Little Rock, the Board of Directors of the City of Little Rock hereby delegates authority to the Sewer Committee to be the governing body to authorize, by resolution, legal actions to collect civil or criminal penalties or fines.

SECTION 10 - SUPPLEMENTAL ENFORCEMENT ACTION

10.1 Performance Bonds

The Manager may decline to issue a wastewater discharge permit to any User who has failed to comply with the provisions

of this Ordinance, any orders, or a previous wastewater discharge permit issued hereunder, unless such User first files a satisfactory bond, payable to the Little Rock Sanitary Sewer Committee or the Utility, in a sum not to exceed a value determined by the Manager to be necessary to achieve compliance.

10.2 Liability Insurance

The Manager may decline to issue a wastewater discharge permit to any User who has failed to comply with the provisions of this Ordinance, or violated any order, or a previous wastewater discharge permit issued hereunder, unless that User first submits proof that it has obtained financial assurances sufficient to restore or repair damage to the POTW caused by its discharge.

10.3 Public Nuisances

Any violation of this Ordinance, wastewater discharge permit, or orders issued hereunder, is declared a public nuisance and shall be corrected or abated as directed by the Manager or his designee. Any person(s) creating a public nuisance shall be subject to the provisions of the City Code § 20-2 governing such nuisances, including reimbursing the Utility for any costs incurred in removing, abating, or remedying said nuisance. Any discharger which makes, causes, or allows a prohibited discharge which causes additional expense or costs to handle and treat such discharge or to correct damages caused by such discharge shall be required to reimburse the Utility for such cost or expense.

SECTION 11 - SEVERABILITY

The provisions of this Ordinance are severable, and if any provision, paragraph, word, section, or article of this Ordinance is invalidated by any court of competent jurisdiction it shall not affect the remainder of this Ordinance and the remaining provisions, paragraphs, words, sections, and articles shall not be affected and shall continue in full force and effect.

11.1 Repeal of Prior Ordinances

All Ordinances and parts of Ordinances inconsistent or conflicting with any part of this Ordinance are hereby repealed to the extent of such inconsistency or conflict, including but not limited to Articles I, II, III, IV, V, X, XI, and XII of Ordinance No. 15,344 passed on September 1, 1987.

**SECTION 12 - AUTHORITY OF LITTLE ROCK SANITARY SEWER COMMITTEE,
EFFECTIVE DATE, AND DECLARING AN EMERGENCY**

The City Board of Directors of the City of Little Rock has determined that it is essential that the Little Rock Sanitary Sewer Committee should have the authority to regulate the use of public and private sewers in accordance with the provisions contained in this Ordinance in order to accomplish the purposes thereof. Therefore, an emergency is hereby declared to exist, and this Ordinance, being necessary for the immediate preservation of the public peace, health and safety, shall be in full force and effect immediately after its passage and approval.

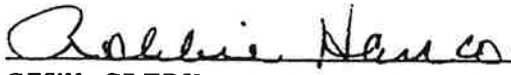
PASSED: **March 16, 1999**

APPROVED:

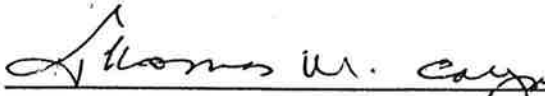


MAYOR **JIM DAILEY**

ATTEST:



CITY CLERK **ROBBIE HANCOCK**
APPROVED:



TOM CARPENTER, CITY ATTORNEY

PREPARED BY:

Don F. Hamilton, General Counsel
Little Rock Wastewater Utility
221 E. Capitol
Little Rock, AR 72202
Ark. Sup. Ct. #63022
(501) 688-1403

CERTIFICATE

**STATE OF ARKANSAS)
COUNTY OF PULASKI) SS
CITY OF LITTLE ROCK)**

I, Robbie Hancock, City Clerk within and for the City aforesaid, do hereby certify that the foregoing is a true and correct copy of Ordinance No. 17,965 of the Ordinances of the City of Little Rock, Arkansas, entitled: "AN ORDINANCE REGULATING THE USE OF PUBLIC AND PRIVATE SEWERS, PRIVATE SEWAGE DISPOSAL, THE INSTALLATION, CONSTRUCTION, MAINTENANCE, AND CONNECTION OF BUILDING SEWERS; THE DISCHARGE OF WATERS AND WASTES INTO THE PUBLIC SEWER SYSTEM; PROVIDING PENALTIES FOR THE VIOLATION THEREOF; REPEALING ALL ORDINANCES AND PROVISIONS THEREOF IN CONFLICT THEREWITH INCLUDING ARTICLES I, II, III, IV, V, X, XI, AND XII OF ORDINANCE NO. 15,344, PASSED ON SEPTEMBER 1, 1987; AND FOR OTHER PURPOSES, ALL PERTAINING TO THE SEWER LINES AND SYSTEM WITHIN THE JURISDICTION OF THE CITY OF LITTLE ROCK, ARKANSAS, AND DECLARING AN EMERGENCY"; passed by the Board of Directors of said City on March 16, 1999, said Ordinance now appearing of record in this office.

IN WITNESS WHEREOF, I have hereunto set my hand and seal of office on this 5th day of April, 1999.



Robbie Hancock
City Clerk
City of Little Rock, Arkansas

SPECIFICATION REQUIREMENTS

FOR

SANITARY SEWERS



1986

Little Rock Wastewater Utility

221 E. Capitol
Little Rock, Arkansas 72202

LITTLE ROCK WASTEWATER UTILITY
STANDARD SPECIFICATIONS

COMMITTEE

TED C. TREADWAY, III, CHAIRMAN

CATHERINE HAMILTON

GEORGE S. IVORY, JR.

LOUIS J. SCHAUFELE

GUS M. VRATSINAS

UTILITY MANAGER

REGGIE CORBITT

REVISED MARCH 1986

TABLE OF CONTENTS

	Page
List of Figures	
<u>Part G</u> <u>General Requirements</u>	
Section G1.0 General	G-1
G1.1 Description	G-1
G1.2 Definitions	G-1
G1.3 Change Orders	G-2
G1.4 Conformity	G-2
Section G2.0 Jurisdiction	G-3
G2.1 Description	G-3
G2.2 Area of Jurisdiction	G-3
Section G3.0 Plans and Specifications	G-4
G3.1 Description	G-4
G3.2 Preliminary Report	G-4
G3.3 Construction Plan Approval	G-4
G3.4 Construction Plans and Specifications	G-4
G3.5 Review Fee	G-5
Section G4.0 Inspection and Layout	G-6
G4.1 Description	G-6
G4.2 Responsible Engineer	G-6
G4.3 General Supervision	G-6
G4.4 Resident Inspection	G-7

Part G General Requirements, Con't

G4.5	Construction Layout	G-7
Section G5.0	Rules and Regulations	G-8
G5.1	Description	G-8
G5.2	Laws, Regulations and Ordinances	G-8
G5.3	Permits and Licenses	G-8
Section G6.0	Existing Utilities	G-9
G6.1	Description	G-9
G6.2	Proximity	G-9
G6.3	Relation To Water Mains	G-9
Section G7.0	Project Acceptance	G-11
G7.1	Description	G-11
G7.2	Leakage Testing	G-11
G7.3	Visual Inspection/Televising	G-11
G7.4	Final Inspection	G-12
G7.5	Sewer Maintenance Bond	G-12
G7.6	"As-Built" Drawings	G-12
G7.7	Final Pay Estimate	G-13
G7.8	Easements	G-13
G7.9	Plat Approval	G-13
G7.10	Use of Completed Portions	G-13
G7.11	Inspection Before Expiration of Maintenance Bond	G-14
Section G8.0	Service Connections	G-15
G8.1	Description	G-15

Part G General Requirements, Con't

G8.2	Service Line Locations	G-15
Section G9.0	Pumping Stations	G-16
G9.1	Description	G-16
G9.2	General	G-16

Part M Construction Materials

Section M1.0	General	M-1
M1.1	Description	M-1
Section M2.0	Sanitary Sewer Pipe	M-2
M2.1	Description	M-2
M2.2	Ductile Iron Pipe	M-2
M2.3	Concrete Sewer Pipe	M-2
M2.4	Clay Sewer Pipe	M-2
M2.5	Polyvinyl Chloride (PVC) Gravity Sewer Pipe	M-3
M2.6	Polyvinyl Chloride (PVC) Force Mains	M-3
M2.7	Cast Iron Soil Pipe	M-3
M2.8	Encasement Pipe	M-3
Section M3.0	Pipe Joints	M-4
M3.1	Description	M-4
M3.2	Concrete Pipe Joints	M-4
M3.3	Ductile Iron Pipe Joints	M-4
M3.4	Clay Pipe Joints	M-4
M3.5	PVC Sewer Pipe Joints	M-4

Part M Construction Materials, Con't

M3.6	Encasement Pipe Joints	M-4
M3.7	Cast Iron Soil Pipe Joints	M-4
M3.8	Flexible Rubber Coupling	M-4
M3.9	Repair Coupling	M-5
Section M4.0	Pipe Fittings	M-6
M4.1	Description	M-6
M4.2	Standard Fittings	M-6
M4.3	Tapping Saddles	M-6
M4.4	Special Fittings	M-6
Section M5.0	Manholes	M-7
M5.1	Description	M-7
M5.2	Brick Manholes	M-7
M5.3	Precast Manholes	M-7
M5.4	Poured-In-Place Manholes	M-7
M5.5	Drop Manholes	M-7
M5.6	Manhole Ring and Covers	M-8
M5.7	Manhole Steps	M-8
Section M6.0	Concrete, Mortar and Reinforcing Steel	M-10
M6.1	Description	M-10
M6.2	Cement	M-10
M6.3	Lime	M-10
M6.4	Water	M-10
M6.5	Air Entraining Agent	M-10
M6.6	Fine Aggregate	M-10

Part M Construction Materials, Con't

M6.7	Coarse Aggregate	M-11
M6.8	Composition and Strength	M-11
M6.9	Use	M-11
M6.10	Reinforcing Steel	M-11
Section M7.0	Pipe Embedment Materials	M-12
M7.1	Description	M-12
M7.2	Class I Embedment Material	M-12
M7.3	Class II Embedment Material	M-12
Section M8.0	Pavement Repairs	M-13
M8.1	Description	M-13
M8.2	State Highways	M-13
M8.3	County Roads	M-13
M8.4	City of Little Rock Streets	M-13
M8.5	Other Roads and Streets	M-13
M8.6	Temporary Repairs	M-13

Part C Construction Procedures

Section C1.0	General	C-1
C1.1	Description	C-1
Section C2.0	Excavation	C-2
C2.1	Description	C-2
C2.2	Excavation - General	C-2
C2.3	Excavation - Trench For Sewer Force Mains	C-2
C2.4	Excavation - Structural	C-3
C2.5	Excavation - Trench For Sewer Pipe	C-3

Part C Construction Procedures, Con't

C2.6	Excavation For Manholes	C-5
C2.7	Disposal of Excavated Materials	C-5
C2.8	Use of Explosives	C-5
Section C3.0	Bedding and Backfilling	C-6
C3.1	General Requirements	C-6
C3.2	Bedding and Backfilling of Rigid Pipe	C-6
C3.3	Bedding and Backfilling of Flexible PVC Pipe	C-7
Section C4.0	Dewatering of Trenches	C-11
C4.1	Description	C-11
C4.2	Wellpointing	C-11
C4.3	Trench Dewatering	C-11
C4.4	Surface Runoff	C-11
C4.5	Disposition of Water From Dewatering	C-12
Section C5.0	Sheeting and Shoring	C-13
C5.1	Description	C-13
C5.2	Cave-ins	C-13
C5.3	Existing Structures	C-13
Section C6.0	Pipe Laying	C-14
C6.1	Description	C-14
C6.2	Gravity Sewer Lines	C-14
C6.3	Steep Grades	C-15
C6.4	Shallow Bury	C-15
C6.5	Creek Crossings	C-15
C6.6	Force Mains	C-16

Part C Construction Procedures, Con't

C6.7	Connections To Existing Sewers	C-17
Section C7.0	Pipe Joints	C-20
C7.1	Description	C-20
C7.2	Pipe Joint Installation	C-20
C7.3	Installation of Slip-Type or Push-On Joints	C-20
C7.4	Installation of Mechanical Joints	C-20
C7.5	Concrete Encasement	C-21
C7.6	Concrete Retaining Collars	C-21
Section C8.0	Pipe Fittings	C-23
C8.1	Description	C-23
C8.2	Pipe Fitting Installation	C-23
C8.3	Wye Connections	C-23
C8.4	Taps	C-23
Section C9.0	Manholes	C-25
C9.1	Description	C-25
C9.2	Excavation and Backfill	C-25
C9.3	Inverts	C-25
C9.4	Brickwork	C-26
C9.5	Precast Manhole	C-27
C9.6	Poured-In-Place Manhole	C-27
C9.7	Drop Manhole	C-27
C9.8	Watertight Manhole	C-27
C9.9	Manhole Detail	C-28
C9.10	Connection to Existing Manhole	C-28

Part C Construction Procedures, Con't

C9.11	Manhole Stubouts	C-28
C9.12	Manhole Ring and Cover	C-28
C9.13	Manhole Steps	C-28
Section C10.0	Concrete and Reinforcing Steel	C-30
C10.1	Description	C-30
C10.2	Ready-Mixed Concrete	C-30
C10.3	Reinforcing Steel	C-30
C10.4	Vibration	C-30
C10.5	Application of Structural Concrete Other Than Manholes	C-31
Section C11.0	Pavement Repairs	C-32
C11.1	Description	C-32
C11.2	Permanent Repairs	C-32
C11.3	Temporary Surfacing	C-32

Part T Testing

Section T1.0	General	T-1
T1.1	Description	T-1
Section T2.0	Backfill Density Tests	T-2
T2.1	Description	T-2
T2.2	Requirements	T-2
T2.3	Methods of Testing	T-2
Section T3.0	Sewer Line Testing	T-3
T3.1	Description	T-3
T3.2	Sanitary Sewer Pipe	T-3

Part T Testing, Con't

T3.3	Leakage Tests of Gravity Sewers	T-3
T3.4	Water Test	T-3
T3.5	Leakage Test By Low Pressure Air Loss	T-4
T3.6	Safety Provisions For Air Testing	T-5
T3.7	Force Main Leakage Tests	T-5
T3.8	Leaks Encountered In Final Inspection	T-6
T3.9	Pipe Deflection Testing	T-6
T3.10	Televising of Lines	T-6

Part S Service Lines

Section	S1.0	General	S-1
	S1.1	Description	S-1
	S1.2	Definitions	S-1
Section	S2.0	Work Subject To Inspections	S-3
	S2.1	City Sewers	S-3
	S2.2	Building Sewers	S-3
	S2.3	Repairs	S-3
	S2.4	Submission of Plans	S-4
Section	S3.0	Location and Connection Requirements	S-6
	S3.1	City Sewer Mains	S-6
	S3.2	Building Sewers	S-6
Section	S4.0	Materials	S-7
	S4.1	City Sewer Mains	S-7
	S4.2	Building Sewers	S-7
	S4.3	Materials Specifically Forbidden	S-7

Part S Service Lines, Con't

S4.4	Transition Joints	S-8
Section S5.0	Installation and Testing Requirements	S-9
S5.1	City Sewer Mains	S-9
S5.2	Building Sewers	S-9
Section S6.0	Special Structures and Details	S-15
S6.1	Manholes	S-15
S6.2	Sand Traps	S-15
S6.3	Grease Interceptors	S-15
S6.4	Pump Stations	S-17
Section S7.0	Fees	S-21
S7.1	General	S-21
S7.2	Permit and Inspection Fees	S-21
S7.3	Taps	S-21
S7.4	Seals	S-21
S7.5	Connection Fees	S-21
S7.6	Capacity Contribution Fees	S-22

APPENDIXES

Certificate of Affidavit	1-A
Bill of Sale	1-B
Sewer Maintenance Bond	1-C
Right-of-Way Easement (Corporation)	1-D
Right-of-Way Easement (Standard)	1-E

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1.	Standard Manhole Lid and Frame	M-9
2.	Force Main Trench Detail	C-8
3.	Gravity Sewer Trench Detail - Rigid Pipe	C-9
4.	Gravity Sewer Trench Detail - Flexible Pipe	C-10
5.	Pier Details	C-18
6.	Encasement/Creek Crossing Detail	C-19
7.	Flexible Coupling Detail	C-22
8.	Service Wye Detail	C-24
9.	Manhole Detail	C-29
10.	Typical Building Sewer Site Plan	S-5
11.	Illustration for Approved 6" or Larger Service Lines	S-12
12.	Sand Trap Detail	S-18
13.	Grease Trap Detail	S-19
14.	Site Plan - Grease Trap	S-20

PART G
GENERAL REQUIREMENTS

SECTION G1.0- GENERAL

G1.1. Description:

This part of these specifications stipulates general requirements for the preparation of reports, plans, specifications, methods of construction, inspections, and final approval of any proposed sanitary sewer lines, appurtenances, or other structures that are within the jurisdiction of the Little Rock Wastewater Utility. Any deviations from the requirements set forth herein in either the general requirements, construction materials, construction procedures, or testing requirements will be approved only by written authorization from the Little Rock Wastewater Utility. Special conditions may arise on any project that are not covered in these specifications or that may require special consideration. In case of such special conditions, complete detail as to materials, method of construction, or other procedures shall be submitted to the Little Rock Wastewater Utility for their review and approval prior to the start of any construction.

Standard construction details are incorporated and made a part of these specifications and shall become a part of the standard requirements for sewer line construction. These details are included within the appropriate sections of these standard specifications.

Where reference is made to a particular industry specification (ASTM, etc.), it is hereby understood that reference is made to the latest specification revision in effect.

G1.2 Definitions:

Little Rock Wastewater Utility - The sewer collection system, treatment facilities, operational equipment and staff of the Wastewater Utility under the jurisdiction of the Sanitary Sewer Committee of the City of Little Rock, Arkansas, hereinafter referred to as "Utility".

Manager - The chief executive of the Wastewater Utility.

Developer - Individual, partnership, corporation, or other legal entity such as an improvement district desiring to construct sanitary sewer facilities for immediate or contemplated future inclusion in the Little Rock Wastewater Utility.

Engineer - Individual registered to practice engineering in the State of Arkansas.

G1.2
(Con't)

ASTM - American Society for Testing and Materials.

AASHTO - American Association of State Highway and Transportation Officials.

ANSI - American National Standard Institute.

Resident Inspector - Individual with at least 2 years experience in the following: 1.) Construction of Sanitary Sewers, 2.) Field supervision of the surveying associated with constructing sewers.

G1.3.

Change Orders:

All change orders in the construction plans and specifications shall be approved by the Engineering Department of the Wastewater Utility prior to the start of their construction. No additional review fee shall be required.

G1.4

Conformity:

All plans, specifications, and construction procedures shall conform to the standards as established by the Little Rock Wastewater Utility. All plans and specifications shall be completed by a Professional Engineer registered in the State of Arkansas. The Engineer's seal shall be on all plans and specifications.

SECTION G2.0 - JURISDICTION

G2.1 Description:

This section outlines the area presently being served or proposed to be served by the Little Rock Wastewater Utility.

G2.2 Area of Jurisdiction:

These general requirements for sanitary sewer lines shall be required for the area within the city limits of Little Rock, Arkansas, as may be changed from time to time and those areas outside the city limits whose sewage is to be treated by the Little Rock Wastewater Utility treatment facilities or may at some time in the future become a part of the Little Rock Wastewater Utility.

G3.4
(Con't)

All plans shall be drawn to a scale suitable for adequately showing the facilities proposed except as stipulated herein. All plans and profiles of sewer lines shall be drawn to scale with the profile vertical scale exaggerated 5:1 or 10:1. Scale of plan portion shall be 1" = 100' or larger. All drawings shall be on 24" x 36" sheets. All elevations shall be based on Mean Sea Level. An overall project map shall accompany the construction plans when there are more than one plan and profile sheet required. The project map shall be a minimum 24" x 36" size and shall be drawn to a scale of 1" = 100' or larger. A vicinity map shall be furnished that depicts the entire project and shows its relationship to surrounding streets and developed areas. A table of contents shall be included which corresponds to the sewer lines shown on the vicinity map. All other utilities shall be shown along with the proposed plan and profile sheets, if applicable.

G3.5

Review Fee:

Accompanying the final construction plans and preliminary cost estimate shall be a review fee of 0.5% of the estimated construction cost of the project with a maximum of \$250.00 and a minimum of \$25.00. Approval will not be given for construction plans submitted until the above review fee is paid.

SECTION G3.0 - PLANS AND SPECIFICATIONS

G3.1 Description:

This section covers the requirements of submission to the Little Rock Wastewater Utility of plans and specifications in order to obtain approval.

G3.2 Preliminary Report:

When requested by the Utility, the Engineer shall prepare and submit a preliminary engineering report prior to approval of construction plans. The report shall conform to accepted engineering criteria including the "Recommended Standards for Sewage Works", published by the Great Lakes-Upper Mississippi Valley Board of State Sanitary Engineers, latest revision. This publication is commonly referred to as "The Ten States Standards".

The size, scope, and contemplated land use of the proposed development will determine the need for a preliminary report.

G3.3 Construction Plan Approval:

Three (3) sets of complete construction plans and a preliminary cost breakdown shall be furnished to the Little Rock Wastewater Utility. Two (2) sets of specifications or a statement by the Engineer that the work will conform to these specifications must accompany the plans. When requested, design data for sewer extensions shall be furnished for the Little Rock Wastewater Utility's review. Upon approval, one (1) set of plans will be returned to the Engineer.

Preliminary sanitary sewer plans located in the City of Little Rock public rights-of-way must be submitted to the City of Little Rock, Director of Public Works for review and approval.

G3.4 Construction Plans and Specifications:

No sewer main extension may be approved for connection to the Little Rock system which was constructed prior to approval of construction plans by the Wastewater Utility or which was not constructed in accordance with approved plans. At the Engineer's option, the submission of construction plans for approval may be accompanied by a letter stating that materials and workmanship will be in accordance with the minimum requirements contained herein in lieu of submitting specific project specifications.

SECTION G4.0 - INSPECTION AND LAYOUT

G4.1 Description:

This section covers the requirements of inspection and layout for the construction of sanitary sewerage facilities.

G4.2 Responsible Engineer:

The Engineer who prepared and submitted the construction plans and specifications shall be responsible for construction layout, general supervision, and resident inspection as described in more detail in the following sections. Continuous project responsibility shall be an express condition of plan approval. The Engineer's responsibility shall extend through submittal of "as built" plans and final acceptance of the project by the Utility.

G4.3 General Supervision:

All sewerage facilities proposed shall be constructed under the general supervision of a Professional Engineer registered in the State of Arkansas. General supervision shall consist of, but not be limited to, periodic visits to the construction work to determine if the work is proceeding in accordance with the approved plans and specifications and with the standards set forth by the Little Rock Wastewater Utility.

Any defects, deficiencies or irregularities in the work found by the Engineer or reported by the inspector shall be reported to the Little Rock Wastewater Utility. Such action, as deemed appropriate, shall be taken to correct such deficiencies and notification shall be made to the Little Rock Wastewater Utility.

All work done within the jurisdiction of these requirements shall at all times be subject to the general inspection by the Little Rock Wastewater Utility. The frequency of visits and the number of hours required for Utility personnel shall be determined by the nature of the improvements to be constructed.

G4.4

Resident Inspection:

Project inspection is an integral part of the Engineer's responsibility to the general public; whether the Engineer chooses to provide full time resident inspection or periodic inspection he should carefully consider this responsibility. It shall be his duty through his inspector to safeguard the public's interest by checking the work to ensure that it complies with the approved plans and specifications.

G4.5

Construction Layout:

The layout and staking of the construction work shall be completed by trained and qualified survey personnel under the supervision of the Engineer. Such layout and staking shall consist of alignment and grade stakes necessary to establish batter boards or grade lines necessary for use in attaining proper alignment and grade of the facilities.

SECTION G5.0 - RULES AND REGULATIONS

G5.1 Description:

This section covers such rules and regulations as required by law for the completion of plans, specifications, and construction work on any and all proposed sewerage facilities.

G5.2 Laws, Regulations, and Ordinances:

All Federal, State, County, or City Laws, Regulations, or Ordinances shall be complied with on all sewer projects. This shall include, but not be limited to the obtaining of approval from the Arkansas State Health Department and the Arkansas Department of Pollution Control and Ecology. Responsibility for submission to and approval by the Arkansas State Health Department and Arkansas Department of Pollution Control and Ecology shall be the Engineers, including payment of any applicable fees.

G5.3 Permits and Licenses:

All permits and licenses required by any Federal, State, County, or Local Governing Body shall be obtained in strict accordance with the requirements of the governing agency. When required by the licensing agency, the Little Rock Wastewater Utility will assist in application for permits and licenses, but the cost of any permit, fee, or bond required will be borne by the Developer.

SECTION G6.0 - EXISTING UTILITIES

G6.1 Description:

This section covers the requirements with respect to existing public or private utilities.

G6.2 Proximity:

All plans shall be drawn in such manner that all known utilities are shown using the best available information including utility maps, field surveys, or other sources of information. Sanitary sewer lines shall be kept, where possible, a minimum horizontal distance of 5' from all underground utilities except water lines. Relation to waterlines shall be as stated below.

G6.3 Relation To Water Mains:

1. Horizontal Separation

Whenever possible, sewers should be laid at least ten (10) feet, horizontally, from any existing or proposed water main. Should local conditions prevent a lateral separation of ten (10) feet, a sewer may be laid closer than ten (10) feet to a water main if:

- a. It is laid in a separate trench.
- b. It is laid in the same trench with the water mains located at one side on a bench of undisturbed earth.
- c. In either case the elevation of the crown of the sewer is at least eighteen (18) inches below the invert of the water main.

2. Vertical Separation

Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least eighteen (18) inches below the bottom of the water main. When the elevation of the sewer cannot be buried to meet the above requirement, the sewer main shall be constructed using ductile iron pipe for a distance of ten (10) feet on each side of the water main.

One full joint of the ductile iron sewer line should be centered under the water main so that both joints will be as far from the water as possible.

G6.3
(Con't)

3. Special Conditions

When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer main shall be constructed of mechanical joint ductile iron pipe. All construction shall be subject to review and inspection by both the Little Rock Wastewater Utility and the Little Rock Water Works.

SECTION G7.0 - PROJECT ACCEPTANCE

G7.1 Description:

This section covers the requirements for final inspection and acceptance of the sanitary sewerage facilities upon completion of the project. No connection of customer facilities or other utilization of sewer main extensions will be permitted by the Utility until a letter of acceptance is issued. The acceptance letter will not be issued until the following requirements are met:

1. Receipt of two copies of approved "as-built" plans and profiles of main extensions.
2. Satisfactory correction of all defects noted in final inspection.
3. Receipt of final construction pay estimate.
4. Receipt of Certificate of Affidavit.
(See Appendix 1-A)
5. Receipt of Bill of Sale.
(See Appendix 1-B)
6. Receipt of sewer maintenance bond.
(See Appendix 1-C)
7. Receipt of all required easements.
(See Appendix 1-D or 1-E)

G7.2 Leakage Testing:

Methods of testing for watertightness are outlined in a succeeding section. All leakage tests shall be conducted in the presence of a representative of the Little Rock Waste-water Utility. Twenty-four (24) hours notice shall be given prior to commencing any tests.

G7.3 Visual Inspection/Televising:

Immediately following the successful completion of the watertightness test, each section of line will be televised by Utility personnel. Any defects caused by poor materials or workmanship will be cause for rejection. The video-tape will be reviewed by the Utility Engineering Department and will be kept on file as a reference. A list of defects will be forwarded to the Engineer.

G7.4 Final Inspection:

Before sanitary sewer extensions are accepted for maintenance and service connections to these extensions approved, a final inspection will be made by Utility personnel. The final inspection will not be conducted until "as-built" plans are submitted. The final inspection will be made at the request of the Engineer. A list of material and workmanship defects, if any, will be forwarded to the Engineer. Defects noted must be corrected before acceptance. Improvements found not as depicted on the submitted "as-built" plans shall be rejected.

G7.5 Sewer Maintenance Bond:

Upon completion of the project and after all defects have been corrected in accordance with the final inspection, a maintenance bond in an amount equal to 50% of the construction cost as indicated on the final pay estimate shall be forwarded to the Little Rock Wastewater Utility. The bond shall be for a period of two years and shall cover all defects in materials and workmanship. The bond shall be binding on the developer or the contractor. If, in the judgment of the Wastewater Utility, construction of a sewer main, which totals less than five hundred (500) lineal feet, meets the applicable specifications stated herein, the maintenance bond may be waived.

G7.6 "As-Built" Drawings:

Upon completion of the project as shown on the final plans and specifications, two (2) complete sets of "as-built" drawings shall be furnished to the Little Rock Wastewater Utility for record purposes by the same Engineer who prepared and submitted the construction plans and specifications. The size and scale of the drawings shall be as outlined in Paragraph G3.4. The "as-built" drawings shall show the elevation of all sewer lines, manhole inverts, and manhole rims in relation to mean sea level (MSL). In addition, the size and type of pipe installed shall be clearly shown.

The exact location of all sanitary sewer service lines shall be accurately identified in the field at the property line in order that the exact location can be easily found when the connection is made. The location shall be shown on the "As-Built" drawings both in distance from manholes and in distance from property corners along the street right-of-way line or lot line. The depth of the service stub at the property line shall be clearly marked on the "as-built" drawings. Service lines shall be installed to provide sufficient vertical clearance from other utilities.

G7.7 Final Pay Estimate:

Upon completion of the project the Engineer shall submit one (1) copy of the final construction pay estimate to the Little Rock Wastewater Utility. The estimate should clearly show the "as-built" quantities and corresponding unit prices.

G7.8 Easements:

Where sanitary sewer lines are not placed in public rights-of-way, a permanent easement shall be acquired for the Little Rock Wastewater Utility and dedicated for the purpose of maintaining the sewer lines. The easement shall have a minimum width of 10' or the width of the maximum depth to the sewer flowline whichever is greater. An exclusive sanitary sewer easement shall be required. Common utility easements shall not be approved. Where practicable, easements of maximum width possible will be provided to allow access to all manholes.

Easements shall be properly recorded and filed. A copy of all final recorded easements or subdivision plats as filed shall be furnished to the Little Rock Wastewater Utility. All easements shall meet with the requirements of standard Little Rock sanitary sewer easements. All easements for sanitary sewer lines shall be in favor of the City of Little Rock, Arkansas for the use and benefit of the Sanitary Sewer Committee. Easements on a recorded plat shall be shown as "Sanitary Sewer" easements.

G7.9 Plat Approval:

Final plats shall not be approved by the Wastewater Utility until the construction is completed and the "As-Built" drawings are approved.

G7.10 Use of Completed Portions:

Portions of the project completed will not be allowed to be put into service without written approval from the Little Rock Wastewater Utility. Approval of the use of completed portions of the project will be granted only in the best interest of the Utility. Use of completed portions of an incomplete project does not constitute acceptance of the entire project by the Utility.

G7.11

Inspection before Expiration of Maintenance Bond:

An inspection consisting of televising the line will be made by the Little Rock Wastewater Utility before the expiration of the maintenance bond. A list of any defects in material or workmanship found during this inspection will be forwarded to the Contractor and a notice filed with the bonding company. As soon as defects found during this inspection are corrected, the Little Rock Wastewater Utility will issue full acceptance of the project.

SECTION G8.0 - SERVICE CONNECTIONS

G8.1 Description:

This section stipulates certain requirements with respect to service line locations.

G8.2 Service Line Locations:

Wyes and/or service stubs, as appropriate, shall be installed on the sewer main to facilitate connection of anticipated services to the sewer. All service stubs, wyes, or other connection facilities shall terminate in a bell suitable for connection of a cast iron soil pipe building sewer. Unless anticipated service requires a larger line, all wyes, stubs, and service laterals shall be 4" nominal diameter. All service lines shall be installed using materials and construction procedures outlined in these specifications.

The exact location of all sanitary sewer service lines shall be accurately identified in the field at the property line in order that the exact location can be easily found when the connection is made. The location shall be shown on the "as built" drawings both in distance from manholes and in distance from property corners along the street right-of-way line or lot line.

A service line installed at the same time as the main line shall extend to the property line of the lot to be served. The depth of cover at that point shall be thirty-six (36) inches or deeper, to allow for other Utilities constructed within the right-of-way.

SECTION G9.0 - PUMPING STATIONS

G9.1 Description:

This section stipulates features, design considerations, and other requirements for utilization of pumping facilities for sewer service. All shop drawings must be approved by the Utility prior to ordering.

G9.2 General:

1. Pumping stations may be installed only where gravity sewer service is not available in the opinion of the Utility.
2. Any pumping station serving two or more parcels of property must be owned and/or maintained by the Utility.
3. The operation and maintenance expenses for the station must be paid for in addition to the monthly sewer service charges paid by the benefiting customers in one of two ways:
 - a. If installed by an improvement district, clauses may be placed in the formation of the District to insure payment of these costs on a regular basis and to insure that the district continues to function so long as the pump station is in operation.
 - b. If installed by a Developer or other investment concern or individual, a maintenance district as outlined in (a) may be formed or the Developer may deposit, in advance, the estimated operation and maintenance costs for the estimated service life of the station.
4. The station must contain at least two pumps designed for pumping sewage and capable of passing a 3" sphere.
5. No pumping stations serving more than one residence or ownership will be allowed unless constructed in conformance with these standards, and under the continuous operational responsibility of the Utility.
6. Pump motors must be for operation on three-phase electric power and sized to non-overloading throughout the operation range of the pump.
7. Control systems shall be designed for the use intended, factory wired, fully adjustable, and capable of providing fail-safe operation. All control systems are subject to Utility review.

G9.2
(Con't)

8. All wiring must be in accordance with the latest requirements of "The National Electric Code" and "The City of Little Rock Electric Code".
9. As a minimum, the station must contain the following accessories:
 - a. Dry pit sump pump discharging into a wet well.
 - b. Lighting.
 - c. Thermostatically controlled electric heat.
 - d. Gated shut-off and swing-check valves on discharge line of each pump.
 - e. Cast or ductile iron influent line.
 - f. Dehumidifier.
 - g. Gated shut off on intake side of each pump.
 - h. Telemetering equipment compatible with the LRWU system.
 - i. Instrumentation capable of monitoring station operations as requested by LRWU. Note: Instrumentation required can vary due to station size and type of equipment.

Note: The sump pump, dehumidifier, and heating and lighting provisions are not required for submersible pump installations.

10. The pump station must contain the following features:
 - a. Clear title conveyance to the Utility. (Temporary stations may revert to Developer upon abandonment).
 - b. Adequate area for vehicular parking and turn-around.
 - c. Unrestricted access to "all weather" surfaced public roads.
 - d. "All weather" surfacing on vehicle parking and access drive.
 - e. Security fence around the site a minimum of 6' high with a 10' wide gate at the drive.
 - f. Potable water at the site, 15 gpm minimum capacity.

G9.2
(Con't)

- g. Automatic light outside. ("Night watcher" or similar).
- h. Adequate three-phase power at the site free of rate encumbrances.
- i. Temporary stations sited so as to allow relief by gravity line without reconstruction.
- j. Non-corroding access ladder to the wet well.
- k. A sign identifying the Pump Station name and the LRWU shall be required.

PART M
CONSTRUCTION MATERIALS

SECTION M1.0 - GENERAL

M1.1

Description:

This part of the specifications shall govern for all materials used in the construction of sanitary sewerage facilities under the jurisdiction of the Utility. Projects that would necessarily involve materials other than those included in this specification shall be subject to the approval of the Utility. Complete specifications covering all materials not included herein shall be submitted for approval. Any material submitted for review other than materials herein specified shall be of the kind and type normally used in the construction of sewerage facilities.

SECTION M2.0 - SANITARY SEWER PIPE

M2.1 Description:

The following section describes the approved pipe materials currently used in the Utility's sewer system. The strength of pipe to be used shall be determined by the Engineer or as outlined in Section C - Construction Methods of these specifications. The strength of pipe used shall be based upon standard engineering design procedures and manufacturer recommendations. Only pipe materials listed in this section shall be used for sewer line construction within the Utility's jurisdiction.

M2.2 Ductile Iron Pipe:

All ductile iron pipe shall be constructed with a minimum wall thickness as outlined in ANSI/AWWA-C 151/A 21.51: Thickness Design of Ductile Iron Pipe. The pipe shall also conform to ANSI/ASTM A 746: Standard Specification for Ductile Iron Gravity Sewer Pipe. All ductile iron pipe shall also contain a cement lining conforming to ANSI/AWWA-C 104/A 21.4: Cement-Mortar Lining for Gray and Ductile Iron Pipe.

M2.3 Concrete Sewer Pipe:

All concrete sewer pipe shall be Class III, IV, or V reinforced concrete sewer pipe conforming to the latest requirements of ASTM C 76. The pipe supplied shall meet or exceed the class requirements specified on the construction drawing and outlined by ASTM C 76. Additional requirements shall include permeability and hydrostatic test performed in accordance with ASTM C 497. All joints shall be in accordance with Section M3.2 of these specifications. Non-reinforced concrete pipe will not be approved for use in the Utility's system.

M2.4 Clay Sewer Pipe:

All clay pipe shall meet the requirements for extra strength pipe as outlined in ANSI/ASTM C 700. All joints shall be in accordance with Section M3.4 of these specifications.

M2.5 Polyvinyl Chloride (PVC) Gravity Sewer Pipe:

All PVC pipe, eight (8) inches in diameter and larger, approved for use within the Utility's gravity sewer system shall meet the requirements of ASTM D 3034 and D 3915. All PVC gravity pipe shall also have a maximum standard dimension ratio of thirty-five (SDR-35). All PVC pipe six (6) inches in diameter shall meet the requirements of ASTM D 3034 and shall have a maximum standard dimension ratio of SDR 26. No PVC smaller than six (6) inches in diameter will be approved for use in the Utility's system.

M2.6 Polyvinyl Chloride (PVC) Force Mains:

All force mains constructed using PVC materials shall meet the requirements of ASTM D 2241 for SDR-21 PVC. All force mains shall be constructed with pipe having the diameter shown on the plans and shall be installed in accordance with Section C of these specifications. All pipe shall be joined using elastomeric joints as described in Section M3.5.

M2.7 Cast Iron Soil Pipe:

All cast iron soil pipe approved for use within the Utility's system shall be used only for service line construction. Only sizes of six (6) inch and four (4) inch will be accepted. The cast iron pipe shall be the bell and spigot type and shall meet the latest requirements of ASTM A 74.

M2. 8 Encasement Pipe:

All encasement pipe shall be smooth wall, welded steel pipe or polymer coated corrugated metal pipe. Steel pipe shall conform to the latest requirements of ASTM A 139, Grade B or ASTM A 53, Grade B. All corrugated metal pipe shall conform to AASHTO M-245 and M 246. The protective coating shall have a minimum thickness of 10 mils on both sides.

The pipe gauge or wall thickness shall be as outlined on the construction plans and approved by the Utility. The encasement pipe diameter and carrier pipe support requirements shall be in accordance with the construction plans.

SECTION M3.0 - PIPE JOINTS

M3.1 Description:

This section of the specifications outlines the materials approved to be used in the joining of pipe sections. Any deviation from the materials specified herein must be approved prior to ordering.

M3.2 Concrete Pipe Joints:

Joints for concrete pipe shall be flexible gasket, bell and spigot type joints conforming to the latest requirements of ASTM C 443 for pipes under 18 inches in diameter and ASTM C 361 for pipes larger than 18 inches in diameter.

M3.3 Ductile Iron Pipe Joints:

All joints shall be push-on, mechanical, or flanged as specified on the plans. All joints shall also conform to the requirements of ANSI A 21.11.

M3.4 Clay Pipe Joints:

All joints for clay pipe shall conform to the latest requirements of ASTM C 425.

M3.5 PVC Sewer Pipe Joints:

All joints for PVC pipe shall be push-on, elastomeric gasket type conforming to ASTM D 3212.

M3.6 Encasement Pipe Joints:

All joints for smooth wall steel encasement pipe shall be welded joints. Joints for corrugated metal pipe shall be made of similar materials with similar protective coatings.

M3.7 Cast Iron Soil Pipe Joints:

All joints for cast iron soil pipe service lines shall be push-on joints equipped with a rubber gasket.

M3.8 Flexible Rubber Coupling:

The approved coupling manufacturers are Fernco, Can-Tex and DFW Plastics. Couplings shall be constructed of a chemical resistant rubber and shall have two stainless steel clamping bands. The couplings shall be manufactured to fit the outside diameter of the different pipe materials while the pipe flowlines remain matched together.

M3.9

Repair Coupling (PVC Only):

PVC repair couplings shall be permitted for use instead of the flexible rubber coupling. Repair couplings shall be installed in accordance with manufacturer's recommendations.

SECTION M4.0 - PIPE FITTINGS

M4.1 Description:

The following section discusses the materials to be used for the various fittings installed as a part of the sewer collection system.

M4.2 Standard Fittings:

All bends, tees, plugs, wyes or other approved fittings shall be constructed from the same material as the pipe with which they are installed. Adaptors shall be constructed from a material approved by the Utility.

M4.3 Tapping Saddles:

All taps installed on sewer mains are performed by the Utility using Utility parts and labor. Payment for the taps shall be made by the contractor.

M4.4 Special Fittings:

All special fittings shall be approved by the Utility prior to installation in the main line. Standard fittings should be used when possible.

SECTION M5.0 - MANHOLES

M5.1 Description:

This section covers the materials which shall be used in the construction of manholes and drop manholes.

M5.2 Brick Manholes:

Brick manholes shall be constructed from radial manhole brick or common brick. All brick shall be of first quality, well burnt, non-porous and free from warps, cracks, broken edges or other defects which might make the constructed manhole leak or structurally unsound. All brick shall conform to the requirements of AASHTO, M 114, Grade SW.

M5.3 Precast Manholes:

Precast concrete manhole sections shall conform to the latest requirements of ASTM D 478. Shop drawings and submittal data shall be furnished to the Utility for approval prior to the delivery of any sections. Sections shall not be transported to the site until they have cured for at least ten days. Factory installed cut-outs in the bottom section shall be appropriate for the pipe being laid and shall have identifying markings to facilitate their being used in the correct locations. The cone or top section shall be concentric for lines 15" inches and larger. All joints will be rubber gasketed.

M5.4 Poured-In-Place Manholes:

Poured in place manholes shall be made of Class A concrete conforming to the requirements of Section M6 - Concrete, Mortar and Reinforcing Steel.

M5.5 Drop Manholes:

Drop manholes may be constructed using any of the three (3) previously mentioned materials. The drop constructed on the outside of the manhole shall be ductile iron pipe. All ductile iron pipe must have mechanical joint fittings. The ductile iron pipe shall extend upstream from the drop tee five (5) feet beyond the manhole excavation.

M5.6

Manhole Ring And Covers:

1. The words LITTLE ROCK SANITARY SEWER shall be cast on the cover of each manhole.
2. Combined weights of the manhole ring and cover shall not be less than 260 pounds. The individual minimum weight for the lid shall be 125 pounds; and for the ring shall be 135 pounds.
3. Rings and Covers shall be free from porosity, blowholes, hard spots, shrinkage, distortion and other defects. They shall be smooth and well cleaned by shotblasting.
4. Metal used in the manufacture of the manhole rings and covers shall conform to ASTM A 48-76 Class 35B for gray iron or ASTM A 536-80, GRADE 65-45-12 for ductile iron.
5. All manhole rings and covers shall be manufactured true to pattern. Component parts shall fit together in a satisfactory manner, and shall be of nonrocking design, or shall have machined bearing surfaces to prevent rocking and rattling under traffic.

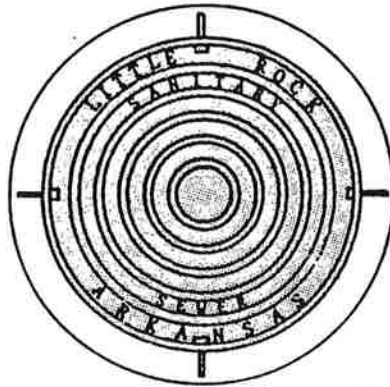
The dimensions of the ring and cover shall conform to those as shown on the standard details for sewer line construction. Cast dimensions may vary one-half the maximum shrinkage possessed by the metal or +/-1/16 inch per foot.

6. Self-sealing covers will be required when the top rim elevation is below the 100-year floodwater elevation. The self-sealing gasket shall be installed as per the Standard Details.
7. The manhole ring and cover shall be similar and equal to the R-1412-A 4 as manufactured by the NEENAH Foundry Co. Currently, the only approved suppliers are NEENAH Foundry Co. and Vulcan Foundry Co. Any other supplier must submit manufacturer data prior to the delivery of the rings and covers to the job site. Any unapproved rings and covers will be rejected for use within the Utility's system.

M5.7

Manhole Steps:

Manhole steps shall be corrosion resistant, coated and reinforced with steel and shall be equal to Perma Step 100-2 as manufactured by Utility Products Inc. or shall be polypropylene coated steps as manufactured by ICM Inc.



DOVETAIL
GROOVE



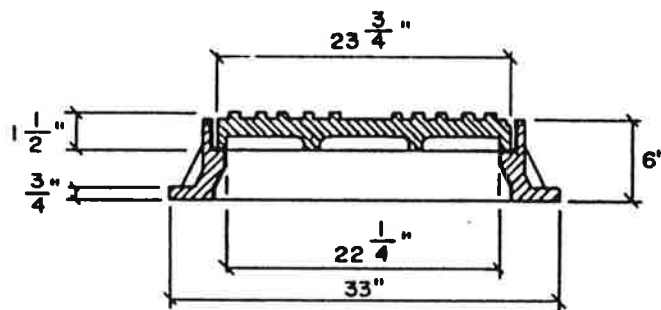
SELF SEALING
GASKET
(if required)

NOTES:

WEIGHT OF RING: 135 pounds

WEIGHT OF LID: 125 pounds

LIDS FURNISHED WITH TWO CLOSED PICK HOLES.



STANDARD MANHOLE LID & FRAME
NTS



SECTION M6.0 - CONCRETE, MORTAR AND REINFORCING STEEL

M6.1 Description:

This section covers materials used to create concrete, mortar and reinforcing steel for use in sanitary sewer line construction.

M6.2 Cement:

Cement used for concrete and mortar shall be Portland Cement conforming to the requirements of AASHTO M 85, Type I. Type III cement, high early strength, may be used only if approved by the Utility. Masonry cement is strictly prohibited for use in sewer manhole construction. Fly ash may not be substituted for cement.

M6.3 Lime:

Hydrated lime shall be used only when approved by the Utility. Lime shall be first quality mason's hydrate composed of at least 95% calcium and magnesium oxides (combined) and not more than 5% carbon dioxide. All lime shall be of a known brand produced by an established manufacturer.

M6.4 Water:

All water used in the mixing of concrete and mortar shall be free from injurious amounts of acids, alkalies, oils, sewage, vegetable matter and dirt. The mixing water shall be potable water fit for drinking.

M6.5 Air Entraining Agent:

An air entraining agent shall be used in all Class A concrete. The agent shall conform to the requirements of AASHTO M 154 and shall be added to the mixing water in solution. The air entraining agent shall be proportioned to provide four (4) to seven (7) percent air in the concrete.

M6.6 Fine Aggregate:

The fine aggregate used in the concrete shall consist of clean, hard, durable particles of natural sand. The fine aggregate shall be free from injurious amounts of organic impurities and shall meet the gradation requirements of AASHTO T 27.

M6.7

Coarse Aggregate:

The coarse aggregate used in the concrete shall consist of crushed stone or washed gravel. The coarse aggregate shall consist of clean, hard and durable particles. The coarse aggregate size shall be reasonably well graded from coarse to fine and shall conform to the requirements of AASHTO T 27.

M6.8

Composition And Strength:

The concrete shall be composed of Portland Cement, fine and coarse aggregate, water and an air entraining agent. These components shall be proportioned so that the end product meets the following requirements.

CLASS "A" CONCRETE/CLASS "B" CONCRETE

Minimum Sacks Of Cement Per Cubic Yard	6	5
Consistency Range (Slump In Inches)	2-4	2-4
Minimum Compressive Strength At 28 Days	3000psi	2500psi
Percent Air Content	4-7	N/A

All material proportioning shall be by weight except water may be measured by volume. One sack of Portland Cement shall consist of one cubic foot or 94 pounds.

M6.9

Use:

All manholes and other structures shall be constructed from Class "A" concrete. The only use of Class "B" concrete shall be for bedding and encasement.

M6.10

Reinforcing Steel:

All reinforcing materials shall consist of deformed steel bars or steel wire mesh. All bar reinforcement shall conform to the requirements of ASTM A 615 or A 617. All wire shall conform to the requirements for Cold-Drawn Steel Wire for concrete reinforcement, ASTM A 82. All wire mesh shall conform to the requirements of ASTM A 185. All bar sizes and wire gauges shall be as shown on the approved construction drawings.

SECTION M7.0 - PIPE EMBEDMENT MATERIALS

M7.1 Description:

This section covers materials approved for use as embedment of sanitary sewer mains. Embedment materials shall be restricted to Class I or certain Class II materials as described below and in accordance with ASTM D 2487. Class II Sands, Class III, IV, or V embedment materials are unacceptable for use. The correct bedding depth for the various pipe types shall be given in the Construction Section of these specifications.

M7.2 Class I Embedment Material:

Class I embedment shall consist of manufactured angular, granular material, 1/4 to 1 1/2 inches in size. This includes materials having regional significance such as crushed stone or rock, broken coral, crushed slag, cinders, or crushed shells.

M7.3 Class II Embedment Material:

Soil Type GW - Well-graded gravels and gravel-sand mixtures, little or no fines. 50% or more retained on No. 4 sieve. More than 95% retained on No. 200 sieve. Clean.

Soil Type GP - Poorly graded gravels and gravel-sand mixtures, little or no fines. 50% or more retained on No. 4 sieve. More than 95% retained on No. 200 seive. Clean.

SECTION M8.0 - PAVEMENT REPAIRS

M8.1 Description:

This section covers the materials used in the repair of roads, streets or other public rights-of-way where a new sewer line or structure is proposed.

M8.2 State Highways:

Materials used in the repair of State Highways shall meet with the approval of the Arkansas State Highway Commission.

M8.3 County Roads:

Materials used in the repair of County roads shall meet with the approval of the County Roads Department.

M8.4 City of Little Rock Streets:

The permanent repair of streets shall meet with the requirements of Ordinance 10,803 of the City of Little Rock.

M8.5 Other Roads or Streets:

Repair of roads, streets or other public rights-of-way not covered in Paragraphs M8.2, M8.3, M8.4 shall meet with the approval of the local governmental agency or private property owner having jurisdiction. Materials used shall meet with the requirements of Paragraph M8.3 above, or as otherwise approved.

M8.6 Temporary Repairs:

All temporary repairs made in order to properly maintain traffic shall meet with the approval of the governmental agency or private owner having jurisdiction. Materials shall meet with the requirements of Paragraph M8.3 above or as otherwise approved.

PART C
CONSTRUCTION PROCEDURES

SECTION C1.0 - GENERAL

C1.1

Description:

This part of the specifications shall govern the construction procedures used in the installation of sanitary sewerage facilities under the jurisdiction of the Utility. Construction procedures other than those outlined in this specification shall meet with the approval of the Utility. Complete specifications covering any unusual or special construction procedures shall be submitted for approval and approval must be received prior to beginning any construction operations. Where soil conditions require bedding in excess of Class B, as outlined in the following sections, the Engineer shall submit a pipe loading design to the Utility for review.

SECTION C2.0 - EXCAVATION

C2.1 Description:

This section covers the excavation of sanitary sewer lines, manholes, or other structures.

C2.2 Excavation - General:

All excavation shall be carried accurately to the line and grade shown on the Plans and as established by the Engineer. When excavation is carried below or beyond that required, the space shall be filled with compacted Class I or II material, or with concrete, in accordance with the Engineer's instructions.

Where necessary to protect the labor, the work, or adjacent property, the Contractor shall use a trench box or provide and install shoring. Such shoring shall remain in place until the backfill has proceeded to a point where it can be safely removed. If, in the opinion of the Engineer, damage is liable to result from withdrawing shoring, it shall remain in place.

All excavation shall be dewatered before any construction is undertaken therein. Concrete shall be placed only upon dry, firm foundation material and pipe shall be laid only in dry trenches.

C2.3 Excavation - Trench For Sewer Force Mains:

Trenches for force mains shall be of the width and depth necessary for the proper installation of the pipe. All pipe lines shall be laid in trenches of such depth as to provide a minimum cover of thirty (30) inches over the top of pipe barrel.

Width of pipe trench for sewage force mains shall be adequate for the installation of the pipe and make-up of joints, but in no case shall the width of the trench at the top of the pipe be wider than the outside diameter of the pipe plus two (2) feet.

The trench excavation shall be extended to a depth which will allow for the proper bedding material to be installed. Where no bedding is required, the trench shall be accurately graded so that the pipe will be in continuous and uniform contact with undisturbed soil for the full length of the pipe. To ensure a smooth bearing surface is maintained, additional excavation shall be required for the pipe bells.

C2.3
(Con't)

If the soil at the bottom of the trench is mucky or unstable so that it cannot properly support the pipe, the Contractor shall remove as much additional material as required to reach a stable trench bottom. The Contractor shall then bring the trench bottom back to grade using a Class I or II bedding material in no greater than eight (8) inch compacted lifts.

C2.4 Excavation - Structural:

The Contractor shall perform all structural excavation required on the Plans. Excavation shall extend a sufficient distance from walls and footings to allow for forms and for proper inspection, except where the Plans indicate that concrete may be deposited directly against excavated surfaces.

Excavation for manholes and other accessories shall be sufficient to leave at least twelve (12) inches in the clear between their outer surfaces and the embankment or shoring which may be used to protect them.

C2.5 Excavation - Trench For Sewer Pipe:

In order to avoid superimposed loading in excess of the designed and specified pipe strength and to provide sufficient room for proper installation and bedding of sewer pipe, the trench widths for the pipe sizes used shall be kept within the limits specified as follows:

<u>Inside Pipe Diameter</u>	<u>Maximum Width Of Trench At Top Of Pipe</u>
6"	2' - 6"
8"	2' - 6"
10"	2' - 6"
12"	3' - 0"
14"	3' - 0"
15"	3' - 0"
16"	3' - 0"
18"	3' - 6"
21"	3' - 6"
24"	4' - 0"

C2.5
(Con't)

If it becomes necessary to reduce the earth load on the trench banks to prevent sliding and caving, it will be permissible to cut the trench banks back on a slope above an elevation two (2) feet above the outside top of the pipe. Under no circumstances shall the specified maximum width immediately above the outside top of the pipe be exceeded.

Shaping of the trench bottom shall be as specified in Section C2.3. Bedding procedures shall be as specified in Section C3.0. Under certain conditions, excavation below the planned invert of the pipe will be required before preparation of the bedding is begun, as listed in the following paragraphs.

If the soil at the bottom of the trench is mucky or in such condition that it cannot be properly shaped and graded, or if the subgrade material is too soft to properly support the pipe, the Contractor shall excavate below the normal subgrade elevation as directed by the Engineer. Wherever excavation is carried below the specified subgrade elevation, the Contractor shall provide and install a fill consisting of Class I or II bedding material thoroughly tamped into place in a maximum of eight (8) inch lifts up to an elevation sufficient to prepare the subgrade as specified in Section C3.0 for the particular classification of bedding that may be required.

Where water occurs in trenches, they shall be excavated to a depth of approximately six (6) inches below grade and back-filled with Class I material to a point approximately 1/6 of the internal pipe diameter or 2", whichever is the greater, above grade. Pumps shall then be kept operating, taking suction out of a sump below the gravel so as to hold the water level well below the bottom of the pipe until the joints have been placed and firmly bedded in position.

The Contractor will be required to keep the sides of the excavation vertical, except as previously described. Shoring shall remain in place until the backfill has proceeded to a point where it can safely be removed, except that, if, in the opinion of the Engineer, damage is likely to result from withdrawing sheeting and shoring, it shall remain in place.

The excavation of trenches shall not advance more than three hundred (300) feet ahead of the completed pipe work and backfill, except by permission of the Engineer and approval by the Utility.

C2.6 Excavation for Manholes:

Excavation for manholes shall be as outlined previously and specified in Section C8 - Manholes.

C2.7 Disposal of Excavated Materials:

Excavation material shall be piled adjacent to the work to be used for backfilling as required. Excavated material which is unsuitable for backfilling and excess material shall be disposed of in a manner approved by the Engineer.

C2.8 Use of Explosives:

In the event the use of explosives is necessary for the efficient execution of the work, the Contractor shall notify the Engineer in advance of their use and shall exercise every precaution to prevent damage to adjoining improvements or property by reason of their use. Any damage to private property resulting from the use of explosives shall be the liability of the Contractor. In all cases where the explosives are necessary, a permit from the local governmental agency shall be obtained prior to their use. All governing OSHA safety regulations must be followed by the Contractor. Under no circumstances shall blasting be permitted without the use of a blasting shield or mat.

SECTION C3.0 - BEDDING AND BACKFILLING

C3.1 General Requirements:

All sewer pipe shall be installed using either Class I or II embedment materials as specified in Section M7 - Pipe Embedment Materials.

Backfilling of gravity sewer lines shall include the re-filling and consolidation of the fill in the excavation up to the surrounding ground surface or road grade at crossings. It is essential that the complete backfill be done in such a manner to minimize voids in the backfill.

Select materials shall be used for backfilling up to a point 12 inches above the top of the pipe. The select material shall be good earth, sand, or gravel and shall be free from large rocks or hard lumpy materials. No materials of perishable, spongy or otherwise unsuitable nature shall be used as select material.

All sewer pipe shall be bedded and backfilled in accordance with Sections C3.2, and 3.3. Also, the appropriate ANSI/ASTM specifications for all sewer pipe must be complied with if the ANSI/ASTM specifications are more stringent than the Utility's requirements.

Where trenches are under existing or proposed paved areas, the entire trench up to a point 2' below existing or proposed subgrade shall be backfilled with Class I materials and compacted to a density of 90% AASHTO T-180 modified or better. The remaining 2' shall be similarly backfilled, but the minimum compaction shall be 95% AASHTO T-180 modified.

The backfill of materials in trenches under existing or proposed paved areas shall be compacted with mechanical devices manufactured for that purpose from the top of the pipe to the top of the existing or proposed subgrade.

C3.2 Bedding and Backfilling Of Rigid Pipe:

The bedding of rigid pipe (concrete, ductile iron, or vitrified clay) shall be completed as described below and in accordance with the standard trench details shown within these specifications.

C3.2
(Cont.)

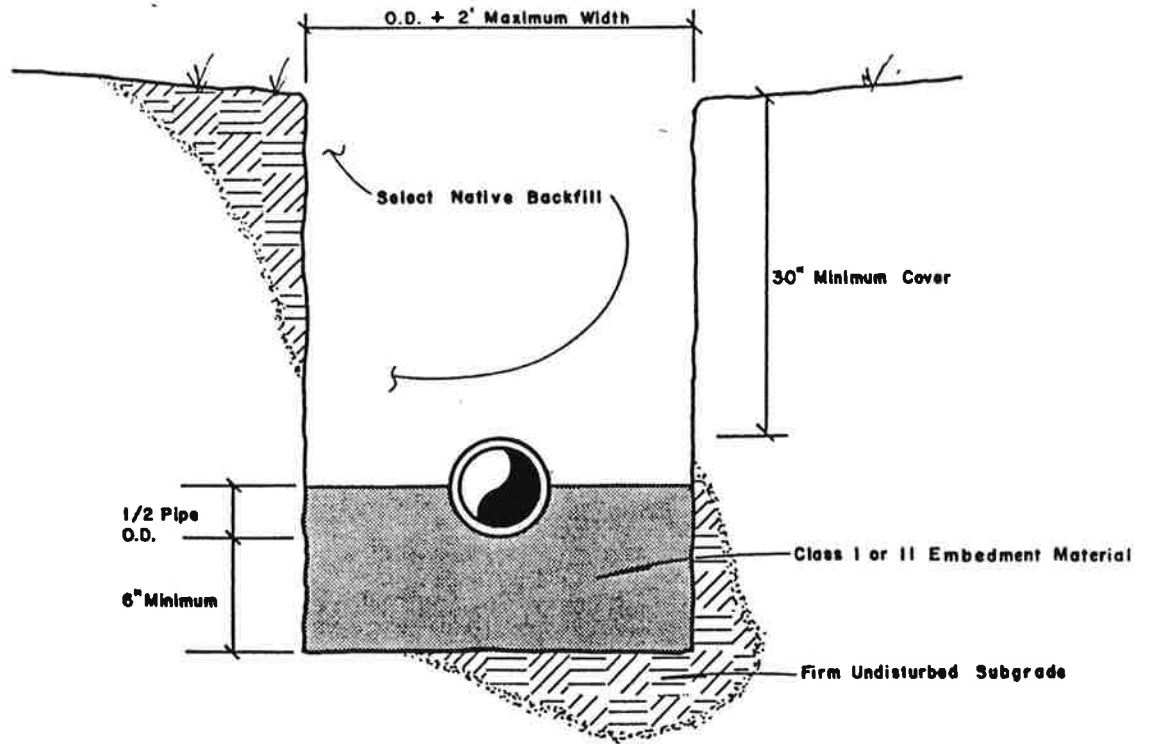
For all rigid pipe, the trench excavation shall be extended to a minimum depth of six (6) inches below the bottom of the pipe. Where additional excavation is required due to unacceptable soil conditions, the trench bottom shall be brought back up to grade using Class I or II bedding material. This bedding material shall be installed in no greater than eight (8) inch compacted lifts. All bedding material shall be compacted to a minimum density of 90% modified proctor as outlined in AASHTO T-180. The intent of the bedding is to create a uniform support which will protect the pipe from localized stress points. The required bedding for the various rigid pipe materials, sizes, and depth of bury shall be as outlined on the bedding detail page.

C3.3

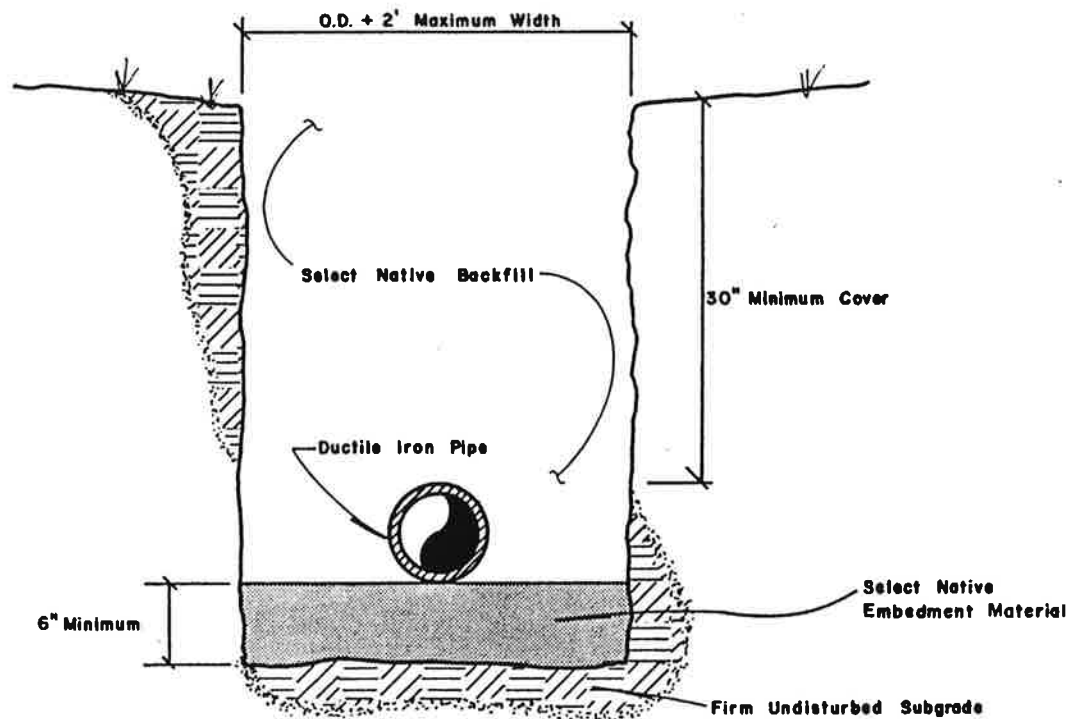
Bedding And Backfilling Of Flexible (PVC) Pipe:

The bedding and backfilling of PVC pipe shall be completed as described below and in accordance with the standard trench details shown within these specifications.

For all PVC pipe, the trench excavation shall be extended to a minimum depth of six (6) inches below the bottom of the pipe. Where additional excavation is required due to unacceptable soil conditions, the trench bottom shall be brought back up to grade using Class I or II bedding material. This bedding material shall be installed in no greater than eight (8) inch compacted lifts. All bedding material shall be compacted to a minimum density of 90% modified proctor as outlined in AASHTO T-180. The intent of this bedding is to provide uniform support for the flexible pipe. The remaining backfill shall be in accordance to the standard details and trench requirements. The required bedding for PVC pipe shall be as outlined on Figure 4 of these specifications. The Class I or II material shall extend from six (6) inches below the pipe to six (6) inches above the pipe. The maximum depth of bury for PVC pipe shall be sixteen (16) feet. Any depths greater than sixteen (16) feet shall require rigid pipe as described in Section G3.2.



FLEXIBLE PIPE (PVC)



DUCTILE IRON PIPE (DIP)

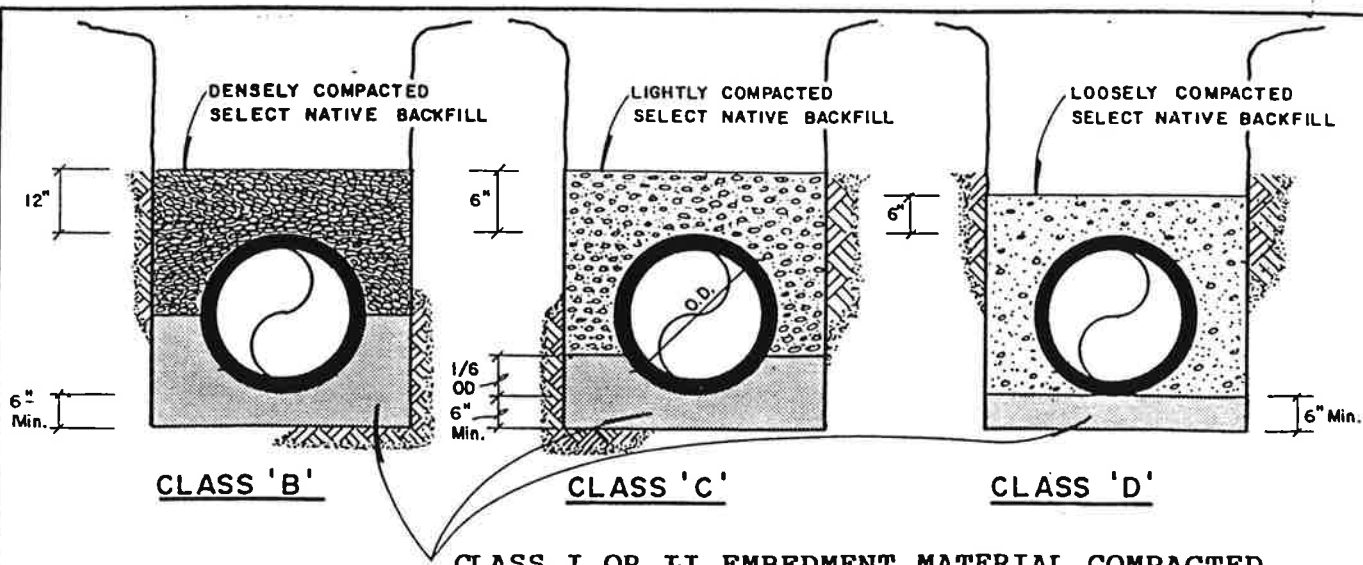


**LITTLE ROCK WASTEWATER
SPECIFICATIONS**

FORCE MAIN TRENCH DETAIL

FIGURE NUMBER

02




CLASS I OR II EMBEDMENT MATERIAL COMPACTED TO 90% MODIFIED PROCTOR.

CLAY PIPE			
PIPE DIAMETER (INCHES)	MAXIMUM TRENCH WIDTH AT TOP OF PIPE (IN)	MAXIMUM DEPTH OF BURY W/CLASS "C" BEDDING (FT)	MAXIMUM DEPTH OF BURY W/CLASS "B" BEDDING (FT)
6	30	19.0	24.5
8	30	16.5	25.0
10	30	19.0	25.0
12	36	12.0	20.5
15	36	15.5	25.0
18	42	13.5	20.5
21	42	17.5	25.0
24	48	15.5	24.0

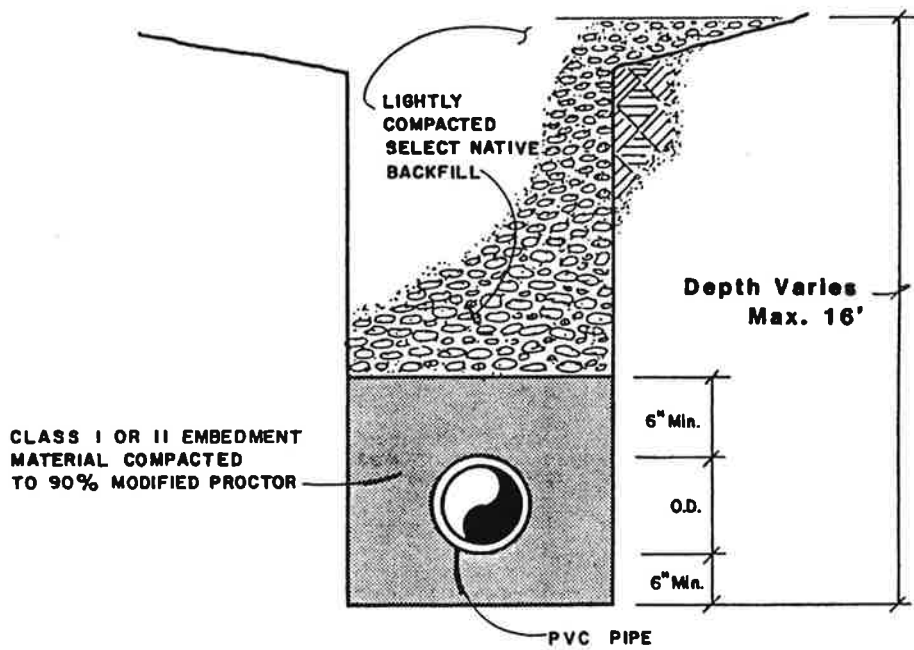
CONCRETE PIPE							
PIPE DIAMETER (INCHES)	MAXIMUM TRENCH WIDTH TOP OF PIPE	MAXIMUM DEPTH OF BURY CLASS III		MAXIMUM DEPTH OF BURY CLASS IV		MAXIMUM DEPTH OF BURY CLASS V	
		"C"	"B"	"C"	"B"	"C"	"B"
12	36"	7'	10'	10'	12.5'	16.5'	30'
15	36"	7'	10'	12.5'	12.5'	25.0'	30'
18	42"	7'	10'	11.5'	17.0'	24.0'	30'
21	42"	7.5'	11.5'	15'	23.0'	25.0'	30'
24	48"	8'	11'	14'	20'	25'	30'

CLASS 50 DUCTILE IRON PIPE				
PIPE DIAMETER (INCHES)	MAXIMUM TRENCH WIDTH TOP OF PIPE (INCHES)	MAXIMUM DEPTH OF BURY W/CLASS "D" (FEET)	MAXIMUM DEPTH OF BURY W/CLASS "C" (FEET)	MAXIMUM DEPTH OF BURY W/CLASS "B" (FEET)
6	30	32	40	40
8	30	25	40	40
10	30	19	38	40
12	36	17	36	40
16	36	13	30	40
18	42	11	29	40
20	42	10	27	38
24	48	8	23	31


 **LITTLE ROCK WASTEWATER SPECIFICATIONS**

GRAVITY SEWER TRENCH DETAILS - RIGID PIPE

FIGURE NUMBER 03



C-10

	LITTLE ROCK WASTEWATER SPECIFICATIONS
	GRAVITY SEWER TRENCH DETAIL FOR FLEXIBLE PIPE
FIGURE NUMBER	04

SECTION C4.0 - DEWATERING OF TRENCHES

C4.1 Description:

This section covers the dewatering of trenches to the extent that bedding material and sanitary sewer pipe can be placed on dry, firm trench bottom.

C4.2 Wellpointing:

Wellpointing where required to keep the excavation dry and the subgrade stable, shall be installed when the excavation is within two (2) feet of the water table, except as hereinafter provided, and shall be in continuous operation until backfill is completed to this level. There shall be sufficient pumping equipment, in good working order, available at all times, to remove any water that accumulates in excavations to the extent that a stable subgrade is obtained. Where the pipe line crosses natural drainage channels, the work shall be conducted in such a manner that unnecessary damage or delays in the prosecution of the work shall be prevented. Provision shall be made for the satisfactory disposal of surface water pumped so as to prevent damage to public or private property.

C4.3 Trench Dewatering:

Dewatering of trenches other than by wellpointing shall be accomplished by whatever means elected by the Contractor and approved by the Engineer. Under no circumstances shall bedding material or pipe be placed in wet or unstable trenches. Soil that cannot be properly dewatered shall be excavated and Class I or II bedding material tamped in place to such a depth as may be required to provide a firm trench bottom.

C4.4 Surface Runoff:

Surface runoff water shall be diverted away from the trenches. Such diversion shall be into existing drainage structures, such as storm sewers, ditches or streams. Diversion of surface runoff shall be in such a manner to prevent flooding of streets or private property.

C4.5

Disposition Of Water From Dewatering:

All water removed from the trenches by wellpointing or any other means shall be pumped, piped or drained into existing drainage structures, such as storm sewers, ditches or streams. The disposition of water from dewatering operations shall be accomplished in a manner that will prevent the flooding of public or private property. Discharge of trenchwater into a sanitary sewer is a violation of City of Little Rock Ordinance 13,092 and violators will be prosecuted as prescribed by law.

SECTION C5.0 - SHEETING AND SHORING

C5.1 Description:

This section covers the sheeting and shoring of trenches to protect the safety of workers, provide suitable means for constructing the sewer line, and to protect public or private property, including existing utilities.

C5.2 Cave-ins:

Where trench cave-ins are a possibility, adequate sheeting, shoring, and/or the use of a trench box shall be provided so as to maintain the trench free from slides or cave-ins and safe for workmen. All governing OSHA safety regulations shall be strictly enforced. When, in the opinion of the Utility, the Contractor is being careless, the proper authorities will be notified immediately.

C5.3 Existing Structures:

Where existing buildings, utilities, streets or other structures are in close proximity to the trench, adequate protection shall be provided by the use of sheeting and shoring to protect the structure from possible damage. In the case of streets or utilities, the Contractor may elect to remove the pavement or utility line provided that the removal and subsequent replacement meets with the approval of the City of Little Rock, the utility owner, or whoever has jurisdiction of the improvement. In all cases, it shall be the responsibility of the Contractor to protect public and private property and any person or persons who might, as a result of the Contractor's work, be injured.

SECTION C6.0 - PIPE LAYING

C6.1 Description:

This section covers the laying of pipe for sanitary sewers. All material shall be in accordance with PART M - MATERIALS of these specifications.

C6.2 Gravity Sewer Lines:

Each joint of pipe shall be inspected carefully before being placed in the trench. Any joint found to be cracked, warped, or otherwise so damaged as to impair its usefulness, shall be plainly marked and separated from the remaining pipe. Damaged joints shall be removed from the project site as soon as possible.

All sewer pipe shall be laid with the bell up-stream. Each pipe shall be laid to plan line and grade, or to line and grade directed by the Engineer, using batter boards and top line, or laser beam grade light. Where batter board and top line is used, each pipe shall be plumbed for line with a plumb bob, and graded for elevation with a grade stick. Care shall be taken that each spigot is centered properly in the bell of the preceeding pipe and properly seated, and that each pipe is solidly bedded as outlined in the preceeding section. As the work progresses, the pipes shall be cleaned of all dirt and other foreign matter. The pipe shall be maintained clean until accepted or put in service.

At the end of each day's work, and when for any reason the laying of pipe will be discontinued for an appreciable period, the open ends of pipe line shall be closed temporarily.

The cutting of pipe for any reason shall be done in a neat and workmanlike manner without damage to pipe or pipe lining.

Pipe shall be lowered carefully into the trench in such a manner that spigot and bell will not become contaminated. Spigot and bell shall be checked for cleanliness immediately before insertion of spigot into bell.

Proper facilities shall be provided for lowering sections of pipe into trenches. Under no circumstances shall pipe be laid in water and no pipe shall be laid, when in the opinion of the Engineer or the Utility, trench conditions or weather are unsuitable for such work. Full responsibility for the diversion of drainage and for dewatering of trenches during construction shall be borne by the Contractor.

C6.2
(Con't)

Spigot and bells shall be cleaned thoroughly before the application of lubricant and attachment of the preformed joint gasket. Application of lubricant and attachment of the gasket shall be in strict accord with the specific joint manufacturer's recommendations.

Pipe shall not be placed in the trench without excavating for bells so that the entire barrel of the pipe is uniformly supported on the pipe bedding.

C6.3

Steep Grades:

Whenever the grade of the sewer line exceeds fifteen percent (15%), ductile iron pipe shall be required. The ductile iron pipe shall meet the requirements set forth in Section M2.2 of these specifications.

Sewers on twenty percent (20%) slopes or greater shall be anchored securely with concrete anchors spaced as follows:

- a. Not over 36 feet center to center on grades 20 percent and up to 35 percent;
- b. Not over 24 feet center to center on grades 35 percent and up to 50 percent;
- and
- c. Not over 16 feet center to center on grades 50 percent and over.

Anchors shall be designed according to soil conditions for each individual jobs.

C6.4

Shallow Bury:

Ductile iron pipe shall be required when the existing grade or the proposed finished grade, whichever is less, provides less than thirty (30) inches of cover. The ductile iron pipe shall, whenever feasible, extend from manhole to manhole. The ductile iron pipe shall again meet the requirements of Section M2.2 of these specifications.

C6.5

Creek Crossings:

Ductile iron pipe shall be required at creek crossings where the depth of bury is less than thirty (30) inches. As per Section C6.4 ductile iron pipe shall also be required and installed as shown on the Standard Details, Figure 6. If the sewer line must be installed on piers, it shall be designed by the Engineer with a minimum design as shown on the Standard Detail.

C6.6

Force Mains:

All pipe and fittings shall be installed to the line and grade as detailed on the plans. Subject to the approval of the Engineer, fittings may be added to or substituted for those shown on the plans. This permissive stipulation in no way shall relieve the Contractor of the responsibility for furnishing and installing all fittings required for a complete and proper installation of the force main as detailed on the plans.

All dirt and other foreign matter shall be removed from the inside of pipe and fittings before they are lowered into the trench. They shall be kept clean during and after laying. Care shall be taken to keep dirt out of the jointing space. At the end of each days work, and when pipe laying is discontinued for an appreciable period, open ends of pipe shall be closed with a cast plug or cap firmly secured in place by tamped jute or hemp.

All pipe and fittings shall be lowered carefully into the trench in such manner as to prevent damage to pipe, fittings or linings. Neither pipe nor fittings shall be dropped or dumped into the trench.

Cutting of pipe, where needed, shall be done in a neat and workmanlike manner without damage to pipe or pipe lining.

Unless otherwise directed by the Engineer, pipe shall be laid with bell ends facing in the direction of laying. For lines on an appreciable slope, bells shall, at the direction of the Engineer, face upgrade. When necessary to deflect pipe from a straight line in either the horizontal or vertical plane to avoid obstructions, the degree of deflection at any joint shall be not greater than that which will provide adequate gasket space entirely around the spigot end of pipe.

Deflections shall not exceed the maximum recommended by the pipe manufacturer.

C6.7

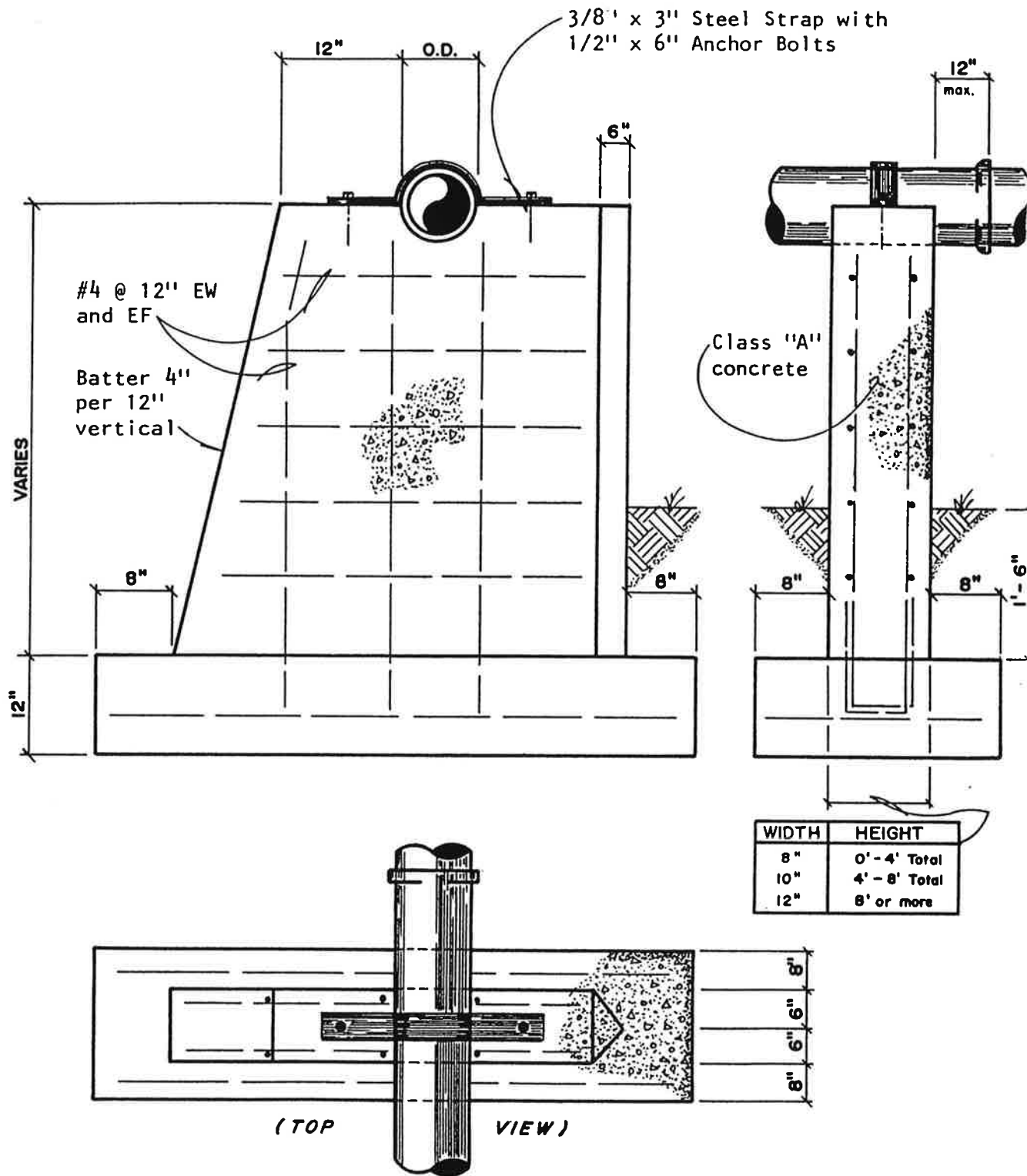
Connections To Existing Sewers:

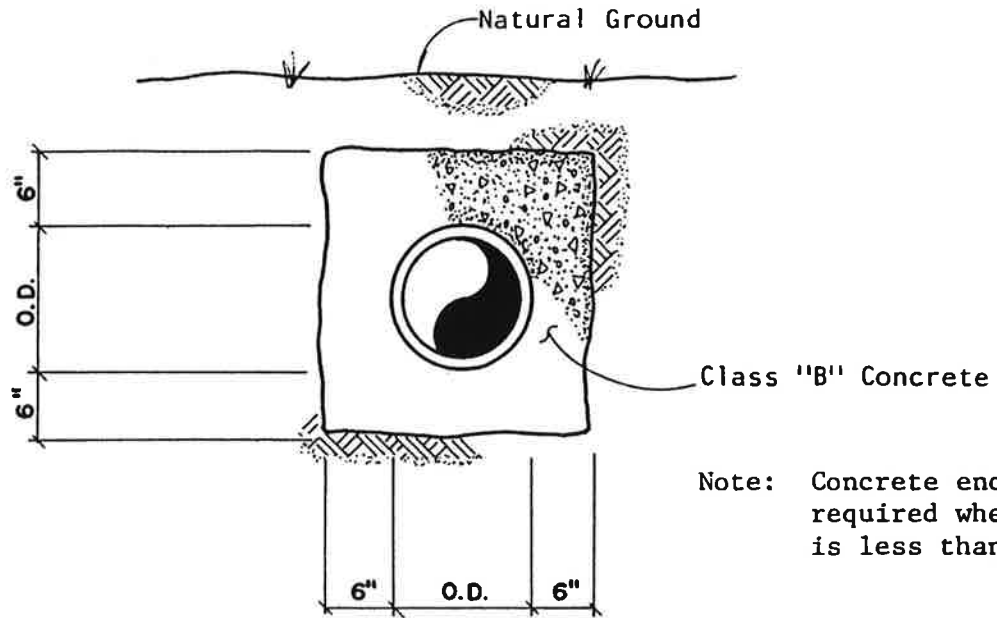
Connections to existing sewers shall not be made until all of the proposed sewer lines and manholes have been constructed, cleaned, tested and approval granted by the Utility for making the connection.

If, in the opinion of the Utility, conditions exist which require connection prior to line acceptance, all lines entering the manhole connecting to the existing system shall be plugged. In addition, the line leaving the first manhole upstream shall also be plugged and remain plugged until all testing and cleaning are complete. Under no circumstances shall water being used to flush the new lines be allowed to enter the existing system.

Any sewer main extension must be connected to the existing system using a new or existing manhole. If a new manhole is built over an existing sewer line, the top of the existing pipe shall not be broken out until the new line is accepted.

All work shall be completed in a neat workmanlike manner to ensure a watertight connection.



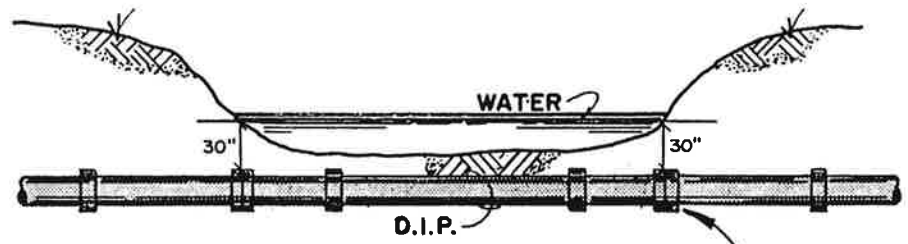


Note: Concrete encasement required when cover is less than 12".

CONCRETE ENCASEMENT DETAIL


(Use where shown on the plans)

Note: Ductile Iron Water Main Pipe is required where cover is less than 30" in flowline & banks of creek.



BURIED CREEK CROSSING DETAIL

Note: Typical transition coupling used to connect ductile iron and sewer pipe of other material matching at points where 30" of cover can be maintained.

 **LITTLE ROCK WASTEWATER SPECIFICATIONS**

ENCASEMENT/CREEK CROSSING

SECTION C7.0 - PIPE JOINTS

C7.1 Description:

This section covers the installation of pipe joints. Joint materials shall be as specified in SECTION M3.0 - PIPE JOINTS.

C7.2 Pipe Joint Installation:

All pipe joints other than those specified herein shall be made in strict accordance with the manufacturer's recommendation and as approved. All joints shall be made watertight in accordance with the latest ASTM Standards. Excavation for bells or other joint protrusions shall be made to insure that the bottom of the pipe firmly rests against the bedding for its entire length.

C7.3 Installation Of Slip-Type Or Push-On Joints:

Prior to jointing, the bell and spigot end of the pipes shall be cleaned thoroughly by whatever means necessary to remove all foreign matter and attain the required cleanliness. A wire brush shall be used as necessary. Particular care shall be exercised to clean the gasket seat.

Joints shall be made in strict accord with the recommendations of the pipe manufacturer. The rubber gasket shall be cleaned and inserted in the gasket seat within the bell. The spigot end of the pipe shall be inserted in the bell of the pipe to which connection is being made, and forced to a firm contact with the shoulder of the bell.

C7.4 Installation Of Mechanical Joints:

The spigot end of pipe, the bell of fitting, and the rubber gasket shall be cleaned thoroughly as specified for pipe joints in paragraph C7.3 above. The gland shall also be cleaned in a similar manner.

After the gland and gasket are placed on the spigot end of the pipe a sufficient distance from the end to avoid fouling the bell, the spigot end shall be inserted in the fitting bell to firm contact with the bell shoulder. The rubber gasket then shall be advanced into the bell and seated in gasket seat. Care shall be exercised to center the spigot end within the bell.

C7.4
(Con't)

The gland shall be brought into contact with the gasket, all bolts entered, and all nuts made hand tight. Continued care shall be exercised to keep the spigot centered in the bell. The joints shall be made tight by turning the nuts with a wrench - first partially tightening a nut, then partially tightening the nut 180 degrees therefrom and working thus around the pipe with uniformly applied tension until the required torque is applied to all nuts. Required torque ranges and indicated wrench lengths for standard cast iron bolts are as follows:

<u>Diameter</u> <u>Inches</u>	<u>Range of Torque</u>		<u>Length of Wrench</u> <u>Inches</u>
	<u>Foot</u>	<u>Pounds</u>	
5/8	40	60	8
3/4	60	90	10
1	70	100	12
1 1/4	90	120	14

C7.5

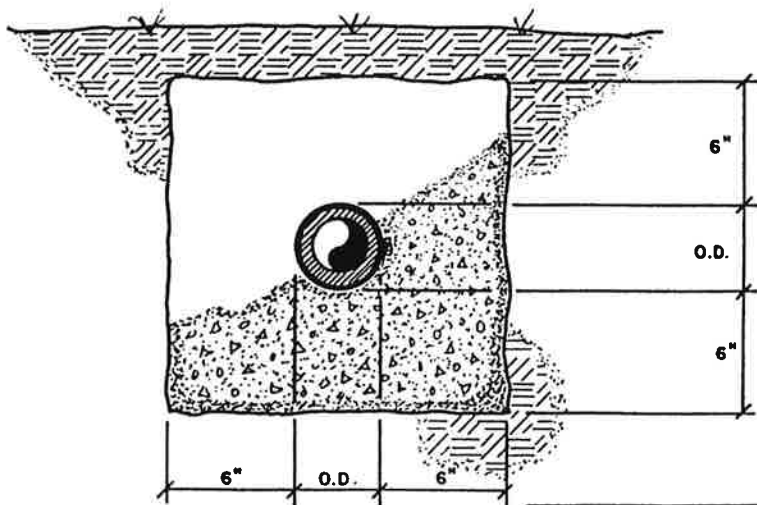
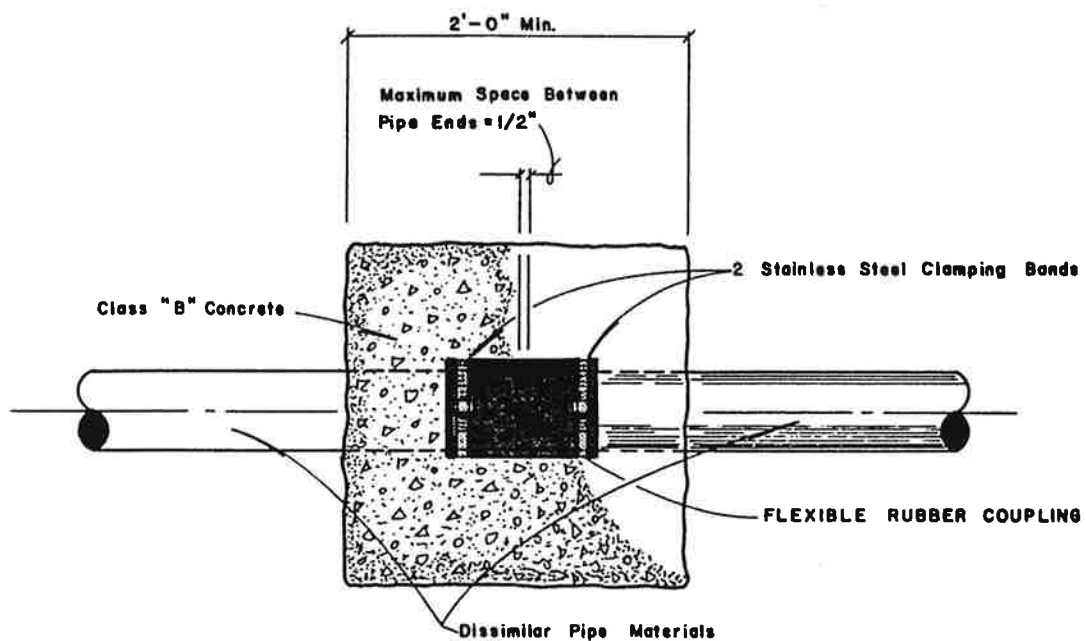
Concrete Encasement:

Concrete encasement shall be placed around joints between different types of pipe, shallow creek crossings, and around all flexible rubber couplings as shown on the Standard Details. Concrete shall meet with the requirements of Section M6.0 - CONCRETE, MORTAR, AND REINFORCING STEEL for Class "B" concrete.

C7.6

Concrete Retaining Collars:

Concrete retaining collars shall be installed at the location and interval as shown on the plans. The collars shall be constructed of Class "A" concrete and shall be reinforced with steel bars. The dimensions and reinforcing requirements shall be as shown on the construction drawings.



SECTION C8.0 - PIPE FITTINGS

C8.1 Description:

This section covers the installation of pipe fittings for sanitary sewer lines.

C8.2 Pipe Fitting Installation:

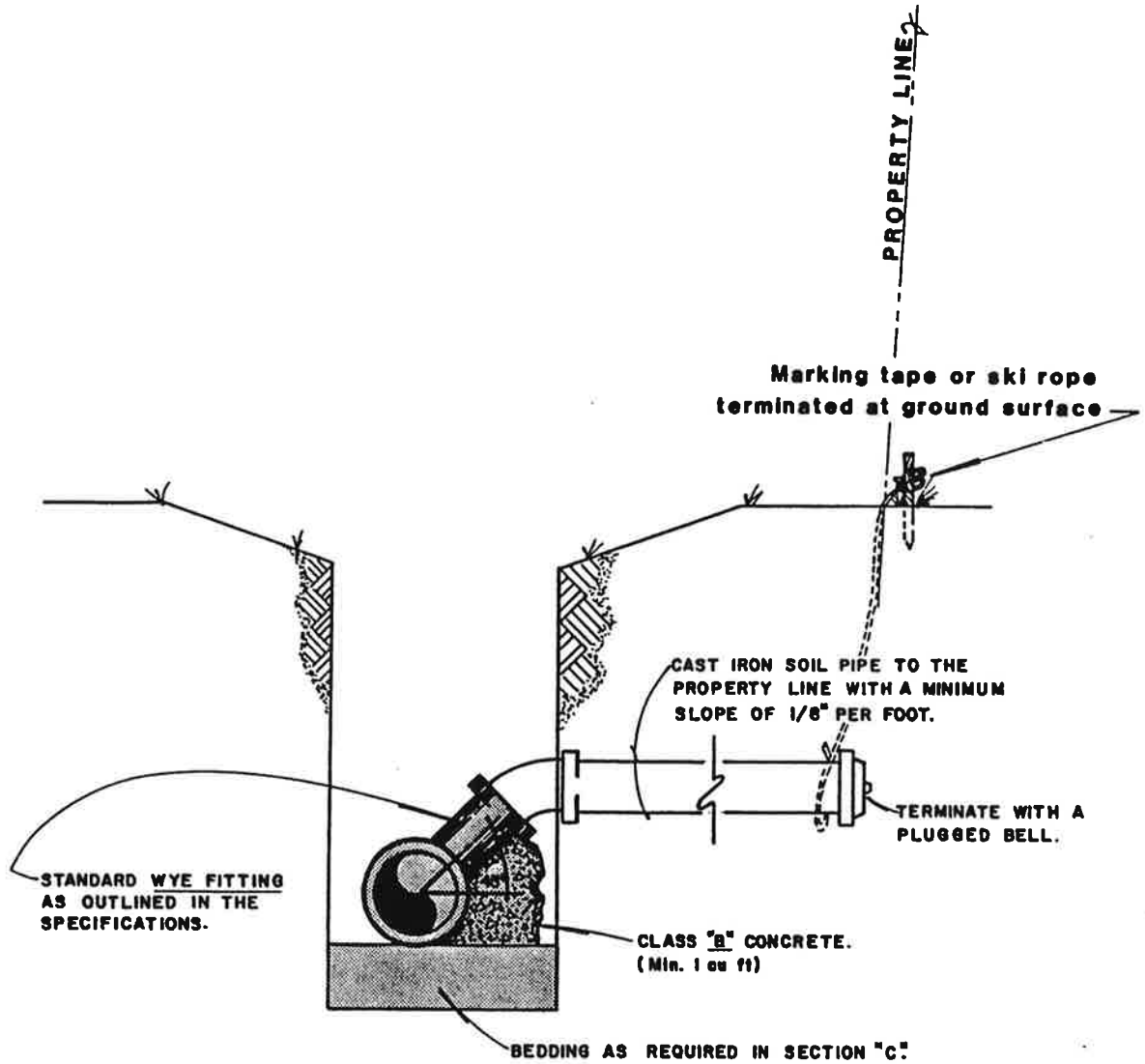
All pipe fittings shall be installed in strict accordance with the manufacturer's recommendations. Joints caused by the installation of fittings shall meet with the requirements of Section C7.0 - PIPE JOINTS. Pipe fittings shall meet with the requirements of Section M4.0 - PIPE FITTINGS.

C8.3 Wye Connections:

Wye connections placed in sanitary sewer lines for services shall be installed in accordance with the manufacturer's recommendations and as approved by the Utility. Installation of wye branches shall be at the location indicated on the construction plans. In-line wye fittings shall be used for all service connections in newly constructed mains except on ductile iron pipe. Taps shall be used only on ductile iron pipe or as approved by the Utility. The wyes shall be of a similar material and shall be joined in a similar fashion to the pipe in which they are installed. Wyes shall be adequately marked using detectable tape or ski rope terminated at the ground surface. Each service wye shall be equipped with a service stub terminated with a plugged bell or a plugged adapter capable of connecting to a four (4) inch cast iron service. All wyes shall also be securely plugged to withstand air testing. Class "B" concrete shall be installed under each wye branch to prevent cracking or twisting under earth loads.

C8.4 Taps:

Taps shall be prohibited on newly constructed mains except where specifically approved by the Utility. All taps shall be performed by Utility crews using Utility materials and equipment. The Contractor shall be invoiced for all taps performed.



SECTION C9.0 - MANHOLES

C9.1 Description:

This section covers the construction methods for manholes, drop manholes, and watertight manholes. Manholes shall be installed at points of change in horizontal alignment, change in vertical grade, or every four hundred (400) feet. Manholes shall be constructed using the materials outlined in Section M5.0.

C9.2 Excavation And Backfill:

Excavation for manholes shall be completed in a workmanlike manner. The area of excavation for the base shall be only that necessary to provide an adequate base with its sides poured against undisplaced earth. All excavations shall be dewatered in accordance with Section C4.0 - DEWATERING OF TRENCHES before any permanent construction is started. Sheet piling and shoring shall meet with the requirements of Section C5.0 - SHEETING AND SHORING.

Where excavation is carried below plan grade because of unsuitable soil or for any other reason, the space below plan grade shall be filled with Class I bedding material thoroughly tamped or the space may be filled with concrete poured monolithically with the base.

Backfill of manholes shall be compacted to a density of not less than 90% of the density obtained in the laboratory. Moisture density relations of soils shall be determined in accordance with AASHTO Designation T 180 modified. The 90% density shall be obtained throughout the entire depth of excavation except in public streets or roads where a density of 95% shall be obtained for the top 2'.

Backfill around manholes shall not be completed until adequate strength has been obtained to support the backfill without damage to the manhole. In no case will backfill be allowed on brick manholes, precast manholes, or poured-in-place manholes until the concrete is at least 48 hours old or as approved by the Utility.

C9.3 Inverts:

All clay or concrete pipes shall extend entirely through the manhole wall so that a joint occurs approximately 6", but no greater than 12", outside the manhole wall. Depth of the invert along the line of flow shall be approximately 1/2 the diameter of the abutting pipe. Curves in inverts shall have as long of a radius as feasible to facilitate flow. Shape of the invert shall be that approximating the bottom half of the pipe and inverts shall be brushed smooth.

C9.3
(Con't)

The surface of the grout fill used in forming the invert shall be sloped upward from the edge of the invert to the manhole wall. The upper half of any pipe extending inside the manhole wall shall be cut substantially flush with the wall. Any rough edge shall be smoothed with grout.

Grout for forming inverts shall be mixed in the proportions by volume of one part Portland cement to four parts sand. The use of masonry cement shall be strictly prohibited. If carefully done, grout may be mixed in a mortar box. Grout shall have a workable consistency, but shall be as dry as feasible.

Before constructing the invert of precast section manholes, the groove of the bottom riser shall be cleaned thoroughly. Care shall be exercised that the groove is entirely filled with grout.

Inverts shall be formed in accordance with details shown on the standard manhole details.

C9.4

Brickwork:

Radial brick or common brick shall be laid in a full mortar bed with the vertical joints between bricks entirely filled with mortar. The mortar shall conform to the requirements outlined previously in Section M6.0. Horizontal joints and interior joints shall be not less than 1/4" nor more than 1/2" in thickness. In vertical walls, the brick shall be laid in alternate courses of headers and stretchers with consecutive courses breaking joints. Where bats are necessary in forming the closures around pipes, a full brick shall be used next to the pipes and the bat used in the interior of the course. Any brick displaced during construction of the masonry shall be removed, cleaned, and relaid with fresh mortar.

The vertical interior surface and the entire exterior surface of the brick masonry shall be pargeted with mortar not less than 1/2" in thickness. The mortar shall be finished to a uniform surface. When directed, pargeting shall be kept moist not less than 48 hours after the brickwork is completed.

Brick masonry shall not be constructed when the temperature is below 35 degrees or when bricks have frost deposits.

Manhole rings for brick manholes shall be set to accurate elevations in a full mortar bed. Finish shall be as directed on the plans. Mortar shall be kept moist not less than 48 hours after the ring is set.

C9.5 Precast Manholes:

Manholes of precast sections shall be positioned carefully upon the concrete base and be raised in a truly vertical plane. Space between pipe and periphery of cut-out shall be entirely filled with mortar or concrete as is appropriate for space to be filled. A collar approximately 8" wide shall be formed around the pipe against the outside of the manhole.

Brickwork shall be in accordance with the requirements for brick manholes.

All precast manholes shall be constructed with a 1' section of pipe immediately below the cone or top section in order to lower the manhole for any future change in grade.

C9.6 Poured-In-Place Manholes:

Forms for poured-in-place manholes shall have cutouts to fit around the sewer pipe entering the manhole so that the form rests upon the concrete base. The space around cut-outs shall be filled in accordance with the requirements for pre-cast manholes.

Poured-in-place manholes shall meet with the requirements and details as shown on the standard details. The top section or cone shall be concentric.

Construction of poured-in-place manholes shall be in accordance with Section C10.0 - CONCRETE AND REINFORCING STEEL and other applicable parts of these specifications.

Rubber waterstop gaskets shall be installed in the walls around all pipes entering or leaving the manhole.

C9.7 Drop Manholes:

Drop manholes shall be required when the difference between the pipe entering and leaving the manhole exceeds two (2) feet. Drop manholes shall be constructed as outlined above depending on material used. The drop pipe including tee shall be constructed of ductile iron or encased in concrete as shown on the details. The ductile iron pipe or concrete encasement shall extend a minimum of five (5) feet into undisturbed soil.

C9.8 Watertight Manholes:

Construction of watertight manholes shall meet with the requirements outlined above for manholes and shall be equipped with a watertight ring and lid.

C9.9 Manhole Details:

All manholes shall be constructed in accordance with the standard manhole details or as approved by the Utility. Manholes 4'0" or less in height shall have a 24" minimum, 30" maximum high cone section and a maximum 12" high throat section.

C9.10 Connection To Existing Manholes:

Connection to existing manholes shall not be made until all other manholes and sewer lines have been completed, cleaned, tested, and inspected in accordance with these specifications.

Where the gravity outfall lines discharge into an existing manhole, the flow of sewage must be diverted around this construction. The Contractor shall intercept the sewage flow at the existing manhole first upstream from the construction and shall provide suitable pumping equipment and rerouting conduit to pump the sewage around the involved construction. Discharge shall be into an appropriate manhole downstream from the construction.

C9.11 Manhole Stubouts:

Where it is anticipated that a sewer line is to be extended in future construction work or where required by the Utility, one short joint of pipe shall be stubbed out from the manhole for future connection. The size of the stubout shall be of the size pipe required for the future construction or as required by the Utility and terminating in a standard bell and watertight plug.

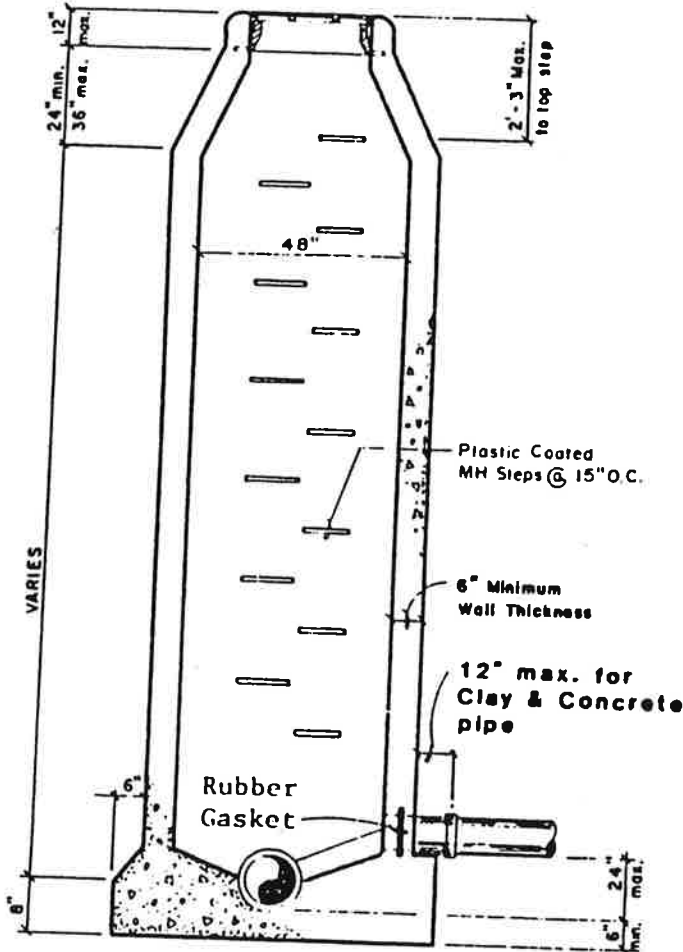
C9.12 Manhole Rings And Covers:

Manhole ring settings shall be attained by the use of common brick set in grout as shown on the standard details. Tops of the manhole rings and covers shall be level except in public rights-of-way where the top shall be set flush with pavements, sidewalks, or other surface areas.

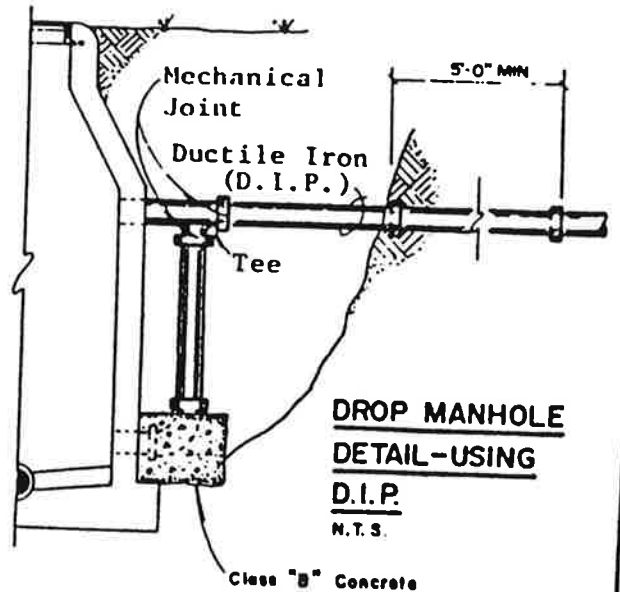
C9.13 Manhole Steps:

Manhole steps shall be placed at locations as shown on the standard details. The first step shall be set approximately 27" down from the top of the manhole ring.

Steps shall be securely anchored by use of grout or cast in place to fully develop adequate bearing support. Distances between steps shall be as shown on the standard details.



STANDARD MANHOLE DETAIL
NTS



**DROP MANHOLE
DETAIL-USING
D.I.P.
N.T.S.**

MANHOLE NOTES:

All manholes in public right-of-way shall have provisions to facilitate any necessary adjustment in height.

Manholes may be constructed of brick, precast reinforced concrete, or poured-in-place concrete. Brick manholes shall have 1/2" portioned cement plaster inside and out.

All brick mortar and invert finishing mortar shall be portioned cement mortar only. Masonry cement shall NOT be used in manhole construction.

If ductile iron mechanical joint pipe and fittings are used for drop manhole construction, concrete encasement may be eliminated except for 90° bend support. If excavation for manhole is greater than 3 feet from edge of manhole select backfill will be required as specified in specifications.

Brush finish surface of concrete and remove ALL sharp edges.

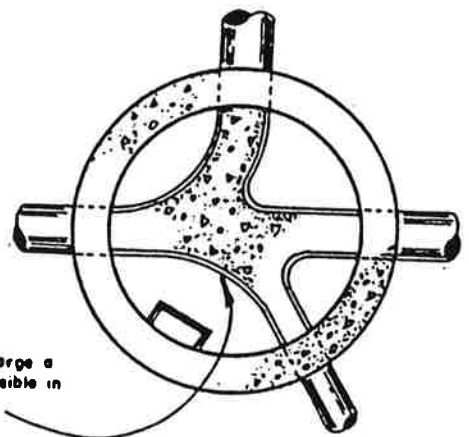
Centerline of all pipes entering and leaving the manhole shall pass through the manhole center.

Construct flow channel for all pipes entering the manhole, including services. Maintain a constant grade throughout each invert.

Manholes for sewers larger than 24" require individual design.

Manhole steps shall be staggered and installed such that they will not interfere with the free flow of installed sewer lines.

Drop manholes are to be used where the difference in finished elevation of intersecting lines exceeds 24".



**MANHOLE BOTTOM
DETAIL**
NTS

 **LITTLE ROCK WASTEWATER
SPECIFICATIONS**

MANHOLE DETAILS-Lines 6"-24"

SECTION 10.0 - CONCRETE AND REINFORCING STEEL

C10.1 Description:

This section covers the construction methods for concrete and reinforcing steel. All materials shall conform to the requirements of Section M6.0 - CONCRETE, MORTAR, AND REINFORCING STEEL.

C10.2 Ready-Mixed Concrete:

All concrete for poured-in-place manholes and other structural applications shall be ready-mixed concrete. Ready-mixed concrete shall conform to ASTM Standard D 94 and to applicable portions of these specifications for on-site mixing. The concrete shall be delivered and placed within one hour after all materials have been placed in the mixing drum.

C10.3 Reinforcing Steel:

Steel reinforcement shall be free from rust, scale, mortar, dirt, or other objectionable coatings. It shall be placed accurately in accordance with details shown on the plans and properly secured in position. All reinforcing steel shall be free standing securely in place prior to the pouring of concrete.

C10.4 Vibration:

All structural concrete must be vibrated as it is placed. The use of form vibrators is not acceptable. Internal vibrators shall be capable of transmitting vibration to the concrete at frequencies not less than 4,500 impulses per minute. Duration of vibration shall be limited to the time necessary to provide satisfactory consolidation without causing segregation. The vibrator shall not be inserted more than six (6) inches into the lower courses previously vibrated. Vibrators shall be applied in a substantially vertical position and at uniformly spaced points not further apart than the visible effectiveness of the vibrator. All concrete shall be vibrated except the concrete in manhole bases and pipe foundations need not be vibrated if other methods produce satisfactory results.

C10.5

Application Of Structural Concrete Other Than Manholes:

Utilization of reinforced or unreinforced concrete for structural uses other than poured-in-place manholes shall be subject to individual design and specification of the responsible Engineer to meet the specific needs of the project. Design and specification shall be in keeping with current engineering practice, applicable codes of practice, and subject to the review and approval of the Utility.

SECTION C11.0 - PAVEMENT REPAIRS

C11.1 Description:

This section covers the construction methods to be used in the repair of roads, streets, or other public rights-of-way.

C11.2 Permanent Repairs:

Asphaltic concrete hot mix surface course construction shall meet with the current requirements of the Arkansas State Highway Department Commission Specifications for the Construction of Asphaltic Concrete Hot Mix Surface Course or as otherwise approved.

Concrete pavement repairs shall meet with the current requirements of the Arkansas State Highway Department Commission Specifications for the Construction of Concrete Rigid Pavements.

Gravel surfacing shall meet with the current requirements of the Arkansas State Highway Department Commission Specifications for the Construction of Crushed Stone Base Courses.

Prime coats shall be applied in accordance with the current requirements of Arkansas State Highway Department Commission Specifications for the Application of Prime Coat to Crushed Stone Base Courses.

All permanent repairs of streets, roads, or other public rights-of-way shall meet with the construction requirements of the governing agency or private owner and shall meet with the requirements of all local Ordinances, Regulations, Permits, or Codes governing the repairs to roads, streets, or other public rights-of-way.

C11.3 Temporary Surfacing:

Methods of temporary surfacing shall meet with the requirements of Paragraph C11.2 or as otherwise approved to adequately maintain traffic and proper drainage.

PART T
TESTING

SECTION T1.0 - GENERAL

T1.1 Description:

This part of the specifications stipulates test requirements for materials, construction methods, and leakage tests of the sewer lines and manholes. All costs for the testing of materials and construction methods shall be born by the Developer. The Utility may require tests as outlined in these specifications for materials and construction procedures if, in the opinion of the Utility, the quality of materials and the construction procedures do not meet the requirements stipulated herein.

In all cases, leakage tests shall be performed on sewer lines as specified in these standard specifications.

SECTION T2.0 - BACKFILL DENSITY TESTS

T2.1 Description:

This section covers the testing of backfill around manholes, sewer lines, sewer service lines, or other structures to insure proper fill.

T2.2 Requirements:

Backfill density requirements are specified in Part C - Construction Methods of these specifications.

T2.3 Methods of Testing:

Moisture Density Relation -

The moisture density relation of material shall be determined in the laboratory in accordance with AASHTO Designation T-180 modified to use material passing a 3/4" sieve.

Field Density -

Field density of backfill shall be determined in accordance with AASHTO Designation T-147.

SECTION T3.0 - SEWER LINE TESTING

T3.1 Description:

This section covers the testing of pipe materials, joints, or other materials incorporated into the sanitary sewer line and leakage tests to determine watertightness.

T3.2 Sanitary Sewer Pipe:

All pipe and pipe materials will be accepted on the manufacturer's certificate that the pipe meets with the specification requirements and has been tested in accordance with the latest ASTM standard procedure for testing pipe, pipe joints, or other material unless specific tests are requested by the Utility. All pipe and pipe materials shall be subject to permeability and hydrostatic tests.

T3.3 Leakage Tests of Gravity Sewers:

All sewers shall pass leakage tests as specified herein. The leakage test must be performed in the presence of a representative of the Utility. The Contractor is requested to provide at least 24 hours notice before beginning testing and Final Acceptance procedures. Leakage tests for watertightness of gravity sewer lines shall be completed in accordance with one of the two following procedures described below.

T3.4 Water Test:

Water tests to determine the quality of the sewer line against infiltration and exfiltration shall only be performed when specifically approved by the Utility. The standard test procedure shall be the low pressure air loss test as outlined in Section T3.5. Where water tests are approved the procedure shall follow the guidelines listed below.

1. Clay, Concrete, PVC, and other Non-Ferrous Pipes:

The pipeline shall not leak under exterior ground water pressures in excess of 250 gallons per inch of nominal pipe diameter per mile of pipeline per 24 hours. If, in the opinion of the Utility, the ground water table at the time of testing is too low to produce dependable results, exfiltration tests shall be run. Allowable limits of exfiltration shall be 250 gallons per inch of nominal pipe diameter per mile of pipeline per 24 hours. If the water table is too high, exfiltration will not be used. The methods of testing for leakage shall be as approved by the Utility.

T3.4
(Con't)

2. Ductile Iron Pipe:

Sewer mains constructed entirely (from manhole to manhole) of ductile iron pipe conforming to Sections M2.2 of these specifications shall not be automatically required to pass the infiltration-exfiltration test required for non-ferrous pipe material in Section T3.4 (1) and T3.5. Such sewer mains shall, however, be subject to the requirements of Section T3.8 requiring repair of obvious running leaks and may be tested by low pressure air loss if requested by the Utility.

T3.5

Leakage Tests by Low Pressure Air Loss:

Sanitary sewer main extensions and building sewers shall be tested for watertightness by low pressure air loss as described below:

Procedure:

1. Plug all pipe outlets with suitable test plugs. Brace each plug securely.
2. Pipe air supply to pipeline to be tested so that air supply may be shut off, pressure observed, and air pressure released from the pipe without entering the manhole.

A valved branch should be left in the supply line past the shut-off valve terminating in a 1/4" female pipe thread for installation of the test gauge.

3. Add air slowly to portion of pipe under test until test gauge reads at least 4 psig, but less than 5 psig.
4. Shut air supply valve and allow at least two minutes for internal pressure to stabilize.
5. Determine time in seconds for pressure to fall 1 psig so that pressure at the end of time of the test is at least 2.5 psig.
6. Compare observed time with minimum allowable times in the chart (next page) for pass/fail determination.
7. Where groundwater level is above the crown of the pipe being tested, test pressure should be increased accordingly at a rate of 1 psi for every 2.5 feet above the crown.

TEST CHART FOR AIR TESTING SEWERS

Leakage Testing of Sewers by Low Pressure Air Loss

(Time Pressure Drop Method)

Minimum time in seconds for 1 psig drop (3.5 psig to 2.5 psig)

Distance Between Manholes	Nominal Pipe Diameter							
	Inches							
Feet	6	8	10	12	15	18	21	24
100	40	70	110	155	245	350	480	625
150	60	105	165	235	365	500	595	680
200	80	140	220	315	425	510	595	680
250	100	176	270	340	425	510	595	680
300	120	215	283	340	425	510	595	680
350	140	226	283	340	425	510	595	680
400	160	226	283	340	425	510	595	680
450	170	226	283	340	425	510	595	680
500				340	425	510	595	680
550						510	595	680
600							595	680

NOTE: Due to force resisted by plug restraints, testing of sewers larger than 24" is not recommended.

T3.6

Safety Provisions for Air Testing:

Plugs used to close the sewer pipe for the air test must be securely braced to prevent the unintentional release of a plug which can become a high velocity projectile. Gauges, air piping manifolds, and valves shall be located at the top of the ground. No one shall be permitted to enter a manhole where a plugged pipe is under pressure. Four pounds (gauge) air pressure develops a force against the plug in a 12" diameter pipe of approximately 450 pounds. Pipes larger than 24" in diameter shall not be air tested because of the difficulty of adequately blocking the plugs.

T3.7

Force Main Leakage Tests:

Leakage tests for force mains shall be made by filling the force main with water and increasing the pressure to a testing pressure of 150% of the working pressure.

The duration of the leakage test shall be two hours or as specified by the Utility.

The maximum leakage per hour for cast iron, ductile iron, PVC, or concrete pipe shall be calculated by the following formulas:

All rubber gasket or o-ring joints (ductile iron and concrete).

$$L = \frac{ND}{3700} P$$

L = Allowable Leakage (gallons per hour)

N = Number of Joints in Pipeline Tested

D = Nominal Diameter (inches)

P = Test Pressure (psi)

The force main will not be accepted until the actual leakage is equal to or less than the allowable. In addition, all obvious leaks shall be repaired.

T3.8

Leaks Encountered in Final Inspection:

In addition to passing the above described leakage tests, all obvious running leaks which may be observed in the final inspection shall be satisfactorily repaired.

T3.9

Pipe Deflection Testing:

The maximum allowable pipe deflection shall not exceed five (5) percent of the inside pipe diameter. The Wastewater Utility may mandrell test any PVC sewer pipe it desires at their discretion. Any sewer pipe which fails the mandrell test will not be accepted by the Utility until the defects are corrected.

The Utility reserves the right to mandrell test any PVC sewer pipe before acceptance, and also prior to expiration of the bonded two years of operation. If a previously accepted line fails a mandrell test performed during the two years of operation, the defects must be corrected at the contractor's expense.

T3.10

Televising of Lines:

All newly installed sewer mains shall be televised by the Utility immediately following the successful completion of the air/water testing. All lines shall be thoroughly cleaned prior to the start of televising. Each segment of pipe shall be videotaped and reviewed by the Utility's Engineering Department for possible defects in material or workmanship. All video tapes will remain on file and may be viewed by the Contractor or Developer by appointment. Any defects discovered during the televising shall be corrected at the Contractor's expense.

PART S
SERVICE LINES

SECTION S1.0 - GENERAL

S1.1 Description:

This section of the specifications describes the definitions associated with the review and installation of building sewers and service lines.

S1.2 Definitions:

Little Rock Wastewater Utility

The sewer collection system, treatment facilities, operational equipment, and staff of the Wastewater Utility under the jurisdiction of the Sanitary Sewer Committee of the City of Little Rock, Arkansas, hereinafter referred to as the "Utility".

Manager

The chief executive of the Little Rock Wastewater Utility.

Inspector

The individual employed by the Wastewater Utility and authorized by the Manager to inspect and approve building sewers.

City Sewer

A public sanitary sewer in which all owners of abutting properties have equal rights and is maintained and controlled by the Little Rock Wastewater Utility. No sewer smaller in diameter than six (6) inches shall be considered a city sewer.

Building Sewer

The sewer which conveys the discharge from a building's plumbing system or other approved waste to the city sanitary sewer system. The building sewer shall be considered as beginning at the connection to the city sanitary sewer and ending at the building foundation.

Plumber or Contractor

A corporation, partnership or individual engaged in the installation of building sewers.

S1.2
(Con't)

Permit

Authorization issued to a plumber or contractor upon request allowing installation of a building sewer to connect to the Little Rock Wastewater Utility system of city sewers.

SECTION S2.0 - WORK SUBJECT TO INSPECTIONS

S2.1 City Sewers:

All extensions of city sewer mains shall be constructed in accordance with previous sections of these specifications.

S2.2 Building Sewers:

All installations of building sewers shall be performed only following the issuance of a permit by the Wastewater Utility. All building sewer installations shall be inspected and approved by an authorized Wastewater Utility inspector, backfill may be placed on the completed portions of a building sewer following inspection, but no approval certificate shall be issued until all portions of a building sewer from the main connection to the building foundation have been inspected and approved by an authorized inspector. At the time of inspection, the pipe should be in place in the trench and "safed-up", but the top half of the pipe barrel exposed. No approval will be given for building sewers all or a portion of which are covered at the time of inspection.

S2.3 Repairs:

All repairs to city sewer mains, including manholes, shall be performed by Wastewater Utility maintenance forces only, unless specifically authorized by the Utility. All repairs or replacements of building sewers, regardless of length, shall be subject to the same inspection and material requirements as new installations.

Where the repair or replacement of a building sewer requires a new point of connection to the city sewer, connection should be into an existing wye or new tap made by the Wastewater Utility. The abandoned building sewer should be sealed to prevent entrance or rainwater or debris into the city sewer and the seal inspected by a Wastewater Utility inspector. No charge will be made for inspection of repairs or replacements less than twenty-five (25) feet in length, unless the repair or replacement is for the entire length of building sewer from the building to the city sewer connection point.

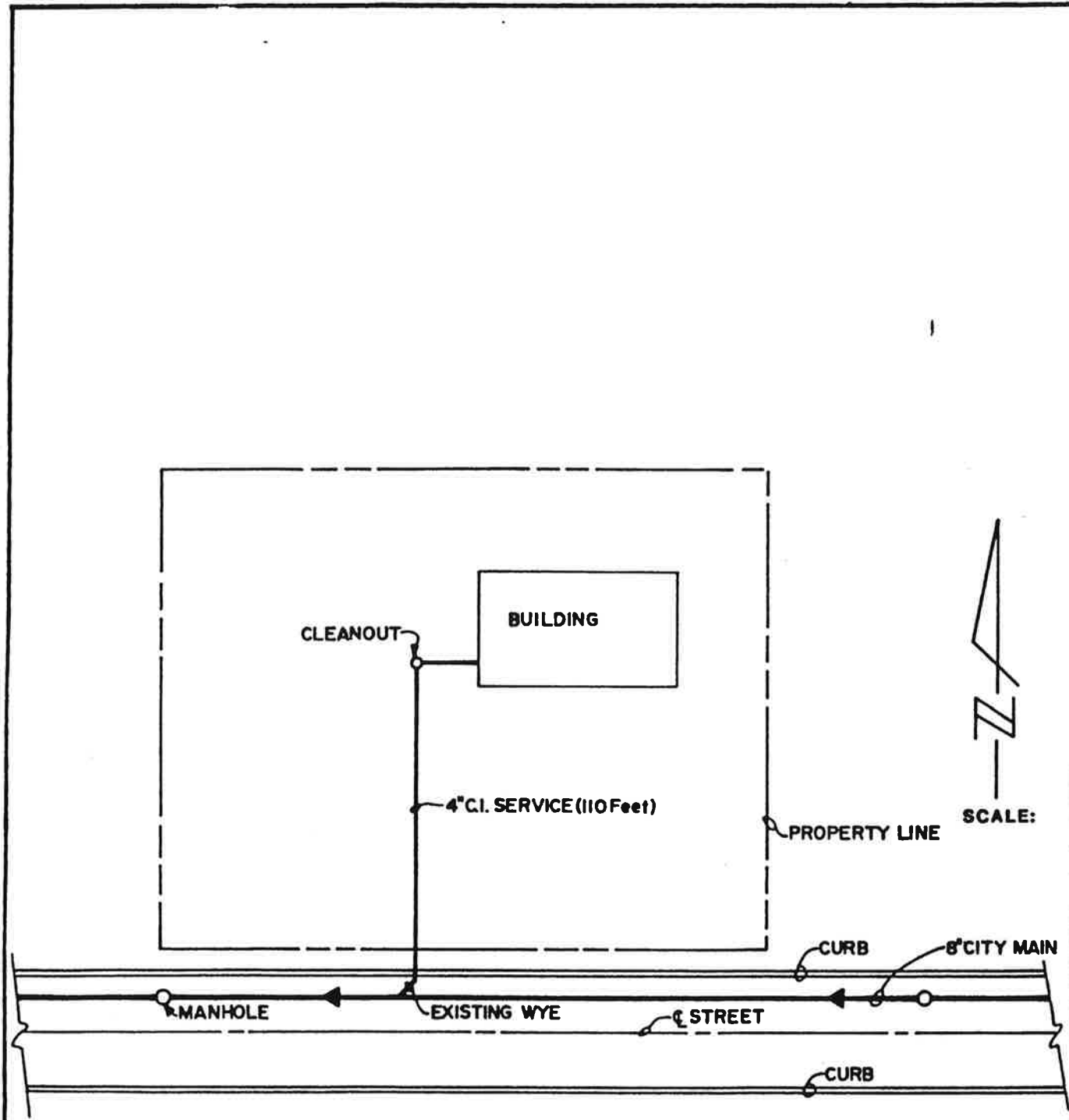
S2.4

Submission of Plans:

Building sewer site plans shall be required for all commercial, industrial, institutional and multi-family residential connections. The site plan shall include as a minimum, the following information.

- (1) Size and location of the entire building sewer starting at the main and ending at the building foundation
- (2) Size and location of the city main
- (3) Location of building to be connected
- (4) Location of cleanouts, grease trap or sand traps as they may be required
- (5) A north arrow
- (6) Streets adjacent to the facility being connected and building address

The plans must be approved in writing by the Little Rock Wastewater Utility before a connection permit can be issued and construction can start. A typical building sewer site plan is shown by Figure 10 located on the following page. Any building sewer constructed in a manner not corresponding to the site plan will not be approved.



S-5

	LITTLE ROCK WASTEWATER SPECIFICATIONS
	SITE PLAN FOR BUILDING SEWER
FIGURE NUMBER	10

SECTION S3.0 - LOCATION AND CONNECTION REQUIREMENTS

S3.1 City Sewer Mains:

- (1) Extension of the city sewer mains shall be required to insure building sewers are installed on the "lot" or "tract" on which the facility served is located and/or only across public right-of-way. Developer of "lot" or "tract" shall bear all expenses for the main extension.
- (2) The site and location of city sewer mains shall be in accordance with previous sections of these specifications.

S3.2 Building Sewers:

- (1) Minimum size for any building sewer shall be four (4) inches nominal diameter.
- (2) No more than one dwelling unit may be served by the same building sewer except as follows:

Where more than one dwelling unit is situated on the same "lot" or "tract", as defined by the Little Rock Subdivision Rules and Regulations, multiple units may be served by the same building sewer, provided that no more than eight (8) dwelling units are served by a four (4) inch line. Approval for installations serving more than one dwelling unit per individual building sewer will be at the discretion of the Utility, but each building sewer must be under the maintenance responsibility of only one ownership. Multiple buildings can not be served by the same building sewer if the "tract" or "lot" can, in the opinion of the Wastewater Utility, possibly be subdivided in the future.

- (3) Where building sewers must be installed outside of the "lot" or "tract" on which the facility served is located, installation must be in the public right-of-way in valid easements.

SECTION S4.0 - MATERIALS

S4.1 City Sewer Mains:

City sewer mains shall be of the materials specified in accordance of previous sections of these specifications.

S4.2 Building Sewers:

Building sewers shall be of one of the following materials.

- (1) Cast iron soil pipe conforming to the latest revision of ASTM A 74 (Bell and Spigot pipe with rubber gaskets, ASTM C 564).
- (2) Six (6) inch vitrified clay pipe with PVC joints, pipe conforming to the latest revision of ASTM C 700; joints conforming to ASTM C 425.
- (3) Ductile iron (water main) pipe conforming to ANSI A 21.51, with joints as specified for ductile iron (water main) pipe.
- (4) Ductile iron gravity sewer pipe conforming to the latest revision of ASTM/ANSI A 746 and with the use of push-on, rubber gasket joints.
- (5) PVC sewer pipe six (6) inches in diameter shall meet the requirements of ASTM D 3034 for SDR 26 PVC. All eight (8) inch and larger sizes shall meet the requirements of ASTM D 3034 and D 3915, SDR 35. All PVC pipe shall be jointed using push-on elastomeric joints.

S4.3 Materials Specifically Forbidden:

The following materials are specifically forbidden for use either as city sewers or building sewers.

- (1) Asphalt impregnated fiber tube pipe.
- (2) Concrete pipe in four (4) inch or six (6) inch diameter.
- (3) "No Hub" cast iron soil pipe or other non bell and spigot pipe unless specifically allowed.
- (4) Any plastic pipe in four (4) inch diameter.

S4.4

Transition Joints:

Jointing of dissimilar pipe materials shall be accomplished with the appropriate adaptor fitting manufactured for that purpose. Where a dissimilar bell and spigot joint is utilized, a "rubber donut" of the proper size shall be used. Where a dissimilar spigot to spigot joint is utilized, a Fernco rubber coupling or equal of the proper type and size shall be used.

SECTION S5.0 - INSTALLATION AND TESTING REQUIREMENTS

S5.1 City Sewer Mains:

The installation and testing of city sewer mains shall be in accordance with previous sections of these specifications.

S5.2 Building Sewers:

The installation and testing of building sewers shall be in accordance with the Arkansas State and City of Little Rock Plumbing Codes or the following requirements, whichever is more restrictive.

(1) Connections to a city main

a. Wye connection

Where a wye or other prefabricated outlet has been left in the city sewer for sewer service to a lot, it shall be utilized for service to that lot unless it can be shown that the dwelling unit or building cannot drain by gravity to the wye.

b. Tap connection

Where a wye or other prefabricated outlet in the city sewer is not available to serve a lot, a tap connection may be installed at a location approved by the Utility to connect the building sewer to the city sewer.

Tap connection to the city sewer main pipe may only be installed by the Wastewater Utility's maintenance forces after the plumber has paid a tap fee. Tap connections into a manhole shall be made by the plumber at his expense. Manhole taps shall be watertight, must be made twenty-four (24) inches or less above the manhole invert, and shall be considered as part of the building sewer subject to inspection. Tap connections are not permitted without the approval of the Utility and approval will be granted only under extenuating circumstances.

S5.2
(Con't)

c. Connection to existing building sewers

Construction of a new building on a lot previously sewerred shall include the installation of a new building sewer from the building to the main unless the following requirement is met:

The existing building sewer must be tested for infiltration and soundness before being placed into new service.

d. Connection Details

Jointing of dissimilar pipe materials shall be accomplished with the appropriate adaptor fitting manufactured for the purpose used. Where a dissimilar bell or spigot joint is utilized, a "rubber donut" of the proper size shall be used.

Under no circumstances shall the "rubber donut" be cut to facilitate the installation of the dissimilar bell and spigot joint. Where a dissimilar spigot joint is utilized, a Fernco rubber coupling or equal of the proper type and size shall be used.

Connection of building sewers to manholes may be accomplished if, in the opinion of the Utility, this constitutes the best point of connection. Where available, a "manhole tap" must be made by the plumber as outlined in Section S5.2-1b above. Connections to manholes must be made twenty-four (24) inches or less above the manhole invert, and must be flush with the inside of the manhole.

(2) Slope of Building Sewers

All building sewers shall have as a minimum the following slopes and deflections:

<u>Size (inches)</u>	<u>Slope Percent</u>	<u>Fall</u>	<u>Deflection</u>
4	1.00	1/8" per foot	1" per foot
6	0.60	1/12" per foot	N/A
8	0.40	1/16" per foot	N/A
10	0.28		N/A
12	0.22		N/A

S5.2
(Con't)

(3) Bedding

Pipe trench shall be graded so that the entire length of the pipe joint rests upon firm trench bottom with holes excavated for the bells. Where the depth of cover over the pipe (to existing or finish grade) exceeds ten (10) feet, the pipe shall be bedded and back-filled in accordance with a Class B trench listed in Section C 3.0, Part I.

(4) Backfilling

Backfill material shall be free of large rocks, boulders, lumber, trash or other materials which may injure the pipeline. Where a pipe trench is to be backfilled in a public right-of-way, or under any area to be paved, Class I bedding material shall be placed in compacted layers to prevent settlement. Backfill in public rights-of-way shall be placed in accordance with City of Little Rock Ordinance #14,031, as administered by the Little Rock Public Works Department.

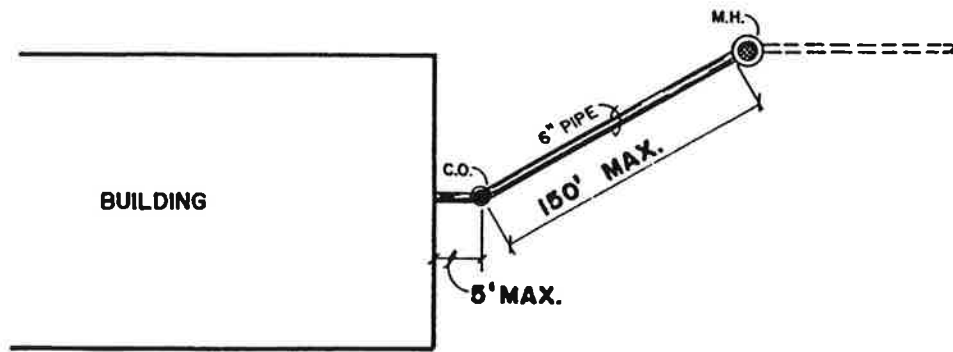
(5) Fittings and Appurtenances

a. Bends

Ninety degree bends on 4" building sewers should be avoided. Where absolutely necessary, long sweep bends must be used.

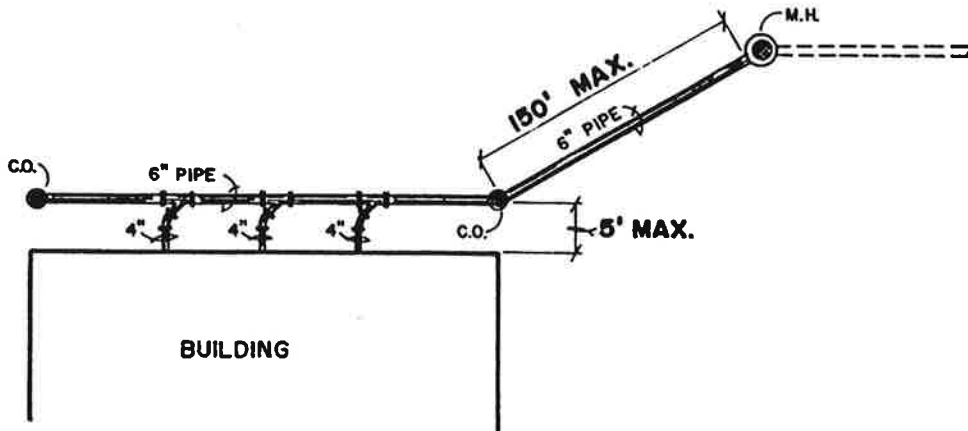
Service lines 6" in size and larger may be installed using bends provided the following requirements are met:

1. Bends will be permitted only within 5' of the building's foundation or 2' of the manhole being connected to,
2. between the points described above the sewer shall be laid on a straight alignment and at a constant slope.
3. The maximum distance between the bend at the building and the connecting manhole shall be 150'.
4. Only one building can be connected to a building sewer.
5. All cleanouts will be 6" in size.



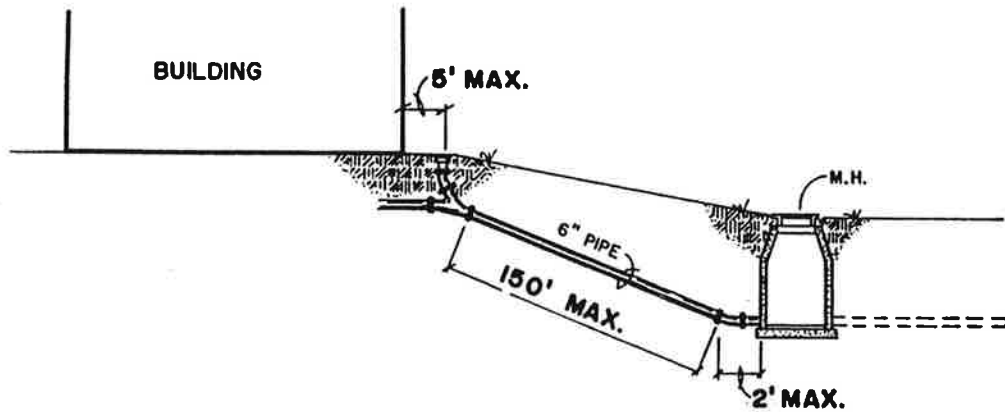
EXAMPLE NO. 1

NTS



EXAMPLE NO. 2

NTS



EXAMPLE NO. 3

NTS



LITTLE ROCK WASTEWATER
SPECIFICATIONS

**ILLUSTRATIONS FOR
APPROVED
6" OR LARGER LINES**

FIGURE NUMBER

11

b. Cleanouts

Cleanouts are required at the building foundation as required by the Little Rock Plumbing Code. In addition, on lines longer than one hundred (100) feet, cleanouts are required at one hundred (100) foot spacing. Cleanouts shall be provided adjacent to any ninety degree bend. Cleanouts should be piped up to finished grade for easy access when construction of the building is completed.

c. Backwater Traps (Sewage check valve)

Backwater traps shall be provided as required by Section 6.14 of the Arkansas Plumbing Code or on any building sewer where, in the opinion of the Utility, the building connected may be subject to flooding by the sewer. Backwater traps should be placed in a meter box or similarly housed to allow periodic servicing.

(6) Testing

All building sewers are subject to testing to insure watertightness. Tests may be either by exfiltration of water or low pressure air. All tests must be performed in the presence of a Wastewater Utility inspector.

a. Exfiltration of Water

The section of line to be tested shall be plugged at the lower end and filled with water so that at least four (4) feet of head is obtained. The water loss while so filled shall be not more than two hundred and fifty gallons per twenty-four hours per inch of pipe diameter per mile of pipe. This is approximately $\frac{3}{8}$ gallons for a one hundred (100) foot long section of four (4) inch pipe tested thirty minutes.

b. Low Pressure Air Loss

Both ends of the line to be tested shall be securely plugged and the line charged with air to a pressure of 4.5 psig. After allowing at least five minutes for the temperature in the pipe to stabilize, the time required for a 1.0 psi drop in pressure shall be determined. This time shall not be less than $28.5 d$ seconds where d = the nominal diameter in inches of the pipe being tested.

S5.2
(Con't)

c. Waiver of Testing

If, in the opinion of the Wastewater Utility inspector, the line in question is properly installed and free from open joints and breaks, building sewers constructed entirely of cast iron soil pipe may be connected to the city sewer without testing. Any building sewer constructed all or in part of any other material shall pass the above tests before being approved.

(7) Seals

When a building is demolished or moved, the building sewer shall be sealed to prevent storm or ground water infiltration and this work shall be done by Wastewater Utility forces only. The demolition or moving contractor shall obtain a permit from the Wastewater Utility for the seal work so that it can be promptly scheduled and performed.

SECTION S6.0 -

SPECIAL STRUCTURES AND DETAILS - BUILDING SEWERS

S6.1 Manholes:

Manholes shall be required at the junction of two or more six (6) inch or larger lines. In consideration of building sewer length and waste characteristics, a manhole may be required on the upper end of a building sewer greater than 4" in size. Connection of a five (5) inch or larger building sewer to a city sewer shall be accomplished by means of a manhole. Manholes shall be constructed at spacings not to exceed four hundred (400) feet and at changes in alignment or grade on building sewers six (6) inches and larger unless the requirements of Section S5.2-5 are met. Manholes shall be constructed in accordance with previous sections of these specifications.

S6.2 Sand Traps:

Connection of vehicle washing facilities or other grit producing discharges to the city sewer shall be preceded by a sand trap constructed as shown in Figure 12. The sand trap or any open grating must be located so as to completely exclude the possibility of rainwater entering the sewer. No connections may be approved to the city sewer which will allow the entrance of rainwater into the sewer.

S6.3 Grease Interceptors:

In accordance with the City of Little Rock Ordinance #14,129, grease interceptors or traps shall be required for the proper handling of liquid wastes containing grease in excessive amounts except that such interceptors shall not be required for private living quarters or dwelling units.

All grease interceptors shall be routinely maintained to prevent the discharge of grease in excess of 100 mg/liter to the city system. When a grease interceptor is required, a detailed plumbing fixture plan must be submitted, which along with the following information will determine the size grease interceptor required. A typical grease trap is shown on Figure 13.

S6.3
(Con't)

The minimum size for a grease trap shall be calculated using the Drainage Fixture Unit Values (FU) as assigned by the Uniform Plumbing Code. The maximum FU shall be a total of all fixtures connected to the grease trap. For those plumbing fixtures which do not have a specific assigned value in the table below and have a flow which is not constant, a value will be assigned by dividing the fixtures' maximum flow in gallons per minute (GPM) by 7.5 and rounding the number up to the nearest whole number. The most common example of this situation will be commercial dishwashers. The FU for commercial dishwashers will be determined by dividing the maximum flow from any cycle (this information is usually available from the manufacturer's specification) by 7.5 GPM. For those fixtures which have a constant flow through the work day, the FU shall be computed by assigning two (2) fixture units for each gallon per minute of flow. All garbage grinders which are connected to the grease trap will be assigned a fixture unit value of 2 in addition to the rated value of the sink.

To compute the minimum trap size, take the total fixture unit value to be connected to the trap and multiply by 7.5 GPM to figure the maximum possible flow to the trap. The Little Rock Wastewater Utility requires a minimum of twelve (12) minutes of detention time for a properly operating grease trap, with a minimum trap size of 500 gallons. To determine the trap size in gallons, multiply the maximum possible flow into the trap times 12 minutes. For example: A facility with 10 fixture units tied into the grease trap will require a grease trap of 900 gallons. This is figured by multiplying 10 times 7.5 GPM to yield a maximum possible flow of 75 GPM. This is then multiplied by 12 minutes to yield 900 gallons.

Fixture Unit Values

Kind of Fixture	Units
Floor Drains (each)	3
Bar Sinks	2
Wash Sinks	3
Lavatories (hand wash sinks)	1
Garbage Grinders	2
Dishwashers	Assign from manufacturer's specs
Constant Flow	2 per each GPM
Misc. Fixtures	Consult LRWU

S6.3
(Con't)

All grease traps should be constructed as follows:

- (1) Must contain two chambers, with the first chamber containing two-thirds of the volume, and the second chamber containing the final third.
- (2) All piping for the grease trap shall be external.

A site plan shall be submitted that contains the following information:

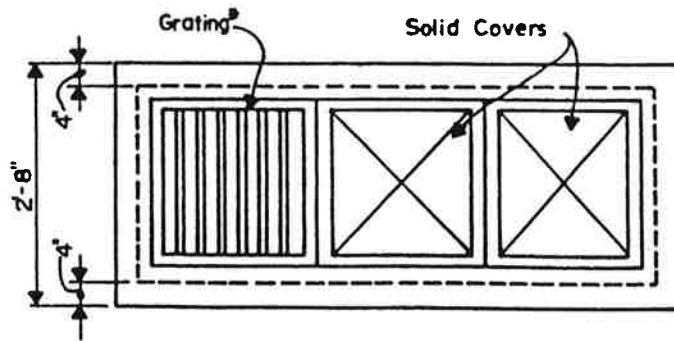
- (1) Grease trap size
- (2) Fixture unit analysis
- (3) Flow computation

S6.4

Pump Stations

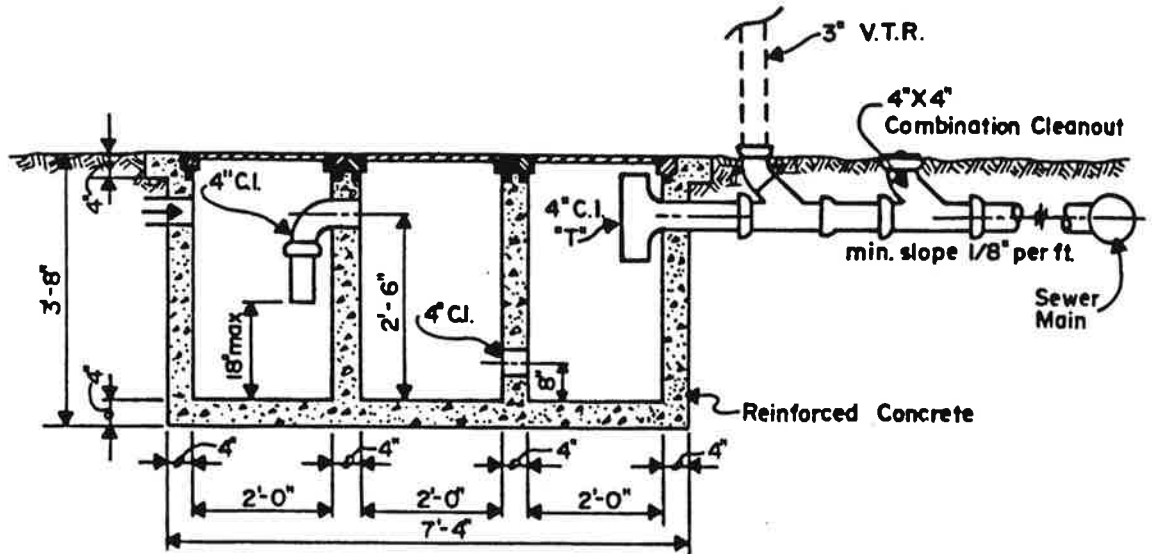
Where gravity city sewers can be extended to serve a "tract" or "lot", pump stations are forbidden. If, in the opinion of the Utility, gravity sewers cannot be feasibly extended to serve the "lot" or "tract" only then will pump stations be allowed.

Pump stations shall be constructed in accordance with previous sections of these specifications.



NOTE: This installation is approved for flows of 50 gpm or less. Flows above 50 gpm require individual design.

Grating to be used only when under roof. Outside installations shall have solid covers only.



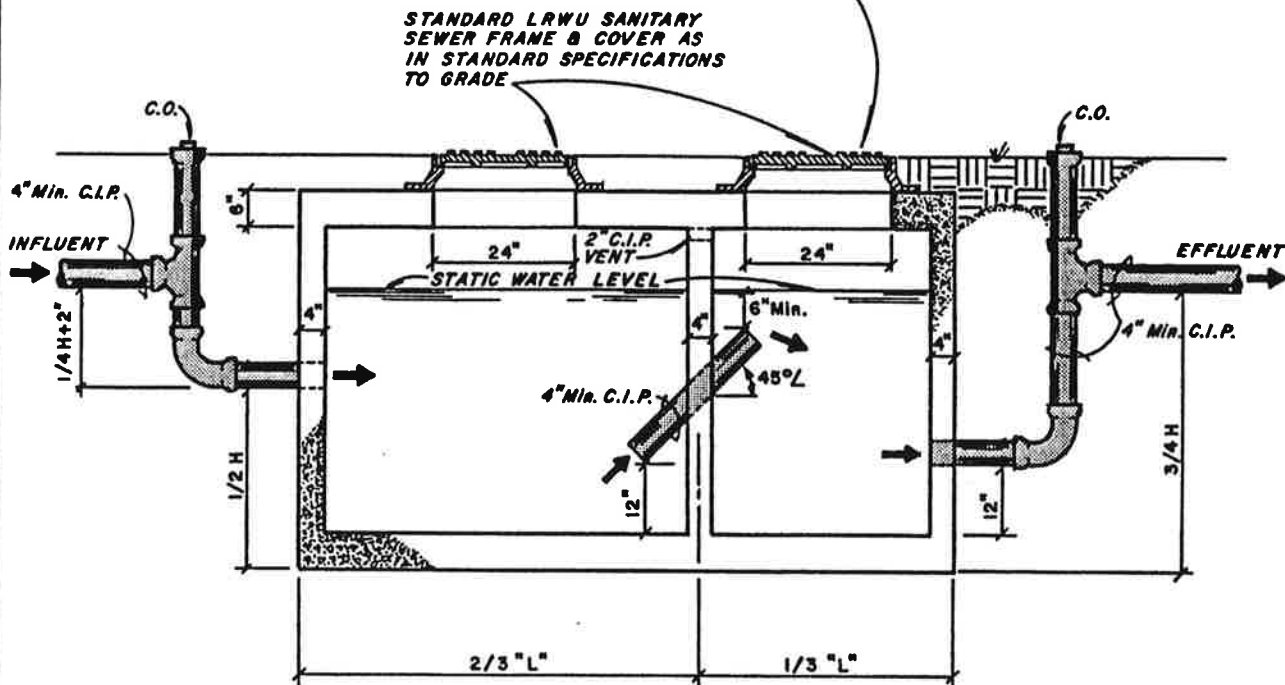
S-18

	LITTLE ROCK WASTEWATER SPECIFICATIONS
	STANDARD SAND TRAP DETAIL
FIGURE NUMBER	12

MAXIMUM CAPACITY	STANDARD TANK DIMENSIONS		
	W	L	H
500 gal.	42	83	56
760 gal.	52	90	67
1000 gal.	64	90	89

NOTE: TANKS WITH DIMENSIONS OTHER THAN THESE SHALL BE SUBMITTED TO LRWU FOR REVIEW.


NOTE - 6" C.O. MAY BE SUBSTITUTED FOR MANHOLE OVER SECOND COMPARTMENT WHEN 500 GALLON TRAP IS USED.

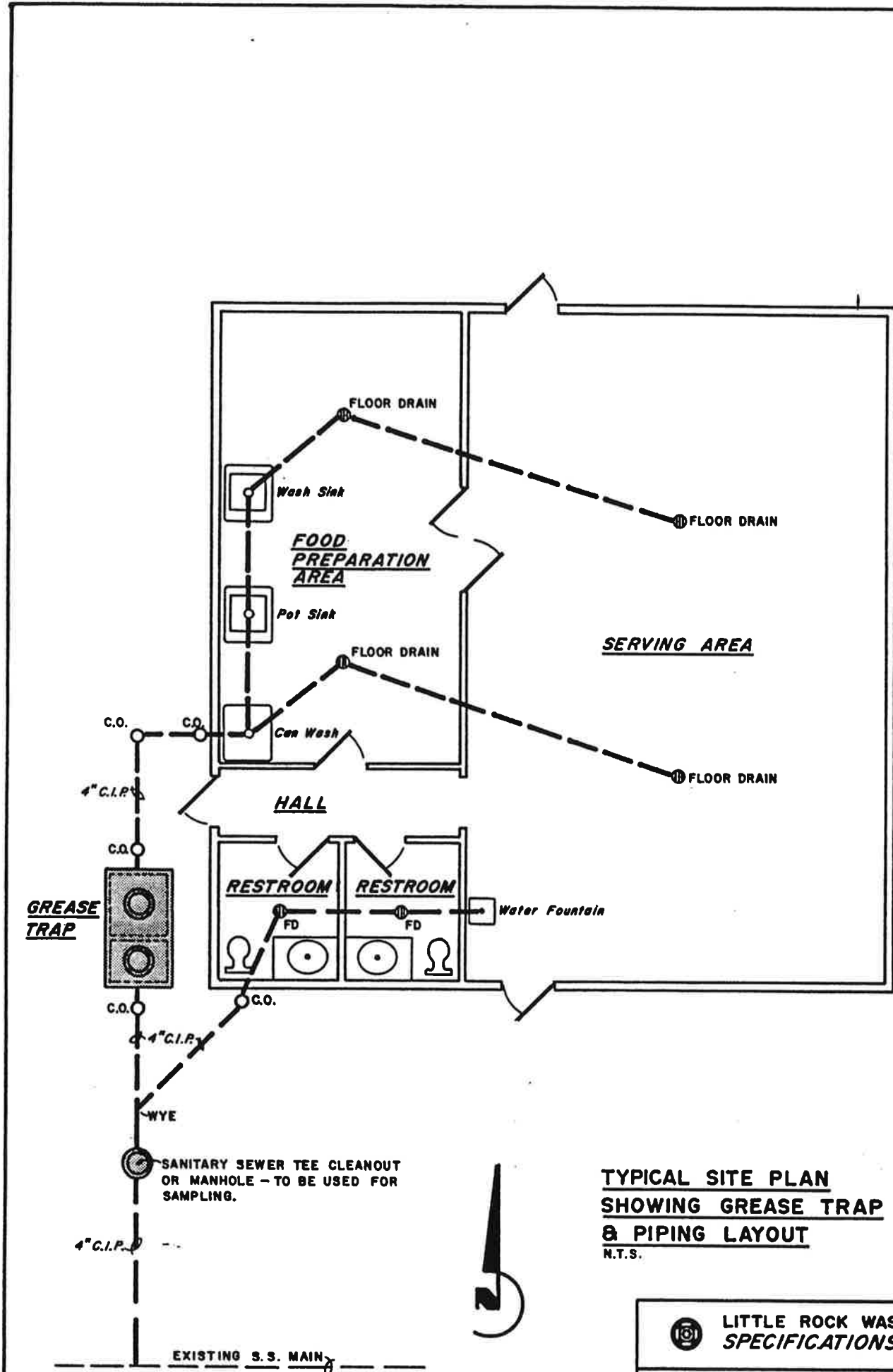


TANK SIZED FOR 12 MINUTE DETENTION TIME WITH A MINIMUM SIZE OF 500 GALLONS.


ONE TANK - 2 COMPARTMENTS GREASE TRAP DETAIL

N.T.S.

	LITTLE ROCK WASTEWATER SPECIFICATIONS
GREASE TRAP DETAIL	
FIGURE NUMBER	



**TYPICAL SITE PLAN
SHOWING GREASE TRAP
& PIPING LAYOUT
N.T.S.**

 LITTLE ROCK WASTEWATER SPECIFICATIONS	
SITE PLAN - GREASE TRAP	
FIGURE NUMBER	14

SECTION S7.0 - FEES

S7.1 General:

Connection of any facility to the city sewer shall be preceded by payment of all applicable fees.

S7.2 Permit and Inspection Fees:

The permit and inspection fees for residential, commercial and other non-industrial connections shall be \$10.00.

The permit and inspection fee for industrial connections shall be \$45.00.

The above mentioned fees shall pay for one field inspection. All additional field inspections as required shall cost \$10.00 each.

S7.3 Taps:

Sewer main taps are \$100.00 each.

S7.4 Seals:

Building sewer seal permits are \$75.00 each.

S7.5 Connection Fees:

The following fees are applicable to all new facilities connecting to the sewer:

Residential Dwelling Units

(Including single or multi-family homes, condominiums, apartments, mobile homes, or any other residential unit.)

\$ 100.00

Hotels and Motels

First unit 100.00

All additional units each 50.00

Commercial, industrial or other nonresidential: (Based upon domestic use water meter required)

5/8" meter	100.00
3/4" meter	150.00
1" meter	250.00
1 1/2" meter	500.00
2" meter	800.00
3" meter	1,600.00
4" meter	2,500.00
6" meter	5,000.00
8" meter	8,000.00
10" meter	11,500.00

S7.5
(Con't)

Any new connections or additions to existing facilities which are currently served by the sewer system, but which will not require installation of any additional or larger water meter shall pay a connection fee equivalent to the meter required for the additional load as determined by the Utility. If a connection fee has been paid in the past for the water meter now in service, no additional connection fee is required.

S7.6

Capacity Contribution Fees:

Capacity contribution fees are calculated specifically for each project. The procedure for determining the amount of the capacity contribution generally is as follows:

1. For the basin, the collection system's maximum flow capacity is determined.
2. Given a location in the basin and the proposed area served, a design capacity (GPM/acre) is determined.
3. The proposed development is evaluated on the basis of its flow contribution.
4. Capacity needed in excess of the design capacity is charged to the development based on the current cost to restore that capacity.

A P P E N D I X

CERTIFICATE OF AFFIDAVIT

The undersigned, sponsor of the sewer project designated _____, in accordance with the policy adopted by the Little Rock Wastewater Utility Sewer Committee, does hereby certify that the construction of the sewer facilities in said sewer project were completed in accordance with the approved plans and specifications of the engineer for said project; that the cost of the said project was the total sum of \$ _____; and that all bills and accounts for materials, labor and services have been paid in full.

Executed this _____ day of _____, 19____

I, _____, state on oath that I am the _____ of the sponsor of the above mentioned sewer project which is being connected to the Little Rock Wastewater sanitary sewer system. I further state on oath that the information represented in this certificate is true and correct to the best of my knowledge and belief.

BILL OF SALE

STATE OF ARKANSAS) SS
)
COUNTY OF _____)

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned _____ for
and in consideration of the permission and consent of the Little Rock
Wastewater Utility, to connect the sewer facilities hereinafter
described to the Little Rock Wastewater Utility sanitary sewer system
and the sum of One Dollar to the undersigned cash in hand paid by the
Little Rock Wastewater Utility, the receipt of which is hereby
acknowledged, does hereby bargain, sell, convey, assign, transfer and
deliver to the Little Rock Wastewater Utility the following described
property:

The completed sewer project known as _____, including all pipe,
machinery, equipment, pumps, fixtures and any and all other
appurtenances thereto installed in the completed sewer
project mentioned above.

TO HAVE AND TO HOLD the same unto the Little Rock Wastewater
Utility, its successors and assigns forever.

The undersigned does hereby warrant that all of the costs of
the installation of the sanitary sewer project mentioned above have
been paid in full and that the same is free from any and all
encumbrances.

WITNESS our hands and seals this _____ day of
_____, 19____.

_____ (SEAL)

ACKNOWLEDGEMENT

STATE OF _____) SS
)
COUNTY OF _____)

BE IT REMEMBERED, that on this day came before me, the undersigned a Notary Public within and for the country and state aforesaid, duly commissioned and acting, _____

to me well known as the Grantors in the foregoing instrument, and acknowledged that they each had executed the same for the consideration and purposes therein mentioned and set forth.

WITNESS my hand and seal as such Notary Public on this _____ day of _____,

NOTARY PUBLIC

My Commission Expires:

SEWER MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT, _____, as Principal and, _____, as Surety are held and firmly bound unto the Little Rock Wastewater Utility, as Obligee, in the amount of _____ Dollars (\$ _____) for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

NOW, THEREFORE, the condition of this obligation is such that if the Principal, upon receiving notice within a period of two years from the date of acceptance of these sanitary sewer lines and appurtenances by the Little Rock Wastewater Utility, of defects or necessary maintenance in the following improvements: SANITARY SEWER LINES AND APPURTENANCES THERETO THAT SERVE _____

_____ shall promptly correct said defects and perform the necessary maintenance in keeping with the requirements of the Wastewater Utility in accordance with the requirements of SPECIFICATION REQUIREMENTS FOR SANITARY SEWERS, then such obligation shall be null and void; otherwise, it shall remain in full force and effect. Any suit under this bond must be instituted before the expiration of three (3) months from the end of the period of notification referred to in the preceding paragraph thereof.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators, or successors of Owner.

SIGNED and sealed this ____ day of _____, 19__.

PRINCIPAL

By: _____

SURETY

By: _____

KNOW ALL MEN BY THESE PRESENTS:

THAT _____, GRANTOR, a corporation organized under and by virtue of the laws of the State of _____, by its _____ and _____, duly authorized by proper resolution of its Board of Directors, for and in consideration of the sum of _____ Dollars (\$ _____), and other valuable consideration paid by the Little Rock Sanitary Sewer Committee, the receipt of which is hereby acknowledged, do hereby, subject to prior recorded mortgages and easements, if any, grant, bargain, sell and convey unto the City of Little Rock, Arkansas, for the use and benefit of the Little Rock Sanitary Sewer Committee, GRANTEE, and unto its successors and assigns forever, the following described easements:

1. A PERMANENT RIGHT, PRIVILEGE AND EASEMENT for the purpose of permitting the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to clear and keep clear the surface of the right-of-way and to (a) lay, construct, operate, maintain, repair, replace, reconstruct, test, inspect and add sewer mains and sewer lines whether one or more, and without the payment of additional compensation therefor; (b) keeping the easement clear of all buildings and other improvements of any kind; and (c) having the right to free ingress and egress across adjacent lands of the GRANTOR(S) to the lands hereinafter described. Subject to prior easement of record and except as hereinafter stated, the Little Rock Sanitary Sewer Committee shall have the exclusive use of this right-of-way and easement; and the GRANTOR may hereinafter use the surface of the easement for any purpose not inconsistent with the rights hereby conveyed, but may not place a building, footing, wall, structure, or other improvement upon the right-of-way except that, after the initial sewer construction is completed, the GRANTOR may pave the easement surface and may use it for driveways, walks or parking areas. The GRANTOR may permit other utility service to cross this easement at approximately right angles, but only if such utilities first comply with whatever specifications the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility may designate at the time for the protection of its own facilities. This permanent easement shall be upon the following described lands situated in Pulaski County, Arkansas, to-wit:

2. A TEMPORARY RIGHT, PRIVILEGE AND EASEMENT for the purpose of permitting the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to remove all timber and obstructions therefrom and to make excavations, store excavated materials, tools, supplies and equipment and provide working space. This temporary easement shall begin when the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility commence the initial work on the permanent easement and shall terminate one year after that date or when that work is completed, whichever is

earlier. This temporary easement shall be upon the following described lands situated in Pulaski County, Arkansas, to-wit:

Upon completion of the initial or any subsequent work by the Little Rock Sanitary Sewer Committee, the Little Rock Sanitary Sewer Committee shall backfill and thoroughly compact all excavations to minimize settling and shall level the surface over its excavations and pipelines, remove all excess excavated materials and debris and leave the premises in a clean sanitary condition. If the initial or any subsequent work by the Little Rock Sanitary Sewer Committee damages any fence, curb or paved surface upon the rights-of-way, the Little Rock Sanitary Sewer Committee, at its expense, shall repair or replace the damaged portion with materials of like quality and as nearly as possible to its prior condition.

The execution of this easement does not give the GRANTOR the right to connect to or receive service from any sewer or wastewater facility; the right to make connections and receive service shall be subject to the rules, regulations, policies or ordinances in effect at the time of application.

To have and to hold said easements, rights and privileges unto the GRANTEE, and unto its successors and assigns forever, for the purposes aforesaid.

And GRANTOR(S) covenants with GRANTEE, its successors and assigns, that subject to prior recorded mortgages and easements, if any, it will forever warrant and defend the title to said easements and rights against the claims of all persons whomsoever and that GRANTEE, its successors and assigns, shall have at all times the quiet use and enjoyment of said easements and rights.

IN WITNESS WHEREOF, the name of the GRANTOR is hereunto affixed by its _____ and its seal affixed by its _____, this ____ day of _____, 1984.

By: _____

ATTEST:

(Corporate Seal)

ACKNOWLEDGMENT

STATE OF ARKANSAS)
)SS
COUNTY OF PULASKI)

On this day personally appeared before the undersigned, a Notary Public within and for the County and State aforesaid, duly qualified, commissioned and acting, _____, and _____, to me well known, who stated that they were the _____ and _____, of _____, a corporation, and were duly authorized in their respective capacities to execute the foregoing easement for and in the name and behalf of said corporation, and further stated and acknowledged that they had so signed, executed and delivered said easement for the consideration, uses and purposes therein mentioned and set forth.

WITNESS my hand and official seal on this ____ day of _____, 1984.

Notary Public

My Commission Expires:

(SEAL)

RIGHT OF WAY EASEMENT

KNOW ALL MEN BY THESE PRESENTS:

THAT we, _____ and _____, his wife, GRANTORS, for and in consideration of the sum of _____ Dollars (\$ _____), and other valuable consideration paid by the Little Rock Sanitary Sewer Committee, the receipt of which is hereby acknowledged, do hereby, subject to prior recorded mortgages and easements, if any, grant, bargain, sell and convey unto the City of Little Rock, Arkansas, for the use and benefit of the Little Rock Sanitary Sewer Committee, GRANTEE, and unto its successors and assigns forever, the following described easements:

1. A PERMANENT RIGHT, PRIVILEGE AND EASEMENT for the purpose of permitting the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to clear and keep clear the surface of the right-of-way and to (a) lay, construct, operate, maintain, repair, replace, reconstruct, test, inspect and add sewer mains and sewer lines whether one or more, and without the payment of additional compensation therefor; (b) keeping the easement clear of all buildings and other improvements of any kind; and (c) having the right to free ingress and egress across adjacent lands of the GRANTOR(S) to the lands hereinafter described. Subject to prior easement of record and except as hereinafter stated, the Little Rock Sanitary Sewer Committee shall have the exclusive use of this right-of-way and easement; and the GRANTOR may hereinafter use the surface of the easement for any purpose not inconsistent with the rights hereby conveyed, but may not place a building, footing, wall, structure, or other improvement upon the right-of-way except that, after the initial sewer construction is completed, the GRANTOR may pave the easement surface and may use it for driveways, walks or parking areas. The GRANTOR may permit other utility service to cross this easement at approximately right angles, but only if such utilities first comply with whatever specifications the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility may designate at the time for the protection of its own facilities. This permanent easement shall be upon the following described lands situated in Pulaski County, Arkansas, to-wit:

2. A TEMPORARY RIGHT, PRIVILEGE AND EASEMENT for the purpose of permitting the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to remove all timber and obstructions therefrom and to make excavations, store excavated materials, tools, supplies and equipment and provide working space. This temporary easement shall begin when the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility commence the initial work on the permanent easement and shall terminate one year after that date or when that work is completed, whichever is

earlier. This temporary easement shall be upon the following described lands situated in Pulaski County, Arkansas, to-wit:

Upon completion of the initial or any subsequent work by the Little Rock Sanitary Sewer Committee, the Little Rock Sanitary Sewer Committee shall backfill and thoroughly compact all excavations to minimize settling and shall level the surface over its excavations and pipelines, remove all excess excavated materials and debris and leave the premises in a clean sanitary condition. If the initial or any subsequent work by the Little Rock Sanitary Sewer Committee damages any fence, curb or paved surface upon the rights-of-way, the Little Rock Sanitary Sewer Committee, at its expense, shall repair or replace the damaged portion with materials of like quality and as nearly as possible to its prior condition.

The execution of this easement does not give the GRANTOR the right to connect to or receive service from any sewer or wastewater facility; the right to make connections and receive service shall be subject to the rules, regulations, policies or ordinances in effect at the time of application.

To have and to hold said easements, rights and privileges unto the GRANTEE, and unto its successors and assigns forever, for the purposes aforesaid.

And GRANTOR(S) covenants with GRANTEE, its successors and assigns, that subject to prior recorded mortgages and easements, if any, it will forever warrant and defend the title to said easements and rights against the claims of all persons whomsoever and that GRANTEE, its successors and assigns, shall have at all times the quiet use and enjoyment of said easements and rights.

And we, _____ and _____, husband and wife, for and in consideration of said sum of money, do hereby release and relinquish unto the said GRANTEE, and unto its successors and assigns forever, all our right and possibility of curtesy, dower, and homestead in and to the said lands.

WITNESS our hands this ____ day of _____, 1984.

ACKNOWLEDGMENT

STATE OF ARKANSAS)
)SS
COUNTY OF PULASKI)

On this day personally appeared before the undersigned, a Notary Public within and for the County and State aforesaid, duly qualified, commissioned and acting, _____ and _____, husband and wife, to me well known as the GRANTOR(S) in the foregoing easement and stated that they had executed the same for the consideration and purposes therein mentioned and set forth.

WITNESS my hand and official seal on this ____ day of _____, 1984.

Notary Public

My Commission Expires:

(SEAL)

**Little Rock
Wastewater
Utility**



221 E. Capitol
Little Rock, Arkansas 72202
501/376-2903
FAX # 501/376-3541

**Re: Revisions To Standard Specifications
Effective January 1, 1992**

Dear Sirs:

Little Rock Wastewater Utility has revised part of the Utility's Standard Specifications. Attached with this letter are four Sections that have been revised by the Utility and will be placed into effect on January 1, 1992. Listed below is a brief description of each section and what part of the existing specifications each new section will replace:

SECTION 00100 - SPECIFICATIONS FOR DEVELOPER FUNDED PROJECTS

This section replaces Sections G1.0, G2.0, G3.0, G4.0, G5.0, G6.0, and G7.0 of the existing Standard Specifications. This section details the specifications, requirements, fees, and documentation required to submit, approve, construct, and accept a main extension project within the service area of the Little Rock Wastewater Utility. This section contains the PAGIS requirements for all projects submitted to the Utility after January 1, 1992.

SECTION 00200 - PUMP STATION SPECIFICATIONS

This section replaces Section G9.0 of the existing Standard Specifications. This section contains all requirements and specifications for new pump stations within the service area of the Little Rock Wastewater Utility.

SECTION 00300 - FEES

This section replaces Section S7.0 of the existing Standard Specifications. This section stipulates fees charged by the Little Rock Wastewater Utility for connection of any facility to the City sewer.

Re: Revisions to Standard Specifications
November 29, 1991
Page 2

SECTION 03500 - SPECIAL STRUCTURES AND BUILDING SEWERS

This section replaces Section S6.0 of the exiting Standard Specifications. This section discusses sand traps and grease interceptors.

These are the only sections revised at this time. The Utility will publish a complete set of Revised Standard Specifications in 1992. The sections listed above will be in effect on January 1, 1992.

If you have any questions or comments, please feel free to call.

Sincerely,

LITTLE ROCK WASTEWATER UTILITY



James Boyd, P.E.
Engineering Supervisor
Construction Administration and New Mains

enc

SECTION 00100

REQUIREMENTS FOR DEVELOPER FUNDED PROJECTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This part of these specifications stipulates general requirements for the preparation of reports, drawings, specifications, inspections, and final approval of any proposed sanitary sewer lines, appurtenances, or other structures that are within the jurisdiction of the Little Rock Wastewater Utility. Any deviations from the requirements set forth herein will be approved only by written authorization from the Little Rock Wastewater Utility. Special conditions may arise on any project that are not covered in these specifications or that may require special consideration. In such cases complete details as to materials, methods of construction, or other procedures shall be submitted to the Little Rock Wastewater Utility for their review and approval prior to the start of any construction.
- B. Standard construction details are incorporated and made a part of these specifications and shall become a part of the standard requirements for sewer line construction.
- C. Where reference is made to a particular industry specification (ASTM, etc.), it is hereby understood that reference is made to the latest revision in effect.

1.02 DEFINITIONS

- A. Little Rock Wastewater Utility - The sewer collection system, treatment facilities, operational equipment and staff of the Wastewater Utility under the jurisdiction of the Sanitary Sewer Committee of the City of Little Rock, Arkansas, hereinafter referred to as "Utility".
- B. Manager - The chief executive of the Little Rock Wastewater Utility.
- C. Developer - Individual, partnership, corporation, or other legal entity such as an improvement district desiring to construct sanitary sewer facilities for immediate or contemplated future inclusion in the Little Rock Wastewater Utility.
- D. Engineer - Individual registered to practice engineering in the State of Arkansas.

- E. PAGIS - The Pulaski Area Geographic Information System, a computerized geographic information system developed by the City of Little Rock, Little Rock Municipal Water Works and Little Rock Wastewater Utility.
- F. ASTM - American Society for Testing and Materials.
- G. AASHTO - American Association of State Highway and Transportation Officials.
- H. ANSI - American National Standard Institute.
- I. Resident Inspector - Individual with at least 2 years experience in the following: 1.) Construction of Sanitary Sewers, 2.) Field supervision of the surveying associated with constructing sewers.

1.03 CONFORMITY

All drawings, specifications, and construction procedures shall conform to the standards as established by the Little Rock Wastewater Utility. All drawings and specifications shall be completed by a Professional Engineer registered in the State of Arkansas. The Engineer's seal shall be on all drawings and specifications submitted as approval drawings or as As Built drawings.

PART 2 - JURISDICTION

2.01 AREA OF JURISDICTION

These general requirements for sanitary sewer lines shall be required for the area within the city limits of Little Rock, Arkansas, as may be changed from time to time and those areas outside the city limits whose sewage is to be treated by the Little Rock Wastewater Utility treatment facilities or may at some time in the future become a part of the Little Rock Wastewater Utility.

PART 3 - DRAWINGS AND SPECIFICATIONS

3.01 DESCRIPTION

This part of the specifications covers the requirements of submission to the Little Rock Wastewater Utility of drawings and specifications in order to obtain approval of a Developer Funded Project.

3.02 DESIGN STANDARDS

All projects submitted to the Little Rock Wastewater Utility shall be-designed according to the following criteria:

$$Q(\text{Max}) = [P * D * 100 \text{ gpcd}] + [1500 \text{ gpda} * A]$$

where:

Q(Max) = Design Flow
P = Ten State Standards Peaking Factor
D = Projected Population Density of the fully developed watershed (persons/acre)
A = Total acreage of the upstream watershed
100 gpcd = 100 gallons per person per day domestic flow (Ten State Standards)

1500 gpda = 1500 gallons per day per acre of watershed for Infiltration/Inflow

Population projections should be based upon proposed "zoning" of the development. In areas where "zoning" information is not available population densities less than eight (8) persons per acre will not be accepted without supporting documentation.

3.03 PRELIMINARY REPORT

- A. When requested by the Utility, the Engineer shall prepare and submit a preliminary engineering report prior to approval of construction plans. The report shall conform to accepted engineering criteria including the "Recommended Standards for Sewage Works", published by the Great Lakes - Upper Mississippi Valley Board of State Sanitary Engineers, latest revision. This publication is commonly referred to as "The Ten States Standards".
- B. The size, scope, and contemplated land use of the proposed development will determine the need for a preliminary report.

3.04 SUBMITTAL REQUIREMENTS FOR CONSTRUCTION PLAN APPROVAL

- A. A Letter of Transmittal shall be submitted detailing all items submitted to the Utility for review and approval of the project. The project name and the date submitted to the Utility shall be shown on the Letter of Transmittal.
- B. An 8 1/2 x 11 copy of a quad-sheet showing the drainage basin being served by the proposed main extension. The total number of acres served should be shown on the drawing.
- C. A preliminary unit cost breakdown which must match plan quantities submitted on the construction drawings.

- D. Three sets of D-size (24x36) construction drawings containing the following:
1. An Overall Project Map including the following items:
 - a. Vicinity Map
 - b. Lot breakdown and proposed lots to be served. All lots to be served shall be capable of obtaining service by means of gravity flow through individual service lines. If any lot cannot be served by gravity flow it should be noted on the plans and approval must be obtained from the Utility. A lot will be considered to be served by gravity when the ground level of the proposed residence or commercial building can be served by gravity without the aid of any pumping apparatus. No service line to a lot shall cross any adjoining lot without approval from the Utility.
 - c. Location and size of existing sewers.
 - d. Location, size, length, and grade of proposed sewer segments.
 - e. Bar scale and north arrow.
 - f. Title block containing project name, project number, and date.
 2. Plan-profile sheets of sewers including the following items:
 - a. Vertical scale of 1" = 10' or 1" = 5'.
 - b. Plan scale of 1" = 100' or larger.
 - c. Elevations based on Mean Sea Level. (NGVD-29 Datum)
 - d. Location of other Utilities on both the plan and the profile.
 3. Standard Little Rock Wastewater Utility detail sheet.
- E. Two (2) sets of specifications on construction procedures, materials, and testing, or a statement by the Engineer contained on the drawings that the work will conform to Little Rock Wastewater Standard Specifications.
- F. A review fee of 1.0% of the estimated cost of the proposed sanitary sewer work with a maximum of \$500.00 and a minimum of \$50.00.
- G. All submittals not conforming to these requirements shall be returned to the Engineer for corrections and resubmittal.

- H. Preliminary sanitary sewer drawings located in the City of Little Rock public rights-of-way must be submitted to the City of Little Rock, Director of Public Works for review and approval, if required by the City of Little Rock Standards.

3.05 CONSTRUCTION PLAN APPROVAL LETTER

- A. Upon approval of the project by the Utility, one (1) set of drawings will be returned to the Engineer along with an approval letter stating any specific items that must be adhered to for the Utility's approval of the project. The drawings shall be stamped by the Utility as reviewed and accepted for construction. Any items that are required to be added or changed will be shown in red on the drawings. The project shall be constructed in accordance with the approved drawings. Any portion of the project constructed in any way other than shown on the approved drawings shall not be accepted by the Utility unless prior written approval is given by the Utility for any major change in alignment, grade, elevation, or type of pipe. Minor field changes that do not change the original concept of the project may be made with the approval of the Engineer of Record.
- B. Attached with the approval letter will be two (2) copies of a Main Extension Agreement which must be signed by the Owner of the project and returned to the Utility with all required fees shown in the Agreement. No construction shall begin on the project until the Agreement is signed and returned to the Utility.
- C. If applicable the owner shall be eligible to enter into a Reimbursement Agreement at the end of the construction period. A representative of the Engineering Services Department of the Utility will be available to meet with the owner of the project and the Engineer to discuss the procedure for entering into a Reimbursement Agreement prior to final acceptance of the project.
- D. The approval letter shall be in force for a period of one (1) year. If construction of the project has not begun within the one (1) year period the Utility's approval of the project will expire. The project will be resubmitted to the Utility for its review when the project is ready for construction. Resubmittal of an expired project must follow the same procedure as if the project had never been submitted previously, including a new review fee.

PART 4 - INSPECTION AND LAYOUT OF THE PROJECT

4.01 ENGINEER RESPONSIBILITY

The Engineer who prepared and submitted the construction drawings and specifications and to whom the approval letter was sent shall be responsible for construction layout, general supervision, and resident inspection of the project. Continuous project responsibility shall be an expressed condition of project approval. The Engineer's responsibility shall extend through submittal of "as built" drawings and final acceptance of the project by the Utility. Should the Engineer of record be removed from the project by the Owner for any reason, no construction will be performed on the project until the Owner has acquired the services of another Engineer and notified the Utility in writing of such action. Construction of any portion of a project without the assistance of an Engineer shall be cause for rejection of that portion of the project by the Utility.

4.02 CONSTRUCTION LAYOUT

The layout and staking of the construction work shall be completed by trained and qualified survey personnel under direct supervision of the Engineer. Such layout and staking shall consist of all items necessary to attain proper alignment and grade of the project.

4.03 GENERAL SUPERVISION

All Developer Funded Projects shall be constructed under the general supervision of a Professional Engineer registered in the State of Arkansas. General supervision shall consist of, but not limited to, periodic visits to the project to determine if the work is proceeding in accordance with the approved plans and specifications and with the standards set forth by the Little Rock Wastewater Utility. Any defects, deficiencies or irregularities in the project found by the Engineer or reported to the Engineer by his inspector shall be reported to the Little Rock Wastewater Utility. Actions shall be taken to correct any and all deficiencies and the Engineer shall notify the Utility of any action taken.

4.04 RESIDENT INSPECTION

A. Project inspection is an integral part of the Engineer's responsibility. The Engineer may choose between providing full time resident inspection or periodic inspection, but whichever he chooses it shall be his duty through his inspector to ensure that the project complies with the approved drawings and specifications. The Engineer nor his inspector shall give per mission for any major changes in the approved drawings without obtaining written permission from the Utility.

- B. All projects within the jurisdiction of these requirements shall at all times be subject to the general inspection by the Little Rock Wastewater Utility. The frequency of visits and the number of hours required for Utility personnel at the project site shall be determined by the nature of the project being constructed.

PART 5 - EXISTING UTILITIES

5.01 PROXIMITY

All drawings shall be drawn in such a manner that all known utilities are shown using the best available information including utility maps, field surveys, or other sources of information. Sanitary sewer lines shall be kept a minimum horizontal distance of five (5) feet from all underground utilities except water lines. Relation to waterlines shall be as stated in Section 5.02.

5.02 SEWER MAIN IN RELATION TO WATER MAINS

- A. Whenever possible, sewers should be laid at least ten (10) feet, horizontally, from any existing or proposed water main. Should local conditions prevent a lateral separation of ten (10) feet, a sewer may be laid closer than ten (10) feet to a water main if:
1. It is laid in a separate trench.
 2. Approval is obtained from the Little Rock Wastewater Utility and the Arkansas Department of Health.
 3. In all cases the elevation of the crown of the sewer must be at least eighteen (18) inches below the invert of the water main.
- B. Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least eighteen (18) inches below the bottom of the water main. When the elevation of the sewer cannot be buried to meet the above requirement, the sewer main shall be constructed using ductile iron pipe for a distance of ten (10) feet on each side of the water main. One full joint of the ductile iron sewer line should be centered under the water main so that both joints will be as far from the water as possible.
- C. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer main shall be constructed of mechanical joint ductile iron pipe. All construction shall be subject to review and inspection by both the Little Rock Wastewater Utility and the Little Rock Water Works.

PART 6 - RULES AND REGULATIONS

6.01 LAWS, REGULATIONS, AND ORDINANCES

All Federal, State, County, or City Laws, Regulations, or Ordinances shall be complied with on all sewer projects. This shall include, but not be limited to the obtaining of approval from the Arkansas State Health Department and the Arkansas Department of Pollution Control and Ecology. Responsibility for submission to and approval by the Arkansas State Health Department and the Arkansas Department of Pollution Control and Ecology shall be the Engineers, including payment of any applicable fees.

6.02 PERMITS AND LICENSES

- A. All permits and licenses required by any Federal, State, County, or Local Governing Body shall be obtained in strict accordance with the requirements of the governing agency. When required by the licensing agency, the Little Rock Wastewater Utility will assist in application for permits and licenses, but the cost of any permit, fee, or bond required will be borne by the Developer.
- B. Any installation of sewer lines or sewer facilities related thereto proposed by Developer may be subject to connection fees, additional charges, or approval by adjoining or nearby property owners or third parties, such as a sewer improvement district. Such an improvement district is a separate, distinct legal entity which the Little Rock Wastewater Utility and/or the Little Rock Sanitary Sewer Committee do not operate or control. Little Rock Wastewater Utility and Little Rock Sanitary Sewer Committee hereby disclaim any duty, obligation, or liability of any nature whatsoever to determine the existence, status, or amount of any fees which may be due third parties such as improvement districts which may be owed in addition to those fees due to Little Rock Wastewater Utility for Sewer lines and/or sewer facilities installation proposed by Developer.

PART 7 - PROJECT ACCEPTANCE BY THE UTILITY

7.01 GENERAL

This part of the specifications covers the requirements for final inspection and acceptance of the sanitary sewerage facilities upon completion of the project. No connection of customer facilities or other utilization of sewer main extensions will be permitted by the Utility until a letter of acceptance is issued. The following sections describe the requirements that must be met before an acceptance letter can be issued by the Utility.

7.02 LEAKAGE TEST

- A. Methods of testing the sewer mains are outlined in Section 02734 of these specifications. All leakage tests shall be conducted in the presence of a representative of the Little Rock Wastewater Utility.
- B. All leakage tests must be scheduled through the Little Rock Wastewater Utility. Twenty-four (24) hours notice shall be given prior to commencing any tests. The Utility shall furnish a standard gauge to be used in the air pressure test as described in Section 02734 Paragraph 3.03 of these Specifications.
- C. When the proposed sewer main successfully completes the Leakage Test Utility personnel will conduct a Preliminary Inspection of the project and complete a "Punch List" of all deficiencies found on the project. This list of deficiencies will be forwarded to the Engineer of the project.

7.03 VISUAL INSPECTION/TELEVISIONING

After the leakage test has been successfully completed, the Utility will televise those sections of the project they feel necessary. All sections using PVC pipe will be televised by the Utility. Any defects caused by poor materials or workmanship will be cause for rejection. The videotape will be reviewed by the Utility's Engineering Services Section and will be kept on file as a reference. A list of defects will be forwarded to the Engineer of the project. Televising the project by the Utility will be placed on the televising schedule as possible after the leakage test has been completed. Each project will be televised according to the Utility's schedule. The Utility will endeavor to televise each project as soon as possible, but delays may occur depending on the amount of projects scheduled at any one time.

7.04 AS-BUILT DRAWINGS

- A. After completion of the project, one (1) complete set of mylar reproducible as-built drawings shall be furnished to the Little Rock Wastewater Utility for record purposes by the Engineer of record for the project.
- B. The size and scale of the drawings shall be the same as described in Section 00100 Part 3.04 of these specifications for construction plan approval. The size and type of pipe for each section of sewer main shall be shown on the as-builts. Manhole stations shall be shown on all As Built drawings including the Overall Project Map.

- C. The following items shall be shown on the as-built drawings and shall be checked by Utility personnel before accepting the as-builts as complete:
1. The length and slope of each section of the project shall be shown on the as-built drawings.
 2. Elevations of all manhole rims and inverts shall be shown on the as-built drawings. All elevations shall be tied to the National Geodetic Vertical Datum 1929 Adjustment (NGVD29) and tied into PAGIS Geodetic Control Network to Third Order accuracy.
 3. All manholes shall be located with coordinates using the Arkansas State Plane Coordinate System - North Zone - NAD-83 Adjustment with a maximum allowable positional error of 1.0 foot. Copies of As-Built field notes and calculations showing how each manhole was located will be submitted to the Utility with the as-builts.
 4. All sanitary sewer service lines shall be shown on the as-built drawings both in distances from manholes and in distance from property corners along the street right-of-way or along lot lines. The depth of the end of the service below natural ground shall be clearly shown on the as-built drawings. The exact location of all sanitary sewer service lines shall be accurately identified in the field at the property line in order that the location can be easily found when the connection is made. Service lines should be installed to provide sufficient clearance from other utilities and provide sewer service by means of gravity flow for each property within the project.
- D. All the horizontal and vertical data supplied with the as-built drawings shall be tied into an approved PAGIS geodetic control network monument. This may be accomplished by tying directly into a PAGIS monument or tying the manholes to property corners within a subdivision that has been tied to the PAGIS geodetic control network.
- E. Only sewer mains as they were constructed shall be on the as-built drawings. The as-built drawings shall be clean of all unnecessary items and shall show only the sewer lines and services as they were constructed.

7.05 FINAL INSPECTION

- A. Before sanitary sewer extensions are accepted for maintenance and new service line connections to these extensions approved, a final inspection will be made by Utility personnel. The final inspection will not take place until the as-built drawings are submitted to the Utility and have been reviewed by Utility personnel.

- B. The final inspection shall not be scheduled until requested by the Engineer of record for the project. The final inspection shall be scheduled by the Engineer with the Utility at least twenty-four (24) hours in advance. Prior to the Engineer scheduling the final inspection the Engineer shall assure him self that all discrepancies noted on the television tapes and on the preliminary inspection performed by the Utility have been corrected.
- C. A list of workmanship and material defects, if any, will be forwarded to the Engineer. Defects noted must be corrected before acceptance.
- D. Improvements found not as depicted on the submitted as-built drawings shall not be accepted. No portion of a project will be accepted prior to acceptance of the entire project.

7.06 FINAL PAY ESTIMATE

Upon completion of the project the Engineer shall submit one (1) copy of the final construction pay estimate to the Little Rock Wastewater Utility. The estimate should clearly match the as-built quantities and unit prices.

7.07 SEWER MAINTENANCE BOND

- A. Upon completion of the project and after all defects have been corrected in accordance with the final inspection, a maintenance bond in an amount equal to 50% of the construction cost as indicated on the final pay estimate shall be forwarded to the Little Rock Wastewater Utility.
- B. The period of the bond shall be for one year and shall cover all defects in materials and workmanship. The bond shall be binding on the developer or the contractor.
- C. If, in the judgement of the Little Rock Wastewater Utility, construction of a sewer main, which totals less than five hundred (500) lineal feet or the total construction cost is less than \$5000, meets the applicable specifications stated herein, the maintenance bond may be waived.
- D. An inspection of the project may be made by the Little Rock Wastewater Utility before the expiration of the maintenance bond. A list of any defects in material or workmanship found during this inspection will be forwarded to the contractor and if the contractor fails to act on the list of defects a notice filed with the bonding company. As soon as all defects found are corrected the Little Rock Wastewater Utility will release the maintenance bond.

7.08 EASEMENTS

- A. Where sanitary sewer lines are not placed in public rights-of-way or platted in a platted subdivision in a common utility easement, a permanent easement shall be acquired for the Little Rock Wastewater Utility and dedicated for the purpose of maintaining the sewer lines. The easement shall be an exclusive sanitary sewer easement and common utility easements shall not be approved.
- B. Sanitary sewer easements shall have a minimum width of 10' or the width of the maximum depth to the sewer flowline whichever is greater. Where practicable, easements of maximum width possible will be provided to allow access to all manholes.
- C. All easements shall be on the standard Little Rock sanitary sewer easement form. All easements for sanitary sewer lines shall be in favor of the City of Little Rock, Arkansas for the use and benefit of the Sanitary Sewer Committee.
- D. A Final Plat of the subdivision that contains the sewer mains may be filed with the Utility in lieu of easements. The Final Plat must meet all requirements of the City of Little Rock's Ordinance concerning final plat's (latest addition). All easements used for the installation of sewer mains on the plat shall be shown as "Utility Easements".
- E. Easements or Final Plats may not be filed with the Utility until construction of the project is complete and the project has met all other requirements for acceptance listed in these specifications.

7.09 BILL OF SALE

- A. Upon completion of the project the Developer shall complete a Bill of Sale as shown in Section 00860 Standard Documents of these specifications. The Bill of Sale shall transfer ownership of the project to the Little Rock Wastewater Utility and be signed by the Developer (Owner) and notarized by a Notary Public prior to delivery to the Utility.
- B. No project will be accepted by the Utility for connection to the Utility's system until such time as the Bill of Sale has been delivered and accepted by the Utility.

7.10 CERTIFICATE OF AFFIDAVIT

- A. Upon completion of the project the Developer and the Engineer shall complete a Certificate of Affidavit as shown in Section 00860 Standard Documents of these specifications. The Certificate of Affidavit shall be delivered to the Utility after the Owner and the Engineer have completed the appropriate sections of the document.
- B. The total sum of the project as shown on the Certificate of Affidavit shall match the Final Cost Estimate prepared by the Engineer and submitted to the Utility.
- C. No project will be accepted by the Utility for connection to the Utility's system until such time as the Certificate of Affidavit has been delivered and accepted by the Utility.

7.10 ACCEPTANCE LETTER

- A. All projects will be issued an acceptance letter from the Little Rock Wastewater Utility when they have completed or submitted all items listed above. No portion of a project shall be put into service without written approval from the Little Rock Wastewater Utility.
- B. Approval of the use of a completed portion of a project will only be given in the best interest of the Utility and such approval for the use of completed portions of the project does not constitute acceptance of the entire project by the Utility.

END OF SECTION 00100

SECTION 00200

PUMP STATION SPECIFICATIONS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section stipulates features, design considerations, and other requirements for utilization of pumping facilities receiving sewage from gravity sewers 18" in diameter or less. Pumping facilities receiving sewage from larger diameter sewers will be reviewed by the Utility's Engineering Services Division on a case by case basis.
- B. No pump station of the size indicated above shall be allowed unless constructed in conformance with these specifications.
- C. Shop drawings and the Engineer of Record's design calculations must be approved by the Little Rock Wastewater Utility prior to ordering materials and construction of the pump station.

1.02 GENERAL REGULATIONS

- A. Pumping stations may be installed only where gravity sewer service is not available in the opinion of the Utility and then only with written approval from the Little Rock Wastewater Utility.
- B. Any pumping station that is serving two or more parcels of property shall be owned and/or maintained by the Little Rock Wastewater Utility.
- C. Clear title conveyance of the pump station to the Little Rock Wastewater Utility shall be provided upon acceptance of the project. (Temporary stations may revert to the Developer upon abandonment.)
- D. The operation and maintenance expenses for the pump station must be paid for in addition to the monthly sewer service charges paid by the benefiting customers in one of two ways:
 - 1. If installed by an improvement district, clauses may be placed in the formation of the District to insure payment of these costs on a regular basis and to insure that the district continues to function so long as the pump station is in operation.

2. If installed by a Developer or other investment concern or individual, a maintenance district as outlined in Section 1.02.D.1 above may be formed or the Developer may deposit, in advance, the estimated operation and maintenance costs for the estimated service life of the station.

E. A deposit equal to the estimated expense the Utility will incur for the purchase and installation of remote pump station-monitoring equipment shall be provided before project acceptance.

1.03. DESIGN

A. The design of pump stations to be owned, operated, and maintained by the Little Rock Wastewater Utility shall comply with following general requirements.

1. Pump Station structures and electrical and mechanical equipment shall be protected from physical damage by the one hundred (100) year flood. Stations should remain fully operational and accessible during the twenty-five (25) year flood.

2. The pump station shall be readily accessible by maintenance equipment during all weather conditions. Sufficient area for vehicular parking and turnaround shall be provided at the pump station site. "All weather" surfacing shall be provided on parking area as well as the access drive.

3. Fencing shall be provided around pump station structures and electrical and mechanical equipment. Fencing shall be six (6) foot chain link with three top strands of barbed wire. Alternate fencing types may be used upon approval of the Engineering Services Division. The minimum acceptable width for access gates shall be ten (10) feet.

4. An automatic night light ("Night Watcher" or similar) and a potable water supply shall be provided at the pump station site. Backflow prevention requirements on the potable water supply shall comply with the requirements of Little Rock Municipal Water Works.

5. Three phase electrical power free of rate encumbrances must be provided. Electrical systems and components (e.g. motors, lights, cables, conduits, switch boxes, etc.) located in raw sewage wet wells or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present, shall comply with the "National Electrical Code" requirements for Class 1 Group D, Division 1 locations. All wiring must be in accordance with the latest revisions of the "National Electrical Code" and the "City of Little Rock Electrical Code". A fused disconnect switch located above ground shall be provided for the pump station. When such equipment is exposed to weather, it shall meet the requirements of weatherproof equipment (NEMA 3R). All electrical enclosures subject to weather or corrosive gases shall be constructed of corrosion resistant material.
6. The pump station shall be of the submersible or wet well/dry well type. Other types of stations may be approved by the Utility's Engineering Services Division where circumstances justify their use.
7. The pump station must contain at least two pumps designed for pumping sewage. Except where grinder pumps are used, the pumps must be capable of passing spheres of a least three (3) inches in diameter. Pump suction and discharge piping shall be at least four (4) inches in diameter. Grinder pumps shall not be allowed if pump station design capacity exceeds ninety (90) gallons per minute. Pumps shall be under a positive suction head during normal operation.
8. Control systems shall be of the air bubble type or the encapsulated float type. Control systems shall be designed for the use intended, factory wired, fully adjustable, and capable of providing fail-safe operation. Control systems shall minimally have five (5) set points (Low level alarm, All "Off", Lead "On", Lag "On", High level alarm). Provisions shall be made to automatically alternate the "Lead" pump. The electrical equipment shall comply with Section 1.03.A.5.

9. The wet well size and control setting shall be appropriate to avoid heat buildup in the motor due to frequent starting and to avoid septic conditions due to excessive detention times.
 10. The wet well floor and pump intakes shall be designed to prevent deposition of solids. The wetwell floor shall have a minimum slope of one to one to the hopper. The horizontal area of the hopper bottom shall not be greater than what is necessary for proper installation of inlets or submersible pumps.
 11. A sign identifying the Pump Station name and Little Rock Wastewater Utility as the Owner shall be provided and clearly displayed.
 12. Temporary pump stations serving sanitary sewers that will be connected to future gravity lines shall be designed in a way that will allow conversion with minimum construction.
- B. Submersible pump stations shall comply with the general provisions set forth in Section 1.03.A. Submersible pumps shall be designed specifically for raw sewage use, including totally submerged operation during a portion of each pump cycle. An effective method to detect shaft seal failure or potential failure shall be provided, and the motor shall be of squirrel-cage type design without brushes or other arc-producing mechanisms. Pump motor power cables shall be specifically designed for submersible pump applications and shall be properly sealed and insulated. Motor control centers for submersible pumps shall be located outside the wet well and be protected by a conduit seal to prevent the atmosphere of the wet well from gaining access to the control center. Submersible pump stations shall, as a minimum, include the following accessories.
1. Check valves and resilient seat gate valves on the discharge line of each pump. The check valve shall be installed between the gate valve and the pump and shall be suitable for the material handled. Check valves and gate valves shall be located in a separate valve pit drained to the soil. Separate valve pits will not be required on grinder stations.
 2. Ductile iron influent line.

3. Stainless steel guide rails.
 4. Wet well vent to atmosphere.
- C. Wet well/dry well pumps stations shall comply with the provisions set forth in Section 1.03.A. Dry wells, including their super structure, shall be completely separated from the wet well. Provisions shall be made to facilitate removal of pumps, motors, and other mechanical and electrical equipment. Suitable and safe means of access shall be provided to dry wells, and to wet wells containing mechanical equipment that requires inspection and maintenance. As a minimum, the following accessories are shall be included in wet well/dry well stations.
1. Check valves and resilient seat gate valves on the discharge line of each pump. Check valves shall be located between the pump and the gate valve.
 2. Resilient seat gate valve on the suction line of each pump.
 3. Float controlled dry well sump pump discharging into the wet well.
 4. Adequate lighting switched at the dry well entrance.
 5. Thermostatically control electric heat.
 6. Dehumidifier.
 7. Ductile iron influent line.
 8. Intermittent mechanical ventilation of dry well providing 30 complete air changes per hour. "On" switch for ventilation shall also be located a dry well entrance.
 9. Wet well vent to atmosphere.
- D. Design of force mains shall comply with the following requirements.
1. Minimum pumping rate shall result in a velocity of at least two (2) feet per second and not greater than five (5) feet per second.
 2. The physical elevation of the force main should not exceed the hydraulic grade line at any location along the force main's length.

3. Automatic air relief valves designed for use with sewage shall, at a minimum, be installed at high points of the force main. Air relief valve assemblies shall include inlet and outlet ports for backflushing, and isolating valves to facilitate inspection and repair.
4. Friction losses through force mains shall be based on the Hazen-Williams formula and actual pipe diameters. Hazen-Williams "C" values of 120 and 100 for PVC and Ductile iron, respectively, shall be used for design. When initially installed force mains will have significantly higher "C" values. Designs should be checked at "C" values of 150 and 130 for PVC and Ductile Iron, respectively, to determine power and net positive suction head requirements.
5. A ten (10) foot horizontal separation shall be maintained between potable water mains and sewage force mains. Where water mains and force mains cross, force mains shall be laid to provide a distance of eighteen (18) inches between the outside of force main to the outside of the water main. Both joints of the force main shall be located as far as possible from the water main.
6. Force main materials, installation, and testing shall comply with applicable provisions in Sections 02220, 02610, 02730, and 02734.

END OF SECTION 00200

SECTION 00300

FEEES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section stipulates fees charged by the Little Rock Wastewater Utility for connection of any facility to the City sewer.
- B. Connection of any facility shall be preceded by payment of all applicable fees.

1.02 DEFINITIONS

- A. Little Rock Wastewater Utility - The sewer collection system, treatment facilities, operational equipment and staff of the Wastewater Utility under the jurisdiction of the Sanitary Sewer Committee of the City of Little Rock, Arkansas, hereinafter referred to as "Utility".
- B. City Sewer - A public sanitary sewer in which all owners of abutting properties have equal rights and is maintained and controlled by the Little Rock Wastewater Utility. No sewer smaller in diameter than six (6) inches shall be considered a city sewer.
- C. Permit - Authorization issued to a plumber or contractor upon request allowing installation of a building sewer to connect to the Little Rock Wastewater Utility system of city sewers.

PART 2 - FEES

2.01 PERMIT AND INSPECTION FEES

- A. The permit and inspection fees for residential, commercial and other non-industrial connections shall be \$25.00.
- B. The permit and inspection fee for industrial connections shall be \$45.00.
- C. All permit and inspection fees mentioned above include one field inspection. All additional field inspections required shall cost \$15.00 for each inspection.

2.02 TAPS

All sewer main taps shall be performed by Utility personnel at a cost of \$100.00 each.

2.03 SEALS

Building sewer seal permits shall be acquired from the Utility at a cost of \$75.00 each.

2.04 CONNECTION FEES

A. Residential Dwelling Units including single and multifamily homes, condominiums, apartments, mobile homes, or any other residential unit shall be charged a fee of \$100.00 for connection to the Utility's system.

B. Hotels and Motels shall be charged the following fees for connection to the Utility's system:

First Unit	\$100.00
Each additional Unit	\$ 50.00

C. The fee for connection of a commercial, industrial or other nonresidential user to the Utility's system shall be based upon the domestic use water meter required. The following is a chart of connection fees based on domestic water meter size:

5/8" meter	\$ 100.00
3/4" meter	\$ 150.00
1" meter	\$ 250.00
1 1/2" meter	\$ 500.00
2" meter	\$ 800.00
3" meter	\$ 1,600.00
4" meter	\$ 2,500.00
6" meter	\$ 5,000.00
8" meter	\$ 8,000.00
10" meter	\$11,500.00

D. Any new connections or additions to existing facilities which are currently served by the sewer system, but which will not require installation of any additional or larger water meter shall pay a connection fee equivalent to the meter required for the additional load as determined by the Utility. If a connection fee has been paid in the past for the water meter now in service, no additional connection fee is required.

2.05 CAPACITY CONTRIBUTION FEES

A. Capacity Contribution Fees are calculated specifically for each project.

B. The procedure for calculating the Capacity Contribution Fees are as follows:

1. For the basin, the collection system's maximum flow capacity is determined.

2. Given a location in the basin and the proposed area served, a design capacity (GPM/acre) is determined.
 3. The proposed development is evaluated on the basis of its flow contribution.
 4. Capacity needed in excess of the design capacity is charged to the development based on the current cost to restore that capacity.
- C. Capacity Contribution Fees must be paid by the Developer prior to any construction taking place on a project.

2.06 REIMBURSEMENT FEES COLLECTED BY THE UTILITY

The Utility is required to collect pro-rata acreage fees for connection to specific projects that have entered into an Extension Reimbursement Agreement with the Utility. These charges will vary depending on the specific project and its location. This information is available from the Utility upon request. All such charges will be paid by the Developer when he signs the Main Extension Agreement. No construction may begin on any project unless all pro-rata acreage charges are paid by the Developer.

END SECTION 00300

SECTION 03500

SPECIAL STRUCTURES FOR BUILDING SEWERS

PART 1 - GENERAL

1.01 WORK INCLUDED

This Section covers the construction of special structures used in building sewers.

1.02 RELATED WORK

- A. Section 00850 - Standard Detail Drawings & Tables
- B. Section 02605 - Manholes
- C. Section 02610 - Pipe and Fittings
- D. Section 02730 - Sanitary Sewer Pipelines
- E. Section 02732 - Sanitary Sewer Service Lines

1.03 DEFINITIONS

- A. Grease Interceptor - A device required for the proper handling of liquid wastes containing grease in excessive amounts.
- B. Sand Trap - A device required for vehicle washing facilities or other grit producing discharges to the City Sewer.
- C. City Sewer - A public sanitary sewer in which all owners of abutting properties have equal rights and is maintained and controlled by the Little Rock Wastewater Utility. No sewer line smaller than six (6) inches in diameter is a city sewer.

PART 2 - PRODUCTS

2.01 MANHOLES

- A. Manholes shall be required at the junction of two or more six (6) inch or larger lines. In consideration of building sewer length and waste characteristics, a manhole may be required on the upper end of a building sewer greater than four (4) inches in size.
- B. Manholes shall be constructed at spacings not to exceed four hundred (400) feet and at changes in alignment or grade on building sewer larger than four (4) inches unless the requirements of Section 02732 Paragraph 3.03 F. of these specifications are met.

- C. Connection of a building sewer larger than four (4) inches to a City Sewer shall be accomplished by means of a manhole.

2.02 SAND TRAPS

- A. Connection of vehicle washing facilities or other grit producing discharges to the City Sewer shall be preceded by a sand trap constructed as shown in Section 00850 Standard Detail Drawings and Tables of these specifications. The sand trap or any open grating must be located so as to completely exclude the possibility of rainwater entering the sewer.
- B. No connections may be approved to the City Sewer which will allow the entrance of rainwater into the sewer.

2.03 GREASE INTERCEPTORS

- A. In accordance with the City of Little Rock Ordinance #14,129, grease interceptors or traps shall be required for the proper handling of liquid wastes containing grease in excessive amounts except that such interceptors shall not be required for private living quarters or dwelling units.
- B. All grease interceptors shall be routinely maintained to prevent the discharge of grease in excess of 100 mg/liter to the City Sewer. When a grease interceptor is required, a detailed plumbing fixture plan must be submitted to the Utility for review. Grease Interceptors shall be constructed as shown in Section 00850 Standard Detail Drawings and Tables of these specifications.
- C. Calculations for the minimum grease interceptor size shall be made using the Drainage Fixture Unit Values (FU) as assigned by the Uniform Plumbing Code. The maximum FU shall be a total of all fixtures connected to the grease trap. Common Fixture Unit Values are shown in the following Table:

FIXTURE UNIT VALUES

<u>Kind of Fixture</u>	<u>Units</u>
Floor Drains (each)	3
Bar Sinks	2
Wash Sinks	3
Lavatories (hand wash sinks)	1
Garbage Grinders	2
Dishwashers	Assign from Manufacturer's specs
Constant Flow	2 per each GPM
Misc. Fixtures	Consult LRWU

- D. For those plumbing fixtures which do not have a specific assigned value in the table shown above and have a flow which is not constant, a value will be assigned by dividing the fixtures' maximum flow in gallons per minute (GPM) by 7.5 and rounding the number up to the nearest whole number. For those fixtures which have a constant flow through the work day, the FU shall be computed by assigning two (2) fixture units for each gallon per minute (GPM) of flow.
- E. All garbage grinders which are connected to the grease interceptor will be assigned a fixture unit value of 2 as shown in the above table in addition to the rated value of the sink.
- F. To Compute the minimum size of the grease interceptor, take the total fixture unit value to be connected to the trap and multiply by 7.5 GPM to figure the maximum possible flow to the trap. The Little Rock Wastewater Utility requires a minimum of twelve (12) minutes of detention time for a properly operating grease interceptor, with a minimum size of 500 gallons. To determine the interceptor size in gallons, multiply the maximum possible flow into the interceptor by 12 minutes.
- G. All grease interceptors shall be designed under the following conditions:
1. Must contain two chambers, with the first chamber containing two-thirds of the volume, and the second chamber containing the final third.
 2. All piping for the grease interceptor shall be external.
 3. Accompanying all design data shall be a site plan that shows the grease interceptor size, fixture unit analysis, and flow calculations.

END OF SECTION 03500

C Installation, Testing, & Inspection of New & Rehabilitated Sewers

*The specification requirements for Installation,
Testing, & Inspection of New & Rehabilitated
Sewers are included in the Little Rock Wastewater
Utility Specification Requirements for Sanitary
Sewers, 1986, as produced in B(2)*

SEWER SERVICE CONNECTION CONTRACT BETWEEN

CITY OF LITTLE ROCK

AND

CITY OF SHANNON HILLS

CONTRACT DATED
SEPTEMBER 22, 1995

REPRESENTATIVES OF PARTIES:

FOR THE CITY OF LITTLE ROCK:

James Dailey, Mayor
City Hall
Markham & Broadway
Little Rock, Arkansas 72201
Telephone: (501) 371-4516

FOR LITTLE ROCK SANITARY SEWER COMMITTEE:

Pat Miller, Chairman
Little Rock Sanitary Sewer Committee
425 W. Capitol, Suite 3300
Little Rock, Arkansas 72201
Telephone: (501) 376-9241

Reggie A. Corbitt, Manager
Little Rock Wastewater Utility
221 East Capitol
Little Rock, Arkansas 72202
Telephone: (501) 688-1404

Don F. Hamilton, General Counsel
Little Rock Wastewater Utility
221 East Capitol
Little Rock, Arkansas 72202
Telephone: (501) 688-1403

FOR THE CITY OF SHANNON HILLS:

Mayor Harold MacIntire
10401 High Road East
Shannon Hills, Arkansas 72103
Telephone: (501) 455-2003

Richard W. Roachell
City Attorney for the City
of Shannon Hills
401 West Capitol, Suite 504
Lyon Building
Little Rock, Arkansas 72201
Telephone: (501) 375-5550

CONTRACT

THIS CONTRACT made on this 22nd day of September, 1995 by and between the City of Little Rock, Arkansas, the Sanitary Sewer Committee (both hereinafter collectively referred to as "Little Rock"), and the City of Shannon Hills (hereinafter referred to as "Shannon Hills");

WHEREAS, on June 6, 1989, the City of Little Rock, the Little Rock Sanitary Sewer Committee (both referred to as "Little Rock") entered into an agreement (the "1989 Agreement") with the City of Shannon Hills ("Shannon Hills") and Shannon Hills Water, Sewer and Fire Protection Improvement District No. 3 ("SID No. 3") for the extension of sewer service by Little Rock to Shannon Hills and SID No. 3 and sewer service was never extended to Shannon Hills and SID No. 3; and,

WHEREAS, since the execution of the 1989 Agreement, the City of Shannon Hills has acquired all rights, title and ownership of the sewer system previously owned and operated by SID No. 3 situated within the city limits of Shannon Hills; and, residents of the City of Little Rock previously receiving sewer service by SID No. 3 in the subdivision known as Rolling Pines have been connected to the sewer system of Little Rock and are currently being served by Little Rock; and,

WHEREAS, Little Rock and Shannon Hills desire to enter into a new contract in substitution of all terms of the 1989 Agreement discharging and extinguishing all rights, duties

or obligations of either party under the 1989 Agreement, and in lieu thereof enter into the new contract subject to the provisions hereinafter set forth whereby Shannon Hills shall abandon its existing sewage treatment plant and connect with the Little Rock sewer system, it being agreed that Shannon Hills shall remain totally responsible for the maintenance of its existing sewer system and any additions thereto, the use of all of which shall at all times be subject to the charges, collections, and all provisions contained in the applicable provisions set forth hereinafter, as well as Little Rock sewer ordinances in effect and as amended, or changed in the future, during the term of this contract or any extension thereof.

NOW THEREFORE, in consideration of the mutual benefits to be derived herefrom by all parties hereto, it is hereby agreed by and between the parties:

1. Connection by Shannon Hills to the Sewer System of the City of Little Rock. Little Rock, as Owner, hereby agrees to permit Shannon Hills, as Lessee, to connect to the sewer system of Little Rock under the terms of this Contract as soon as practical after the necessary ordinances are adopted as referred to herein, including those approving this agreement pursuant to A.C.A §14-235-212 by the governing authorities of the City of Little Rock and Shannon Hills; and Shannon Hills hereby agrees at its expense to make such connection in a manner and at a location as approved by the Manager of the Little Rock Wastewater

Utility (the "Manager"), and in accordance with the terms and provisions of this Contract and all applicable laws and regulations. As soon as this connection is completed and approved by the Manager, the treatment plant currently operated by Shannon Hills shall be abandoned and no longer used in the sewer system of Shannon Hills. Shannon Hills shall pay to the Sewer Committee an initial connection fee of \$8,000.00 for the present users (approximately 550 users); and, thereafter, \$100.00 per home user for future tie-ons, and such other connection fees as published in the Sewer Committee's connection fee schedule, effective February 6, 1987, and any amendments made thereto.

2. Wastewater Discharge Flow Measuring Meter. The connection to the Little Rock facilities shall include the furnishing and installation of a wastewater discharge flow meter by Shannon Hills and all expenses in connection therewith shall be borne by Shannon Hills. The meter shall be of a type and installation as approved by the Manager. The function of the meter shall be to measure and record accurately all flows discharged into the Little Rock sewer facilities by Shannon Hills. Little Rock by the Utility further agrees to maintain this meter to insure its reliability and accuracy.

3. Sewer Services, Charges and Collections.

(a) Shannon Hills agrees to pay the Utility a monthly sewer service charge and said charge shall be promptly billed after the first day of each month for the services

provided by this agreement. The monthly sewer service charge shall be computed from the total flow registered by the Wastewater Discharge Flow Measuring Meter, excluding 30% infiltration and inflow, at the rates set by the Little Rock Board of Directors for sewer service inside the city limits of Little Rock, Arkansas, currently in effect and as may be adjusted in the future, it being expressly understood by the parties that rate adjustments may occur in the future during the term and the rates to be charged hereunder shall at all times be in accordance with those rates for sewer service inside the city limits of Little Rock, Arkansas, as adjusted in the future. The monthly statement for the charge shall be based upon flow meter readings conducted by the Utility; however, in the event of flow meter malfunction, the Utility may estimate the reading based upon a comparable preceding period. All charges for sewer service provided to Shannon Hills shall be billed to Shannon Hills and it shall be the responsibility of Shannon Hills to make timely payment of these charges on or before the twentieth (20th) day following the month for which the service is billed. Shannon Hills shall collect from its users all sums which may be due in connection with the service extended. The Sewer Committee for the use and benefit of the City of Little Rock shall have all rights to effect such collection of all sums owed to Little Rock pursuant to Arkansas law, including but not limited to those provisions contained in A.C.A. §14-235-223; and Shannon Hills agrees to hold

harmless the Sewer Committee for all losses, costs and expenses as may be sustained by Little Rock in connection with the payment of such sewer service. If Shannon Hills does not remit payment on or before the twentieth (20th) day of the month following the month for which the service is billed, a penalty equal to ten percent (10%) of the total payment amount due shall be added to such payment, and if not paid on or before the twentieth (20th) day of the month in which the statement is submitted, Little Rock may terminate this agreement in accordance with the terms herein.

4. Application of City of Little Rock Sewer Ordinances. The provisions of all existing and future ordinances enacted by the City of Little Rock relating to the regulation of the construction, operation and maintenance of sewers shall apply to the sewer facilities owned and operated by Shannon Hills and connected to the sewer facilities owned and operated by the City of Little Rock. The provisions of these ordinances shall be binding on the parties hereto, including the rates as may be from time to time specified; and Shannon Hills covenants that it will at all times comply with said ordinances and further agrees to hold harmless the Sewer Committee from all losses, damages, expenses or liabilities of any nature incurred by the Sewer Committee as a consequence of any acts, omissions or any conduct by any authorized representative or employee of Shannon Hills, its customers or citizens arising out of

any violations of said ordinance or any provision of this Contract or relating to the sewer service furnished as a consequence thereof.

5. Future Connections with the Sewer System of Shannon Hills. Shannon Hills agrees not to extend any sewer services to any area outside the incorporated area of Shannon Hills as the boundaries exist on the date when this Contract is executed, unless the governing body of the City of Little Rock has given its prior written approval to do so. Shannon Hills further agrees to limit any future sewer main extensions and sewer connections in any portion of Pulaski County not currently served unless Shannon Hills obtains the prior approval in writing by the Sewer Committee; and then only for so long as service is not available from the Sewer Committee for all users now located in the City of Little Rock, situated in Pulaski County, Arkansas. A map of the City of Shannon Hills showing the current boundaries is attached hereto as Exhibit "A".

6. Future Extensions of Service. The Sewer Committee shall not be obligated for and assumes no liability for any future extension of service not specifically set forth herein, and no such extension shall be made without the prior written approval of the governing body of the City of Little Rock and the Sewer Committee. This Contract anticipates up to 1,000 Shannon Hills users. In any event, anyone desiring such an extension of service beyond the existing facilities hereby served shall bear the full cost

thereof, including all costs of any nature whatsoever involved in effecting such extension or making available such service and any connection fees set by the Sewer Committee, and SID No. 142 and Shannon Hills. The further extension of service shall be in accordance with the rules and regulations of the Sewer Committee and subject to its approval at the time of the extension of service.

7. Shannon Hills Comprehensive Development Plan, Zoning Ordinance, and Pre-Treatment Ordinance. Prior to the connection of the sewer system of Shannon Hills with the City of Little Rock, Shannon Hills shall furnish proof of the adoption of a comprehensive development plan and zoning ordinance and a sewage pretreatment ordinance; and said plan and zoning ordinance shall have been submitted to the Director of Comprehensive Planning for the City of Little Rock for his written approval before the sewer connection specified in this Contract with the pretreatment ordinance to be approved by the Manager before said connection is made; and Shannon Hills covenants to maintain and enforce at all times said comprehensive development plan, zoning ordinance and sewage pretreatment ordinance.

8. Title and Maintenance Responsibility for Sewer Facilities Owned and Operated by Shannon Hills. Title to and maintenance responsibility for any and all sewer facilities of any nature whatsoever located within the incorporated city limits of Shannon Hills, including but not limited to each customer's public facilities to the public

sewer line, shall remain with Shannon Hills or its citizens; and Little Rock shall have no liability or responsibility for the operating or maintenance of said sewer system located within the incorporated city limits of Shannon Hills or any future connections as may from time to time be permitted.

9. Term of Contract. Unless terminated earlier, the term of this Contract shall be for a period of fifteen (15) years from the date hereof at which time it will expire; provided, however, this Contract may be extended by the agreement of the parties hereto upon notice given by either party prior to the end of the term and adoption, thereafter, of approving ordinances by Shannon Hills and the City of Little Rock, Arkansas.

10. Assignment or Transfer. This Contract and the rights hereunder shall not be assigned or transferred by Shannon Hills, and shall be binding upon the successors of either party.

11. Taxes. Shannon Hills covenants and agrees to pay any and all taxes levied by the United States and the State of Arkansas for the services provided and treatment of sewage pursuant to this contract, and shall comply with all federal, state, county and municipal laws, ordinances, rules and regulations pertaining to the treatment of sewage; and Shannon Hills further agrees to indemnify and hold harmless Little Rock for any loss or damage of nature whatsoever sustained by Little Rock occasioned by the failure to comply

with said laws, ordinances, rules and regulations by the employees or authorized representatives of Shannon Hills.

12. Termination. This Contract may be terminated by Little Rock if Shannon Hills fails to comply fully with any of the terms and provisions of this Contract. Termination of this Contract may occur only after actual written notice is given of the nature of the breach. In the event of the termination of this Contract, all obligations of Little Rock to treat the sewage under the agreement shall cease and Shannon Hills shall immediately remove the sewer connection provided herein, it being the intention of the parties hereto that Shannon Hills shall be solely responsible for the treatment of its sewage upon termination of this Contract, failing which Little Rock shall be entitled to recover from Shannon Hills all damages sustained by Little Rock of any nature whatsoever proximately caused by Shannon Hills' violation of any provision(s) of this Contract, including but not limited to Shannon Hills' failure to remove said sewer connection and treat said sewage in the event it fails to do so.

13. Notices. All notices hereunder shall be in writing and shall be deemed to have been duly given when sent by certified mail, postage prepaid, as follows:

If to Little Rock:

Little Rock Wastewater Utility
221 East Capitol Avenue
Little Rock, Arkansas 72201
Attn: Manager

AND City of Little Rock
City Hall, 500 W. Markham
Little Rock, Arkansas 72201
Attn: City Manager and Mayor

If to Shannon Hills:

City of Shannon Hills
City Hall
Shannon Hills, Arkansas 72103
Attention: Mayor

14. Update or Regulations. Shannon Hills agrees to abide by the rules and regulations published from time to time concerning the treatment of sewage by Little Rock; and all applicable federal, state, county and municipal regulations concerning construction, operating, maintenance, and protection of treatment of sewage pursuant to this Contract. Little Rock shall have the right, if it deems necessary or appropriate, to inspect all individual tie-ons to the Shannon Hills sewage system.

15. Governmental Function. The parties recognize that treatment of sewage pursuant to this agreement is a governmental function and this Agreement shall be performed by the parties hereto in their respective governmental capacities.

16. Invalid Provision Shall Not Invalidate Contract. The parties agree that in the event any paragraph, sentence, clause or word(s) of this Contract shall be held to be invalid, illegal or unenforceable, all other terms and provisions of this Contract shall remain in full force and effect, and this Contract shall be construed as if not containing the particular provision or provisions held to be invalid.

17. Contract Legally Binding. All parties to the Contract agree to the terms contained herein and represent

to each other that the terms of this Contract have been duly accepted and approved by the authorized representatives of the parties hereto; and all parties covenant to each other that all action required by law has been taken to make this Contract legally binding and enforceable and that the parties hereto shall have all of the rights and remedies under the law of Arkansas to enforce the terms of this Contract.

DATED this 22nd day of September, 1995.

CITY OF SHANNON HILLS, ARKANSAS

By: Gold R MacIntur
Mayor

ATTEST:

Doris m. Eoff

CITY OF LITTLE ROCK, ARKANSAS

By: Jim Bailey
Mayor

Attest:

Robin Hancock

LITTLE ROCK SANITARY SEWER
COMMITTEE

By: David D. Lillie
Chairman

ATTEST:

Regis G. Corbett
Manager
Little Rock Wastewater Utility

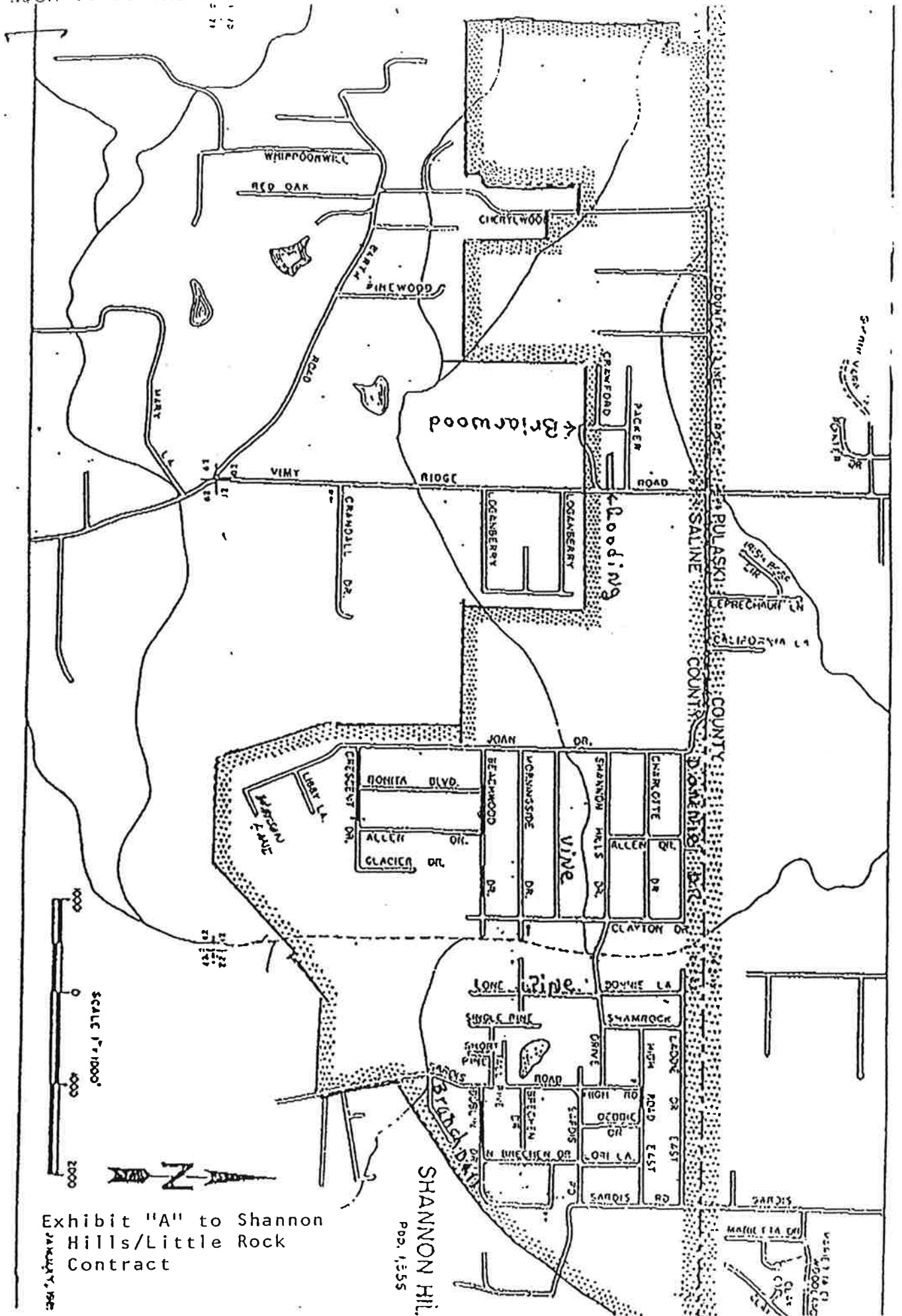


Exhibit "A" to Shannon Hills/Little Rock Contract

JANUARY, 1955

SHANNON HILLS
P. 01, 1955

SEWER SERVICE CONTRACT BETWEEN

CITY OF LITTLE ROCK

AND

CITY OF CAMMACK VILLAGE

CONTRACT DATED
NOVEMBER 7, 1997

REPRESENTATIVES OF PARTIES:

FOR THE CITY OF LITTLE ROCK:

James Dailey, Mayor
City Hall
Markham & Broadway
Little Rock, Arkansas 72201
Telephone: (501) 371-4516

Tom Carpenter, City Attorney
City Hall
Markham & Broadway
Little Rock, Arkansas 72201
Telephone: (501) 371-6875

FOR LITTLE ROCK SANITARY SEWER COMMITTEE:

Brenda James, Chair
Little Rock Sanitary Sewer Committee
1868 Arch Street
Little Rock, Arkansas 72206
Telephone: (501) 324-2312

Reggie A. Corbitt, Manager
Little Rock Wastewater Utility
221 East Capitol
Little Rock, Arkansas 72202
Telephone: (501) 688-1404

Don F. Hamilton, General Counsel
Little Rock Wastewater Utility
221 East Capitol
Little Rock, Arkansas 72202
Telephone: (501) 688-1403

FOR THE CITY OF CAMMACK VILLAGE:

Mayor Harry Light
Cammack Village City Hall
2710 North McKinley
Little Rock, Arkansas 72207
Telephone: (501) 340-5610
Fax: (501) 340-6037

Mr. Paul Revels
Cammack Village City Attorney
2710 North McKinley
Little Rock, Arkansas 72209
Telephone: (501) 340-3304
Fax: (501) 376-6369

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CONTRACT

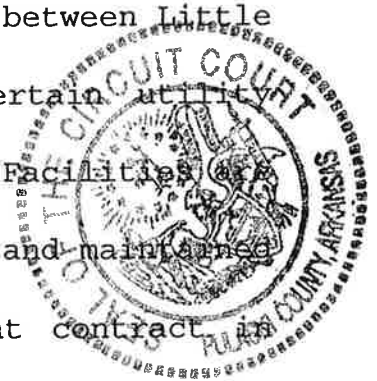
FILED AND RECORDED
1997 DEC 12 P 3: 21
CAROLYN STALEY
CIRCUIT COUNTY CLERK

THIS CONTRACT is entered into by and between the City of Little Rock, Arkansas and the Little Rock Sanitary Sewer Committee (both hereinafter collectively "Little Rock" and sometimes separate references to "the Sewer Committee") and the City of Cammack Village, Arkansas ("Cammack Village") by their respective duly authorized undersigned representatives;

W I T N E S S E T H:

WHEREAS, Little Rock is the owner of certain existing public sewer facilities consisting of pipes six (6) inches or larger in diameter and manholes with covers and appurtenances thereto all situated within the city limits of Cammack Village ("Sewer Facilities"), which Little Rock acquired by contract dated September 15, 1982 between Little Rock and Cammack Village, together with certain utility easements or rights of way in which the Sewer Facilities are located, and the Sewer Committee has operated and maintained said Sewer Facilities since the date of that contract in accordance with the provisions contained therein; and

WHEREAS, the contract dated September 15, 1982, between Little Rock and Cammack Village is subject to the provisions of A.C.A. §14-235-212 and the statutory term of fifteen (15)



years which expired on September 15, 1997, and the parties desire to renew that contract for sewer service on the terms and conditions herein set forth;

NOW, THEREFORE, in consideration of the mutual benefits to be derived, it is hereby agreed by and between the parties:

1. Sewage Treatment and Extension of Sewer Service by Little Rock. Little Rock, acting through the Sewer Committee operating the Little Rock Wastewater Utility, agrees to perform the treatment of sewage from Cammack Village, as discharged from Cammack Village to Little Rock's sewer system in accordance with this contract into the existing sewer facilities located in that area shown on the map marked Exhibit "A" attached hereto and incorporated by reference herein, subject to the provisions of this contract; and, in consideration of the terms and conditions set forth herein and Cammack Village's covenant to perform and comply with all provisions of this contract, including Cammack Village's cooperation in the enforcement of all rules, regulations, ordinances, and laws referred to herein and/or applicable to the use, operation and maintenance of Little Rock's sewer system referred to in this contract for

the duration thereof, as well as any continuations or extensions thereof.

2. Charges for Sewer Service. All charges for sewer services provided by Little Rock to customers residing within the city limits of Cammack Village and/or to any customer through the Sewer Facilities referred to in this contract and located in the area identified on Exhibit "A" attached hereto shall be included on the water bills of Little Rock Municipal Water Works in accordance with the existing city ordinances establishing rates for sewer service based on outside city rates, as those rates are currently established and as these rates may be adjusted from time to time. In the event such sewer service is provided to customers who do not receive water service from Little Rock Municipal Water Works and, therefore, receive no water bills which would otherwise also contain sewer charges, those customers shall be billed in accordance with such procedures as Little Rock, acting through the Little Rock Sanitary Sewer Committee by the Little Rock Wastewater Utility ("LRWU") may establish in order to collect the outside city sewer rates for such sewer service.

3. Sewer Facilities. No sewer line with a nominal diameter of less than six (6) inches shall be considered a public sewer, or otherwise be maintained by the Sewer Committee, acting through LRWU; and, the "point of service" for maintenance responsibility assumed by the Sewer Committee shall be the "wye" connection or other means of connecting any building sewer to the public sewer, being a public sewer main serving two or more customers.

4. Application of City of Little Rock Sewer Ordinances.

(a) The operation and maintenance of the Sewer Facilities referred to herein, including any present or future service or extension thereof, shall be governed solely by the provisions of all existing and future ordinances enacted by the City of Little Rock, Arkansas relating to the operation and maintenance of sewers including, but not limited to, sewer use and pretreatment requirements of any nature whatsoever; and the provisions of these ordinances shall be binding on the parties hereto, including the rates as may be from time to time specified in those ordinances.

(b) The City of Cammack Village agrees that the authority of the Sewer Committee includes, but is not limited to, the authority to:

(1) Deny or condition new or increased contributions of pollutants, or changes in the nature of pollutants, to the Publicly Owned Treatment Works ("POTW") owned by the Sewer Committee by Industrial Users where such contributions do not meet applicable Pre-treatment Standards and Requirements (as same are defined in applicable Federal and Arkansas statutes and regulations and ordinances of the City of Little Rock, as the same may be amended from time to time) or where such contributions would cause the POTW to violate its National Pollutants Discharge Elimination System ("NPDES") permit;

(2) Require compliance with applicable Pretreatment Standards and Requirements by Industrial Users;

(3) Control, through permit, contract, order, or similar means, the contribution to the POTW by each Industrial User to ensure compliance with applicable Pretreatment Standards and Requirements;

(4) Require (a) the development of a compliance schedule by each Industrial User for the installation of

technology required to meet applicable Pretreatment Standards and Requirements and (b) the submission of all notices and self-monitoring reports from Industrial Users as are necessary to assess and assure compliance by Industrial Users with Pretreatment Standards and Requirements, including but not limited to the reports required in Volume 40 of the Code of Federal Regulations at 40 C.F.R. §403.12, as adopted into Section 4 of Regulation No. 6 of the Regulations for State Administration of the National Pollutants Discharge Elimination System of the Arkansas Department of Pollution Control and Ecology, or any future amendment to these regulations, as same are administered and enforced by the Arkansas Department of Pollution Control and Ecology;

(5) Carry out all inspection, surveillance and monitoring procedures necessary to determine, independent of information supplied by Industrial Users, compliance or non-compliance with applicable Pretreatment Standards and Requirements by Industrial Users. Representatives of the POTW shall be authorized to enter any premises of any Industrial User in which a Discharge source or treatment system is located or in which records are required to be

kept under applicable federal or state regulations including but not limited to 40 C.F.R. §403.12(m) to assure compliance with Pretreatment Standards. Such authority shall be at least as extensive as the authority provided under Section 308 of the Clean Water Act of 1972, as amended, and any applicable Arkansas regulations and statutes including the Arkansas Water and Air Pollution Control Act, Act 472 of 1949, as amended, and ordinances of the City of Little Rock, as same may be enacted or amended from time to time;

(6) Obtain remedies for noncompliance by any Industrial User for violation of any Pretreatment Standard and Requirement. The Sewer Committee shall be entitled to seek injunctive relief for noncompliance by Industrial Users with Pretreatment Standards and Requirements. If the laws of the State of Arkansas now or hereafter authorize Cammack Village to enact ordinances or other local legislation to assess civil or criminal penalties for noncompliance by Industrial Users with Pretreatment Standards and Requirements, Cammack Village covenants with the Sewer Committee that it will enact such ordinances or other local legislation which the Sewer Committee may request as soon as practical, and Cammack Village expressly agrees that this

covenant may be enforced by the Sewer Committee in a Court of Equity in accordance with the law of Arkansas in Pulaski County, Arkansas, which the parties expressly stipulate is the appropriate venue for any such action. If the laws of the State of Arkansas do not now or hereafter authorize such actions, then the Sewer Committee is authorized to enter into contracts with Industrial Users to assure compliance by Industrial Users with Pretreatment Standards and Requirements. Any such contract will provide for liquidated damages for violation of Pretreatment Standards and Requirements and will include an agreement by the Industrial User to submit to the remedy of specific performance for breach of contract, enforceable by a court situated in Pulaski County, Arkansas.

(7) The definitions set forth at 40 C.F.R. §403.3, as amended, are expressly incorporated by reference herein as if set forth word for word and a copy thereof is attached hereto marked Exhibit "B".

5. Future Connections with the Sewer System in Cammack Village. Cammack Village shall have no authority to extend or permit any future connections to the Sewer Facilities referred to in this Contract and Cammack Village

agrees not to allow or permit any sewer extension to any area outside the incorporated area of Cammack Village as the boundaries exist on the date when this Contract is executed or if they are changed in the future. Cammack Village further agrees not to allow or permit any future sewer main extensions and/or sewer connections within the city limits of Cammack Village (as shown on Exhibit "A") served or not currently served without the prior approval in writing of the Little Rock Sanitary Sewer Committee after a written application for such connection with information of the reasons and proposed location of the connection.

6. Future Extensions of Service. Little Rock and the Sewer Committee shall not be obligated for and assume no liability for any future extension of service not specifically set forth herein. Anyone desiring such an extension of service beyond the existing facilities hereby served after receiving the necessary written permission, as specified herein, shall bear the full cost thereof, including all costs of any nature whatsoever involved in effecting such extension or making available such service and the payment of any connection fees set by the Little Rock Sanitary Sewer Committee, which shall have the sole

authority to establish such fees. The further extension of service shall be in accordance with the rules and regulations of the Little Rock Sanitary Sewer Committee and subject to its approval at the time of the extension of service.

7. Cammack Village Comprehensive Development Plan, Zoning Ordinance, and Pre-Treatment Ordinance. Cammack Village covenants as a condition of sewer service under this Contract that it has or is in the process of enacting a comprehensive development plan and zoning ordinance. Cammack Village covenants to maintain and enforce at all times said comprehensive development plan, and zoning ordinance and cooperate with Little Rock for the enforcement of such ordinance.

8. Title and Maintenance Responsibility for Public Sewer Facilities Located and/or to be Located in Cammack Village. Title to and maintenance responsibility for any and all public sewer facilities subject to this contract being defined as those pipes or conduits having a diameter of six (6) inches or larger, normally equipped with manholes located in rights of way or easements together with all appurtenances thereto, shall be in Little Rock, provided

however, any storm water facilities are not included as part of the Sewer Facilities herein referred to, and any storm water facilities shall remain the property and sole responsibility of Cammack Village. Little Rock shall maintain the Sewer Facilities in good condition and repair and respond promptly to customer complaints.

9. Title and Maintenance Responsibility for Building Sewer or Private Service Lines. Title to and maintenance responsibility for any building sewer connecting each customer's public facilities to the public sewer line located in Cammack Village or private service line or to any extension thereof shall remain with the respective property owner, even though a portion of the building sewer or service line may be installed in the public right of way or easement; and Little Rock shall have no liability or responsibility for the operation or maintenance of said building sewer.

10. Term of Contract. Unless terminated earlier, the term of this Contract shall be for a period of fifteen (15) years from the date hereof at which time it will expire; provided, however, this Contract may be extended by the agreement of the parties hereto upon notice given by either

party prior to the end of the term and adoption, thereafter, of approving ordinances by Cammack Village and the City of Little Rock, Arkansas.

11. Assignment or Transfer. This Contract and the rights hereunder shall not be assigned or transferred by Cammack Village, and shall be binding upon the successors of either party.

12. Taxes and Compliance with Laws. Cammack Village covenants and agrees to pay any and all taxes levied by the United States and the State of Arkansas for the services provided and treatment of sewage pursuant to this contract, and Cammack Village and Little Rock shall comply with all federal, state, county and municipal laws, ordinances, rules and regulations pertaining to the treatment of sewage; and Cammack Village further agrees to indemnify and hold harmless Little Rock for any loss or damage to Little Rock's Sewer Facilities situated in Cammack Village sustained by Little Rock occasioned by the employees or authorized representatives of Cammack Village.

13. Termination. This Contract may be terminated by Little Rock if Cammack Village fails to comply fully with any of the terms and provisions of this Contract.

Termination of this Contract may occur only after actual written notice is given of the nature of the breach. In the event of the termination of this Contract, all obligations of Little Rock to treat the sewage under the agreement shall cease and Cammack Village, including all residents and/or customers shall stop using the Sewer Facilities and Cammack Village shall immediately remove the sewer connection(s) to Little Rock's sewer system provided herein. It is the intention of the parties hereto that Cammack Village shall be solely responsible for the treatment of its sewage upon termination of this Contract, failing which Little Rock shall be entitled to recover from Cammack Village all damages sustained by Little Rock of any nature whatsoever proximately caused by any violation by Cammack Village or its residents of any provision(s) of this Contract, including but not limited to any damages sustained by Little Rock due to the failure of Cammack Village or its residents to remove said sewer connection(s) and cease use of the Sewer Facilities, as well as any additional costs and expenses incurred by Little Rock for treatment of said sewage in the event Cammack Village fails to remove the sewer connection(s) to Little Rock's sewer system.

14. Notices. All notices hereunder shall be in writing and shall be deemed to have been duly given when sent by certified mail, postage prepaid, as follows:

If to Little Rock:

Little Rock Wastewater Utility	AND City of Little Rock
221 East Capitol Avenue	City Hall, 500 W. Markham
Little Rock, Arkansas 72201	Little Rock, Arkansas 72201
Attn: Manager	Attn: City Manager and Mayor

If to Cammack Village:

City of Cammack Village
City Hall
2710 North McKinley
Little Rock, Arkansas 72207
Attention: Mayor

15. Update or Regulations. Cammack Village agrees to abide by the rules and regulations published from time to time concerning the treatment of sewage by Little Rock; and all applicable federal, state, county and municipal regulations concerning construction, operating, maintenance, and protection of treatment of sewage pursuant to this Contract. Little Rock by the Sewer Committee acting through LRWU shall have the right at all times, if it deems necessary or appropriate, to inspect all individual tie-ons, connections to or extensions of the Sewer Facilities referred to in this Contract.

16. Governmental Function. The parties recognize that treatment of sewage pursuant to this agreement is a

governmental function and this Agreement shall be performed by the parties hereto in their respective governmental capacities.

17. Invalid Provision Shall Not Invalidate Contract.

The parties agree that in the event any paragraph, sentence, clause or word(s) of this Contract shall be held to be invalid, illegal or unenforceable, all other terms and provisions of this Contract shall remain in full force and effect, and this Contract shall be construed as if not containing the particular provision or provisions held to be invalid.

18. Contract Legally Binding. All parties to the

Contract agree to the terms contained herein and represent to each other that the terms of this Contract have been duly accepted and approved by the authorized representatives of the parties hereto; and all parties covenant to each other that all action required by law has been taken to make this Contract legally binding and enforceable and that the parties hereto shall have all of the rights and remedies under the law of Arkansas to enforce the terms of this Contract, any action on which the parties stipulate and agree shall be brought in Pulaski County, Arkansas.

IN WITNESS WHEREOF, the parties have caused this contract to be executed by their duly authorized representatives on the 7th day of November, 1997.

CITY OF LITTLE ROCK, ARKANSAS

By: Jim Hailey
Mayor

Attest:

Robbie Hancock

LITTLE ROCK SANITARY SEWER
COMMITTEE

By: Shirley James
Chairman

ATTEST:

Reggie E. Corbett
Manager
Little Rock Wastewater Utility

CITY OF CAMMACK VILLAGE, ARKANSAS

By: [Signature]
Mayor

Attest:

Aue G. Hall, Clerk

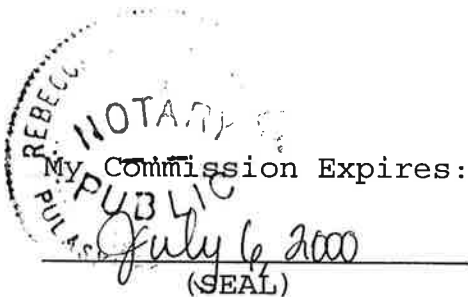
ACKNOWLEDGMENT

STATE OF ARKANSAS
COUNTY OF PULASKI

On this 7th day of November, 1997, before me, a Notary Public, duly commissioned, qualified and acting, within and for said County and State, appeared in person the within named James Dailey and Robbie Hancock, being the persons authorized by the City of Little Rock to execute such instrument, stating their respective capacities in that behalf, to me personally well known, who stated that they were the Mayor and City Clerk of the City of Little Rock, respectively, and executed and delivered said foregoing instrument for the consideration, uses and purposes therein mentioned and set forth.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal this 7th day of November, 1997.

Rebecca Jane Campbell
Notary Public



ACKNOWLEDGMENT

STATE OF ARKANSAS
COUNTY OF PULASKI

On this 7th day of November, 1997, before me, a Notary Public, duly commissioned, qualified and acting, within and for said County and State, appeared in person the within named Brenda James and Reggie A. Corbitt, being the persons authorized by the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to execute such instrument, stating their respective capacities in that behalf, to me personally well known, who stated that they were the Chair of the Little Rock Sanitary Sewer Committee and Manager of the Little Rock Wastewater Utility and

executed and delivered said foregoing instrument for the consideration, uses and purposes therein mentioned and set forth.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal this 7th day of November, 1997.

Rebecca Jane Campbell
Notary Public

My Commission Expires:
July 6, 2000
(SEAL)
PULASKI COUNTY

ACKNOWLEDGMENT

STATE OF ARKANSAS
COUNTY OF PULASKI

On this 7th day of November, 1997, before me, a Notary Public, duly commissioned, qualified and acting, within and for said County and State, appeared in person the within named Harry A. Light and Sue A. Hall, being the persons authorized by the City of Cammack Village to execute such instrument, stating their respective capacities in that behalf, to me personally well known, who stated that they were the Mayor and Clerk of the City of Cammack Village, respectively, and executed and delivered said foregoing instrument for the consideration, uses and purposes therein mentioned and set forth.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal this 7th day of November, 1997.

Nancy Se. Trotter
Notary Public

My Commission Expires:
February 5, 2000
(SEAL)

§ 403.1

- 403.10 Development and submission of NPDES State pretreatment programs.
- 403.11 Approval procedures for POTW pretreatment programs and POTW granting of removal credits.
- 403.12 Reporting requirements for POTW's and industrial users.
- 403.13 Variances from categorical pretreatment standards for fundamentally different factors.
- 403.14 Confidentiality.
- 403.15 Net/Gross calculation.
- 403.16 Upset provision.
- 403.17 Bypass.
- 403.18 Modification of POTW Pretreatment Programs.

APPENDIX A TO PART 403—PROGRAM GUIDANCE MEMORANDUM

APPENDIX B TO PART 403—[RESERVED]

APPENDIX C TO PART 403—[RESERVED]

APPENDIX D TO PART 403—SELECTED INDUSTRIAL SUBCATEGORIES CONSIDERED DILUTE FOR PURPOSES OF THE COMBINED WASTESTREAM FORMULA

APPENDIX E TO PART 403—SAMPLING PROCEDURES

APPENDIX F [RESERVED]

APPENDIX G TO PART 403—Pollutants Eligible for a Removal Credit

AUTHORITY: Sec. 54(e)(2) of the Clean Water Act of 1977 (Pub. L. 95-217) sections 204(b)(1)(C), 208(b)(2)(C)(iii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(b)(2)(C), 301(h)(5), 301(i)(2), 304(e), 304(g), 307, 308, 309, 402(b), 405 and 501(a) of the Federal Water Pollution Control Act (Pub. L. 92-500) as amended by the Clean Water Act of 1977 and the Water Quality Act of 1987 (Pub. L. 100-4).

SOURCE: 46 FR 9439, Jan. 23, 1981, unless otherwise noted.

§ 403.1 Purpose and applicability.

(a) This part implements sections 204(b)(1)(C), 208(b)(2)(C)(ii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(h)(5) and 301(i)(2), 304(e) and (g), 307, 308, 309, 402(b), 405, and 501(a) of the Federal Water Pollution Control Act as amended by the Clean Water Act of 1977 (Pub. L. 95-217) or "The Act". It establishes responsibilities of Federal, State, and local government, industry and the public to implement National Pretreatment Standards to control pollutants which pass through or interfere with treatment processes in Publicly Owned Treatment Works (POTW) or which may contaminate sewage sludge.

(b) This regulation applies:

(1) To pollutants from non-domestic sources covered by Pretreatment Standards which are indirectly discharged into or transported by truck or

rail or otherwise introduced into POTWs as defined below in § 403.3;

(2) To POTWs which receive wastewater from sources subject to National Pretreatment Standards;

(3) To States which have or are applying for National Pollutant Discharge Elimination System (NPDES) programs approved in accordance with section 402 of the Act; and

(4) To any new or existing source subject to Pretreatment Standards. National Pretreatment Standards do not apply to sources which discharge to a sewer which is not connected to a POTW Treatment Plant.

(46 FR 9439, Jan. 23, 1981, as amended at 48 FR 2776, Jan. 21, 1983; 60 FR 23337, June 23, 1995)

§ 403.2 Objectives of general pretreatment regulations.

By establishing the responsibilities of government and industry to implement National Pretreatment Standards this regulation fulfills three objectives:

(a) To prevent the introduction of pollutants into POTWs which will interfere with the operation of a POTW, including interference with its use or disposal of municipal sludge;

(b) To prevent the introduction of pollutants into POTWs which will pass through the treatment works or otherwise be incompatible with such works; and

(c) To improve opportunities to recycle and reclaim municipal and industrial wastewaters and sludges.

§ 403.3 Definitions.

For the purposes of this part:

(a) Except as discussed below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR part 401 shall apply to this regulation.

(b) The term *Act* means Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq.

(c) The term *Approval Authority* means the Director in an NPDES State with an approved State pretreatment program and the appropriate Regional Administrator in a non-NPDES State or NPDES State without an approved State pretreatment program.

Environmental Protection Agency

§ 403.3

- (d) The term *Approved POTW Pretreatment Program* or *Program* or *POTW Pretreatment Program* means a program administered by a POTW that meets the criteria established in this regulation (§§ 403.8 and 403.9) and which has been approved by a Regional Administrator or State Director in accordance with § 403.11 of this regulation.
- (e) The term *Director* means the chief administrative officer of a State or Interstate water pollution control agency with an NPDES permit program approved pursuant to section 402(b) of the Act and an approved State pretreatment program.
- (f) The term *Water Management Division Director* means one of the Directors of the Water Management Divisions within the Regional offices of the Environmental Protection Agency or this person's delegated representative.
- (g) The term *Indirect Discharge* or *Discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under section 307(b), (c) or (d) of the Act.
- (h) The term *Industrial User* or *User* means a source of Indirect Discharge.
- (i) The term *Interference* means a Discharge which, alone or in conjunction with a discharge or discharges from other sources, both:
- (1) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
 - (2) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.
- (j) The term *National Pretreatment Standard*, *Pretreatment Standard*, or *Standard* means any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307 (b) and (c) of the Act, which applies to Industrial Users. This term includes prohibitive discharge limits established pursuant to § 403.5.
- (k)(1) The term *New Source* means any building, structure, facility or installation from which there is or may be a Discharge of pollutants, the construction of which commenced after the publication of proposed Pretreatment Standards under section 307(c) of the Act which will be applicable to such source if such Standards are thereafter promulgated in accordance with that section, *provided that*:
- (i) The building, structure, facility or installation is constructed at a site at which no other source is located; or
 - (ii) The building, structure, facility or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or
 - (iii) The production or wastewater generating processes of the building, structure, facility or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source should be considered.
- (2) Construction on a site at which an existing source is located results in a modification rather than a new source if the construction does not create a new building, structure, facility or installation meeting the criteria of paragraphs (k)(1)(ii), or (k)(1)(iii) of this section but otherwise alters, replaces, or adds to existing process or production equipment.
- (3) Construction of a new source as defined under this paragraph has commenced if the owner or operator has:
- (i) Begun, or caused to begin as part of a continuous onsite construction program:
 - (A) Any placement, assembly, or installation of facilities or equipment; or

(B) Significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or

(ii) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.

(l) The terms *NPDES Permit* or *Permit* means a permit issued to a POTW pursuant to section 402 of the Act.

(m) The term *NPDES State* means a State (as defined in 40 CFR 122.2) or Interstate water pollution control agency with an NPDES permit program approved pursuant to section 402(b) of the Act.

(n) The term *Pass Through* means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

(o) The term *Publicly Owned Treatment Works* or *POTW* means a treatment works as defined by section 212 of the Act, which is owned by a State or municipality (as defined by section 502(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in section 502(4) of the Act, which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works.

(p) The term *POTW Treatment Plant* means that portion of the POTW which is designed to provide treatment (in-

cluding recycling and reclamation) of municipal sewage and industrial waste.

(q) The term *Pretreatment* means the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. The reduction or alteration may be obtained by physical, chemical or biological processes, process changes or by other means, except as prohibited by § 403.6(d). Appropriate pretreatment technology includes control equipment, such as equalization tanks or facilities, for protection against surges or slug loadings that might interfere with or otherwise be incompatible with the POTW. However, where wastewater from a regulated process is mixed in an equalization facility with unregulated wastewater or with wastewater from another regulated process, the effluent from the equalization facility must meet an adjusted pretreatment limit calculated in accordance with § 403.6(e).

(r) The term *Pretreatment requirements* means any substantive or procedural requirement related to Pretreatment, other than a National Pretreatment Standard, imposed on an Industrial User.

(s) The term *Regional Administrator* means the appropriate EPA Regional Administrator.

(t) *Significant Industrial User*. (1) Except as provided in paragraph (t)(2) of this section, the term *Significant Industrial User* means:

(i) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N; and

(ii) Any other industrial user that discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, non-contact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority as defined in 40 CFR 403.12(a) on the

Environmental Protection Agency

§403.5

basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

(2) Upon a finding that an industrial user meeting the criteria in paragraph (k)(1)(ii) of this section has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority (as defined in 40 CFR 403.12(a)) may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

(u) The term *Submission* means:

(1) A request by a POTW for approval of a Pretreatment Program to the EPA or a Director;

(2) A request by a POTW to the EPA or a Director for authority to revise the discharge limits in categorical Pretreatment Standards to reflect POTW pollutant removals; or

(3) A request to the EPA by an NPDES State for approval of its State pretreatment program.

(46 FR 9439, Jan. 23, 1981, as amended at 49 FR 5132, Feb. 10, 1984; 49 FR 23053, July 10, 1984; 51 FR 20430, June 4, 1986; 51 FR 23760, July 1, 1986; 52 FR 1600, Jan. 14, 1987; 53 FR 40510, Oct. 17, 1988; 55 FR 30123, July 24, 1990)

§403.4 State or local law.

Nothing in this regulation is intended to affect any Pretreatment Requirements, including any standards or prohibitions, established by State or local law as long as the State or local requirements are not less stringent than any set forth in National Pretreatment Standards, or any other requirements or prohibitions established under the Act or this regulation. States with an NPDES permit program approved in accordance with section 402 (b) and (c) of the Act, or States requesting NPDES programs, are responsible for developing a State pretreatment program in accordance with §403.10 of this regulation.

§403.5 National pretreatment standards: Prohibited discharges.

(a)(1) *General prohibitions.* A User may not introduce into a POTW any pollutant(s) which cause Pass Through or Interference. These general prohibitions and the specific prohibitions in paragraph (b) of this section apply to each User introducing pollutants into a POTW whether or not the User is subject to other National Pretreatment Standards or any national, State, or local Pretreatment Requirements.

(2) *Affirmative Defenses.* A User shall have an affirmative defense in any action brought against it alleging a violation of the general prohibitions established in paragraph (a)(1) of this section and the specific prohibitions in paragraphs (b)(3), (b)(4), (b)(5), (b)(6), and (b)(7) of this section where the User can demonstrate that:

(i) It did not know or have reason to know that its Discharge, alone or in conjunction with a discharge or discharges from other sources, would cause Pass Through or Interference; and

(ii)(A) A local limit designed to prevent Pass Through and/or Interference, as the case may be, was developed in accordance with paragraph (c) of this section for each pollutant in the User's Discharge that caused Pass Through or Interference, and the User was in compliance with each such local limit directly prior to and during the Pass Through or Interference; or

(B) If a local limit designed to prevent Pass Through and/or Interference, as the case may be, has not been developed in accordance with paragraph (c) of this section for the pollutant(s) that caused the Pass Through or Interference, the User's Discharge directly prior to and during the Pass Through or Interference did not change substantially in nature or constituents from the User's prior discharge activity when the POTW was regularly in compliance with the POTW's NPDES permit requirements and, in the case of Interference, applicable requirements for sewage sludge use or disposal.

(b) *Specific prohibitions.* In addition, the following pollutants shall not be introduced into a POTW:

SEWER SERVICE CONTRACT BETWEEN

CITY OF LITTLE ROCK

AND

CITY OF ALEXANDER

CONTRACT DATED
NOVEMBER 7, 1997

REPRESENTATIVES OF PARTIES:

FOR THE CITY OF LITTLE ROCK:

James Dailey, Mayor
City Hall
Markham & Broadway
Little Rock, Arkansas 72201
Telephone: (501) 371-4516

Tom Carpenter, City Attorney
City Hall
Markham & Broadway
Little Rock, Arkansas 72201
Telephone: (501) 371-6875

FOR LITTLE ROCK SANITARY SEWER COMMITTEE:

Brenda James, Chair
Little Rock Sanitary Sewer Committee
1868 Arch Street
Little Rock, Arkansas 72206
Telephone: (501) 324-2312

Reggie A. Corbitt, Manager
Little Rock Wastewater Utility
221 East Capitol
Little Rock, Arkansas 72202
Telephone: (501) 688-1404

Don F. Hamilton, General Counsel
Little Rock Wastewater Utility
221 East Capitol
Little Rock, Arkansas 72202
Telephone: (501) 688-1403

FOR THE CITY OF ALEXANDER:

Mayor Shirley Johnson
City of Alexander City Hall
Second & Main Streets
Alexander, Arkansas 72202
Telephone: (501) 455-2585

Mr. Mark Riable
Attorney at Law
9710 Interstate 30
Little Rock, Arkansas 72209
Telephone: (501) 568-5680

FILED AND RECEIVED

97 078941

NOV 26 AM 10 53

CAROLYN STEVENS
CLERK

CONTRACT

SALINE BRADY
GRANTEE CLERK

'97 NOV 26 AM 9 10

THIS CONTRACT is entered into by and between the City of Little Rock, Arkansas and the Little Rock Sanitary Sewer Committee (both hereinafter collectively "Little Rock" and sometimes separate references to "the Sewer Committee") and the City of Alexander, Arkansas ("Alexander") by their respective duly authorized undersigned representatives;

W I T N E S S E T H:

WHEREAS, Little Rock is the owner of certain existing public sewer facilities consisting of pipes eight (8) inches or larger in diameter and manholes with covers and appurtenances thereto situated within the city limits of Alexander ("Sewer Facilities"), and Alexander is the owner of certain utility easements or rights of way in which the Sewer Facilities are located, and the Sewer Committee has operated and maintained said Sewer Facilities since the completion of the construction of these Sewer Facilities; and

WHEREAS, the Sewer Facilities were constructed with federal grant funds from the United States Environmental Protection Agency ("E.P.A.") with 75% of the costs of the Sewer Facilities borne by E.P.A. and 25% of the costs borne by Mabelvale-Alexander Sewer Improvement District No. 142

("S.I.D. #142") with S.I.D. #142 making assessments on those properties subject thereto, and the parties hereto acknowledge that any liability for assessments by S.I.D. #142 or sums due for connection fees for sewer main extensions are independent from any sums due for sewer service under this contract and such assessments are the liability of those property owners subject to S.I.D. #142 assessments for which there is no liability or responsibility of any nature whatsoever by Little Rock or the Sewer Committee and any connection fees shall be paid to S.I.D. #142 by the party(ies) making the extension, as specified in Paragraph No. 6(b) on page 6 of S.I.D. #142's contract with the Sewer Committee dated March 4, 1980, a copy being attached hereto and referred to on Page 12 of this Contract as Exhibit "D"; and

WHEREAS, there are sewer connections by domestic sewage customers residing within the city limits of Alexander and said customers are currently provided sewer service by Little Rock; and

WHEREAS, there is currently a restriction against any industrial customers being connected to the Sewer Facilities due to an E.P.A. audit imposing pre-treatment requirements,

and there is also a restriction on any further domestic sewage customers due to the City Board of Directors requirements that a contract be executed with Alexander to document terms and conditions of the extension of sewer service including appropriate certification of the existence of land use controls within Alexander consisting of a comprehensive plan, the existence of an active Alexander Planning Commission, the existence or adoption of zoning and subdivision ordinances, and a resolution of Alexander to follow and enforce such ordinances; and

WHEREAS, Little Rock and Alexander desire to enter into a contract pursuant to A.C.A. §14-235-212 containing those terms and conditions under which sewer service will be extended by Little Rock to Alexander through the existing Sewer Facilities, as well as those to be constructed in the future in that area annexed to Alexander since the original construction of the Sewer Facilities in 1983; and

WHEREAS, Alexander desires to convey and assign to the Sewer Committee certain easements and rights of way for the Sewer Facilities now owned by the Sewer Committee or hereafter constructed or acquired for the purpose of operating, maintaining, repairing or replacing the above-

described Sewer Facilities in the discretion of Little Rock acting through the Little Rock Sanitary Sewer Committee, all in consideration of the Sewer Committee's agreement to continue to operate, maintain, repair or replace said Sewer Facilities, excluding any storm water facilities, it being expressly agreed that any storm water facilities located in Alexander or owned and/or operated by Alexander shall remain in the ownership of Alexander and the sole responsibility of Alexander for the operation, maintenance, monitoring and for all other purposes; and

WHEREAS, Little Rock desires to accept the conveyance and assignment by Alexander to the City of Little Rock, Arkansas for the use and benefit of the Sewer Committee of certain easements and rights of way for the above-stated purpose, which it is understood does not include any storm water facilities of any nature whatsoever, and to operate and maintain said Sewer Facilities subject to the terms and conditions contained herein;

NOW, THEREFORE, in consideration of the mutual benefits to be derived, it is hereby agreed by and between the parties:

1. Sewage Treatment and Extension of Sewer Service by Little Rock. Little Rock, acting through the Sewer Committee operating the Little Rock Wastewater Utility, agrees to perform the treatment of sewage from Alexander by Little Rock as discharged in accordance with this contract into the existing sewer facilities described herein and in the exhibits attached hereto, including approved extensions, subject to the provisions of this contract, and in consideration of the terms and conditions set forth herein and Alexander's covenant to perform and comply with all provisions of this contract, including Alexander's cooperation in the enforcement of all rules, regulations, ordinances, and laws referred to herein and/or applicable to the use, operation and maintenance of Little Rock's sewer system referred to in this contract for the duration thereof, as well as any extensions thereof.

2. Charges for Sewer Service. All charges for sewer services provided by Little Rock to customers residing within the city limits of Alexander and/or to any customer through the Sewer Facilities referred to in this contract shall be included on the water bills of Little Rock Municipal Water Works in accordance with the existing city

ordinances establishing rates for sewer service based on outside city rates, as those rates are currently established and as these rates may be adjusted from time to time. In the event such sewer service is provided to customers who do not receive water service from Little Rock Municipal Water Works and, therefore, receive no water bills which would otherwise also contain sewer charges, those customers shall be billed in accordance with such procedures as Little Rock, acting through the Little Rock Sanitary Sewer Committee by LRWU may establish in order to collect the outside city sewer rates for such sewer service.

3. Conveyance and Assignment by Alexander to the Sewer Committee of Easements and Rights of Way. Alexander agrees to grant and assign by separate easement unto Little Rock for the use and benefit of the Sewer Committee a certain easement and rights of way situated within its corporate city limits in Pulaski County and Saline County, Arkansas, and further assigns and agrees to assign in the future (if necessary) any easements, whether now owned or hereafter acquired, including but not limited to all of those utility easements and rights of way as described in the easement attached hereto identified as Exhibit "A"

including Schedule "1" attached thereto, for the purpose of maintaining, operating, repairing or replacing the aforescribed Sewer Facilities in the Sewer Committee's discretion.

4. Acceptance by Sewer Committee of Easement and Assignment by City of Alexander and Agreement to Operate and Maintain Sewer Facilities. The Sewer Committee by the execution of this contract by its duly authorized undersigned Chairman hereby accepts the easement and assignment, a copy of said easement being attached hereto as Exhibit "A", with Schedule "1" attached thereto, subject to the terms and conditions contained therein, and further covenants to operate and maintain said Sewer Facilities in good repair in accordance with the provisions of the easement as set forth in Exhibit "A" attached hereto. It is expressly agreed, however, that no sewer line with an internal diameter of less than eight (8) inches shall be considered a public sewer, or otherwise be maintained by the Sewer Committee, and the "point of service" for maintenance responsibility assumed by the Sewer Committee shall be the "wye" connection or other means of connecting any building sewer to the public sewer.

5. Application of City of Little Rock Sewer Ordinances.

(a) The operation and maintenance of the Sewer Facilities referred to herein, including any present or future service or extension thereof, shall be governed solely by the provisions of all existing and future ordinances enacted by the City of Little Rock, Arkansas relating to the operation and maintenance of sewers including, but not limited to, sewer use and pretreatment requirements of any nature whatsoever; and the provisions of these ordinances shall be binding on the parties hereto, including the rates as may be from time to time specified in those ordinances.

(b) The City of Alexander agrees that the authority of the Sewer Committee includes, but is not limited to, the authority to:

(1) Deny or condition new or increased contributions of pollutants, or changes in the nature of pollutants, to the Publicly Owned Treatment Works ("POTW") owned by the Sewer Committee by Industrial Users where such contributions do not meet applicable Pre-treatment Standards and Requirements (as same are defined in applicable Federal

and Arkansas statutes and regulations and ordinances of the City of Little Rock, as the same may be amended from time to time) or where such contributions would cause the POTW to violate its National Pollutants Discharge Elimination System ("NPDES") permit;

(2) Require compliance with applicable Pretreatment Standards and Requirements by Industrial Users;

(3) Control, through permit, contract, order, or similar means, the contribution to the POTW by each Industrial User to ensure compliance with applicable Pretreatment Standards and Requirements;

(4) Require (a) the development of a compliance schedule by each Industrial User for the installation of technology required to meet applicable Pretreatment Standards and Requirements and (b) the submission of all notices and self-monitoring reports from Industrial Users as are necessary to assess and assure compliance by Industrial Users with Pretreatment Standards and Requirements, including but not limited to the reports required in Volume 40 of the Code of Federal Regulations at 40 C.F.R. §403.12, as adopted into Section 4 of Regulation No. 6 of the Regulations for State Administration of the National

Pollutants Discharge Elimination System of the Arkansas Department of Pollution Control and Ecology, or any future amendment to these regulations, as same are administered and enforced by the Arkansas Department of Pollution Control and Ecology;

(5) Carry out all inspection, surveillance and monitoring procedures necessary to determine, independent of information supplied by Industrial Users, compliance or non-compliance with applicable Pretreatment Standards and Requirements by Industrial Users. Representatives of the POTW shall be authorized to enter any premises of any Industrial User in which a Discharge source or treatment system is located or in which records are required to be kept under applicable federal or state regulations including but not limited to 40 C.F.R. §403.12(m) to assure compliance with Pretreatment Standards. Such authority shall be at least as extensive as the authority provided under Section 308 of the Clean Water Act of 1972, as amended, and any applicable Arkansas regulations and statutes including the Arkansas Water and Air Pollution Control Act, Act 472 of 1949, as amended, and ordinances of the City of Little Rock, as same may be enacted or amended from time to time;

(6) Obtain remedies for noncompliance by any Industrial User with any Pretreatment Standard and Requirement. The Sewer Committee shall be entitled to seek injunctive relief for noncompliance by Industrial Users with Pretreatment Standards and Requirements. If the laws of the State of Arkansas now or hereafter authorize Alexander to enact ordinances or other local legislation to assess civil or criminal penalties for noncompliance by Industrial Users with Pretreatment Standards and Requirements, Alexander covenants with the Sewer Committee that it will enact such ordinances or other local legislation which the Sewer Committee may request as soon as practical, and Alexander expressly agrees that this covenant may be enforced by the Sewer Committee in a Court of Equity in accordance with the law of Arkansas in Pulaski County, Arkansas which the parties expressly stipulate is the appropriate venue for any such action. If the laws of the State of Arkansas do not now or hereafter authorize such actions, then the Sewer Committee is authorized to enter into contracts with Industrial Users to assure compliance by Industrial Users with Pretreatment Standards and Requirements. Any such contract will provide for liquidated damages for violation

of Pretreatment Standards and Requirements and will include an agreement by the Industrial User to submit to the remedy of specific performance for breach of contract, enforceable by a court situated in Pulaski County, Arkansas.

(7) The definitions set forth at 40 C.F.R. §403.3, as amended, are expressly incorporated by reference herein as if set forth word for word and a copy thereof is attached hereto marked Exhibit "B".

6. Future Connections with the Sewer System in Alexander. Alexander shall have no authority to extend or permit any future connections to the Sewer Facilities referred to in this Contract and Alexander agrees not to allow or permit any sewer extension to any area outside the incorporated area of Alexander as the boundaries exist on the date when this Contract is executed or when they may be changed in the future without the prior written approval of Little Rock by resolution of the Little Rock City Board of Directors. Alexander further agrees not to allow or permit any future sewer main extensions and/or sewer connections within the city limits of Alexander served or not currently served unless Alexander obtains the prior approval in writing of the Little Rock Sanitary Sewer Committee and

payment is made to S.I.D. #142 for any sewer main extension fees. A map of Alexander showing the current boundaries is attached hereto as Exhibit "C". A copy of the agreement dated March 4, 1980 between S.I.D. #142 and the Sewer Committee containing paragraph 6(b) on page 6 referring to extension fees due S.I.D. #142 is attached hereto, and marked Exhibit "D".

7. Future Extensions of Service. Little Rock and the Sewer Committee shall not be obligated for and assume no liability for any future extension of service not specifically set forth herein, and no such extension shall be made without the prior written approval of the governing body of Little Rock and the Sewer Committee and payment is made to S.I.D. #142 for any sewer main extension fees. This Contract anticipates no more than 820 residential Alexander connections which generate an amount of wastewater flow not to exceed a peak daily flow rate of 750 gallons per minute with the maximum flow rate being based on the capacity of the 18" diameter collector presently serving the City of Alexander, as determined by the Mannings formula set forth on Exhibit "E" attached hereto; provided, however, there may be a combination of residential, commercial, and industrial

users otherwise permitted by land use controls such as zoning, and subdivision regulations, on condition that the maximum peak daily wastewater flow rate for any combination of such permitted users does not exceed the peak daily wastewater flow rate of 750 gallons per minute as specified herein. In any event, anyone desiring such an extension of service beyond the existing facilities hereby served shall bear the full cost thereof, including all costs of any nature whatsoever involved in making such extension or making available such service and any connection fees set by the Little Rock Sanitary Sewer Committee which shall have the sole authority to do so. The further extension of service shall be in accordance with the rules and regulations of the Little Rock Sanitary Sewer Committee and subject to its approval at the time of the extension of service.

8. Alexander Comprehensive Development Plan, Zoning Ordinance, and Pre-Treatment Ordinance. Before any further sewer service is provided through connections to or extensions of the Sewer Facilities referred to in this Contract, Alexander shall furnish proof of the adoption of a comprehensive development plan and zoning ordinance and

resolution mandating the application and enforceability of the Little Rock sewer use and pretreatment requirements of the sewer use/pretreatment ordinance(s), and that said plan and zoning ordinance shall have been submitted to the Director of Department of Neighborhoods and Planning for the City of Little Rock for written approval before any further sewer service is provided by Little Rock either through a sewer connection or sewer extension specified in this Contract with such resolution to be approved by the Manager before said connection is made; and Alexander covenants to maintain and enforce at all times said comprehensive development plan, zoning ordinance and cooperate with Little Rock for the enforcement thereof.

9. Title and Maintenance Responsibility for Public Sewer Facilities Located and/or to be Located in Alexander.

Title to and maintenance responsibility for any and all public sewer facilities subject to this contract being defined as those pipes or conduits having a diameter of eight (8) inches or larger, normally equipped with manholes located in rights of way or easements together with all appurtenances thereto, shall be in Little Rock, provided however, any storm water facilities are not included as part

of the Sewer Facilities herein referred to or assigned, and any storm water facilities shall remain the property of Alexander.

10. Title and Maintenance Responsibility for Building Sewer or Private Service Lines. Title to and maintenance responsibility for any building sewer connecting each customer's public facilities to the public sewer line shown in Schedule "1" to Exhibit "A" attached hereto or private service line or to any extension thereof shall remain with the respective property owner, even though a portion of the building sewer or service line may be installed in the public right of way or easement; and Little Rock shall have no liability or responsibility for the operation or maintenance of said building sewer.

11. Term of Contract. Unless terminated earlier, the term of this Contract shall be for a period of fifteen (15) years from the date hereof at which time it will expire; provided, however, this Contract may be extended by the agreement of the parties hereto upon notice given by either party prior to the end of the term and adoption, thereafter, of approving ordinances by Alexander and the City of Little Rock, Arkansas.

12. Assignment or Transfer. This Contract and the rights hereunder shall not be assigned or transferred by Alexander, and shall be binding upon the successors of either party.

13. Taxes. Alexander covenants and agrees to pay any and all taxes levied by the United States and the State of Arkansas for the services provided and treatment of sewage pursuant to this contract, and shall comply with all federal, state, county and municipal laws, ordinances, rules and regulations pertaining to the treatment of sewage; and Alexander further agrees to indemnify and hold harmless Little Rock for any loss or damage of nature whatsoever sustained by Little Rock occasioned by the failure to comply with said laws, ordinances, rules and regulations by the employees or authorized representatives of Alexander.

14. Termination. This Contract may be terminated by Little Rock if Alexander fails to comply fully with any of the terms and provisions of this Contract. Termination of this Contract may occur only after actual written notice is given of the nature of the breach. In the event of the termination of this Contract, all obligations of Little Rock to treat the sewage under the agreement shall cease and

Alexander, including all residents and/or customers shall stop using the Sewer Facilities and Alexander shall immediately remove the sewer connection provided herein. It is the intention of the parties hereto that Alexander shall be solely responsible for the treatment of its sewage upon termination of this Contract, failing which Little Rock shall be entitled to recover from Alexander all damages sustained by Little Rock of any nature whatsoever proximately caused by any violation by Alexander or its residents of any provision(s) of this Contract, including but not limited to the failure of Alexander or its residents to remove said sewer connection and cease use of the Sewer Facilities, and Little Rock's costs and expenses for treatment of said sewage in the event Alexander fails to do so.

15. Notices. All notices hereunder shall be in writing with copies sent to Mabelvale-Alexander Sewer Improvement District #142, c/o Jack Larrison, District Assessor, 11518 Fairview Road, Little Rock, Arkansas 72212, and shall be deemed to have been duly given when sent by certified mail, postage prepaid, as follows:

If to Little Rock:

Little Rock Wastewater Utility	AND City of Little Rock
221 East Capitol Avenue	City Hall, 500 W. Markham
Little Rock, Arkansas 72201	Little Rock, Arkansas 72201
Attn: Manager	Attn: City Manager and Mayor

If to Alexander:

All copies to:

City of Alexander	Mabelvale-Alexander S.I.D.#142
City Hall	c/o Jack Larrison
Second & Main Streets	District Assessor
Alexander, Arkansas 72202	11518 Fairview Road
Attention: Mayor	Little Rock, Arkansas 72212

16. Update or Regulations. Alexander agrees to abide by the rules and regulations published from time to time concerning the treatment of sewage by Little Rock; and all applicable federal, state, county and municipal regulations concerning construction, operating, maintenance, and protection of treatment of sewage pursuant to this Contract. Little Rock by the Sewer Committee acting through LRWU shall have the right at all times, if it deems necessary or appropriate, to inspect all individual tie-ons, connections to or extensions of the Sewer Facilities referred to in this Contract.

17. Governmental Function. The parties recognize that treatment of sewage pursuant to this agreement is a governmental function and this Agreement shall be performed by the parties hereto in their respective governmental capacities.

18. Invalid Provision Shall Not Invalidate Contract.

The parties agree that in the event any paragraph, sentence, clause or word(s) of this Contract shall be held to be invalid, illegal or unenforceable, all other terms and provisions of this Contract shall remain in full force and effect, and this Contract shall be construed as if not containing the particular provision or provisions held to be invalid.

19. Contract Legally Binding. All parties to the

Contract agree to the terms contained herein and represent to each other that the terms of this Contract have been duly accepted and approved by the authorized representatives of the parties hereto; and all parties covenant to each other that all action required by law has been taken to make this Contract legally binding and enforceable and that the parties hereto shall have all of the rights and remedies under the law of Arkansas to enforce the terms of this Contract.

20. Venue in Pulaski County, Arkansas. The parties

expressly agree that any legal or equitable action of any nature whatsoever must be brought in appropriate courts situated in Pulaski County, Arkansas, and that court shall

be the proper venue for any such action to assert jurisdiction over the parties hereto, as well as the subject matter thereof.

IN WITNESS WHEREOF, the parties have caused this contract to be executed by their duly authorized representatives on the 7th day of November, 1997.

CITY OF LITTLE ROCK, ARKANSAS

By: Jim Mallory
Mayor

Attest:

Robin Hancock

LITTLE ROCK SANITARY SEWER
COMMITTEE

By: Brenda James
Chair

ATTEST:

Reggie A. Corbett
Manager
Little Rock Wastewater Utility

CITY OF ALEXANDER, ARKANSAS

By: Shelby Johnson
Mayor

Attest:

Brenda S Lee

ACKNOWLEDGMENT

STATE OF ARKANSAS
COUNTY OF PULASKI

On this 7th day of November, 1997, before me, a Notary Public, duly commissioned, qualified and acting, within and for said County and State, appeared in person the within named James Dailey and Robbie Hancock, being the persons authorized by the City of Little Rock to execute such instrument, stating their respective capacities in that behalf, to me personally well known, who stated that they were the Mayor and City Clerk of the City of Little Rock, respectively, and executed and delivered said foregoing instrument for the consideration, uses and purposes therein mentioned and set forth.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal this 7th day of November, 1997.

Rebecca Jane Campbell
Notary Public

My Commission Expires:

July 6, 2000
(SEAL)

ACKNOWLEDGMENT

STATE OF ARKANSAS
COUNTY OF PULASKI

On this 7th day of November, 1997, before me, a Notary Public, duly commissioned, qualified and acting, within and for said County and State, appeared in person the within named Brenda James and Reggie A. Corbitt, being the persons authorized by the Little Rock Sanitary

Sewer Committee and the Little Rock Wastewater Utility to execute such instrument, stating their respective capacities in that behalf, to me personally well known, who stated that they were the Chair of the Little Rock Sanitary Sewer Committee and Manager of the Little Rock Wastewater Utility and executed and delivered said foregoing instrument for the consideration, uses and purposes therein mentioned and set forth.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal this 7th day of November, 1997.

Rebecca Jane Campbell
Notary Public

My Commission Expires:
July 2000
(SEAL)

ACKNOWLEDGMENT

STATE OF ARKANSAS
COUNTY OF PULASKI

On this 7th day of November, 1997, before me, a Notary Public, duly commissioned, qualified and acting, within and for said County and State, appeared in person the within named Shirley Johnson and Brenda Lee, being the persons authorized by the City of Alexander to execute such instrument, stating their respective capacities in that behalf, to me personally well known, who stated that they were the Mayor and City Clerk of the City of Alexander, respectively, and executed and delivered said foregoing instrument for the consideration, uses and purposes therein mentioned and set forth.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal this 7th day of November, 1997.

Rebecca Jane Campbell
Notary Public

REBECCA JANE CAMPBELL
NOTARY PUBLIC
My Commission Expires:
July 6, 2000
173 (SEAL)

TABLE OF EXHIBITS

OF

CONTRACT BETWEEN CITY OF ALEXANDER, ARKANSAS

and

CITY OF LITTLE ROCK, ARKANSAS

and

THE LITTLE ROCK SANITARY SEWER COMMITTEE

- EXHIBIT "A" Easement (with Schedule "1" attached thereto)
- EXHIBIT "B" Copy of definitions contained in 40 C.F.R. §403.3, as amended, consisting of 4 pages.
- EXHIBIT "C" Map of City of Alexander
- EXHIBIT "D" Agreement dated March 4, 1980, between S.I.D. #142 and Little Rock Sanitary Sewer Committee, consisting of pages 1 through 7.
- EXHIBIT "E" Mannings Formula and computation determining 820 residential connections referred to on Page 13 of the Contract (pages 1 and 2).

RIGHT-OF-WAY EASEMENT

KNOW ALL MEN BY THESE PRESENTS:

THAT THE CITY OF ALEXANDER, ARKANSAS, GRANTOR, a municipality organized under and by virtue of the laws of the State of Arkansas, by its duly authorized representative, Mayor Shirley Johnson, and by proper resolution of its City Council, for good and valuable consideration received from the Little Rock Sanitary Sewer Committee, the receipt of which is hereby acknowledged, does hereby, subject to prior recorded mortgages and easements, if any; grant, bargain, sell, assign, and convey unto the City of Little Rock, Arkansas, for the use and benefit of the Little Rock Sanitary Sewer Committee, GRANTEE, and unto its successors and assigns forever, the following-described easement for all of the sewer lines eight inches (8") or larger with manholes, shown on Schedule "1" attached hereto:

1. A PERMANENT RIGHT, PRIVILEGE AND EASEMENT for the purpose of permitting the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to (a) lay, construct, operate, maintain, repair, replace, reconstruct, test, inspect and add sewer mains and sewer lines whether one or more, and without the payment of additional compensation therefor; (b) keeping the easement clear of all building and other improvements of any kind except streets or roads; and (c) having the right to free ingress and egress across adjacent lands of the GRANTOR(S) to the lands hereinafter described. Subject to prior easement of record and except as hereinafter stated, the Little Rock Sanitary Sewer Committee shall have the exclusive use of this right-of-way and easement; and the GRANTOR may hereinafter use the surface of the easement for any purpose not inconsistent with the rights hereby conveyed, but may not place a building, footing, wall, structure, or other improvement upon the right-of-way except that, after the initial sewer construction is completed, the GRANTOR may pave the easement surface and may use it for driveways, walks, parking areas, streets or roads. The GRANTOR may permit other utility service to cross this easement at approximately right angles, but only if such utilities first comply with whatever specifications the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility may designate at the time for the protection of its own facilities. This permanent easement shall be upon the following-described lands situated in Pulaski County and Saline County, Arkansas, to-wit:

A strip of easement, varying in width not to exceed 20' with the centerline being the existing sewer lines eight inches (8") or larger with manholes all owned by the City of Little Rock, as shown in Exhibit "1" attached hereto, or the width of the existing easement, street, or right-of-way in which said lines are located, as hereinafter described, whichever is 20' in width or less, all of which being located in those Utility easements and rights-of-way owned by the City of Alexander (or, in the case of Kelliwood Subdivision, the sewer easement[s] in which the City of Alexander has any right, title or interest), Utility easements, streets, and/or rights-of-way on the plat filed of record at Plat Book 1, Page 129 and dated June 6, 1910, the Planning Area Map of the City of Alexander, Arkansas, filed of record as Instrument No. 82-12788 in the real estate records of Pulaski County, Arkansas and dated April 15, 1982, and the Replat of Kelliwood Subdivision located

within the corporate limits of the City of Alexander, filed of record at Book B, Page 278 in the real estate records of Pulaski County, Arkansas and dated July 10, 1984; all of which being existing sewer lines eight inches (8") or larger with manholes being shown on the "as-built" survey attached as Schedule "1" hereto and incorporated herein by reference.

The execution of this easement does not give the GRANTOR the right to connect to or receive service from any sewer or wastewater facility; the right to make connections and receive service shall be subject to the rules, regulations, policies or ordinances in effect at the time of application.

To have and to hold said easement, rights and privileges unto the GRANTEE, and unto its successors and assigns forever, for the purposes aforesaid.

And GRANTOR covenants with GRANTEE, its successors and assignees, that subject to prior recorded mortgages and easements, if any, it will forever warrant and defend the title to said easement and rights against the claims of all persons whomsoever and that GRANTEE, its successors and assigns, shall have at all times the quiet use of enjoyment of said easements and rights.

IN WITNESS WHEREOF, the name of the GRANTOR is hereunto affixed by its undersigned authorized Mayor and attested to by its City Clerk, this ____ day of _____, 1997.

CITY OF ALEXANDER, ARKANSAS

By: _____
Shirley Johnson, Mayor

ATTEST:

ACKNOWLEDGMENT

STATE OF ARKANSAS)
)SS
COUNTY OF PULASKI)

On this day personally appeared before the undersigned, a Notary Public within and for the County and State aforesaid, duly qualified, Commissioned and acting, Shirley Johnson and _____ to me well known, who stated that they were the Mayor and City Clerk of the City of Alexander, Arkansas, and were duly authorized in their respective capacities to execute the foregoing agreement for and in the name and behalf of said municipality, and further stated and acknowledged that they had so signed, executed and delivered said easement for the consideration, uses and purposes therein mentioned and set forth.

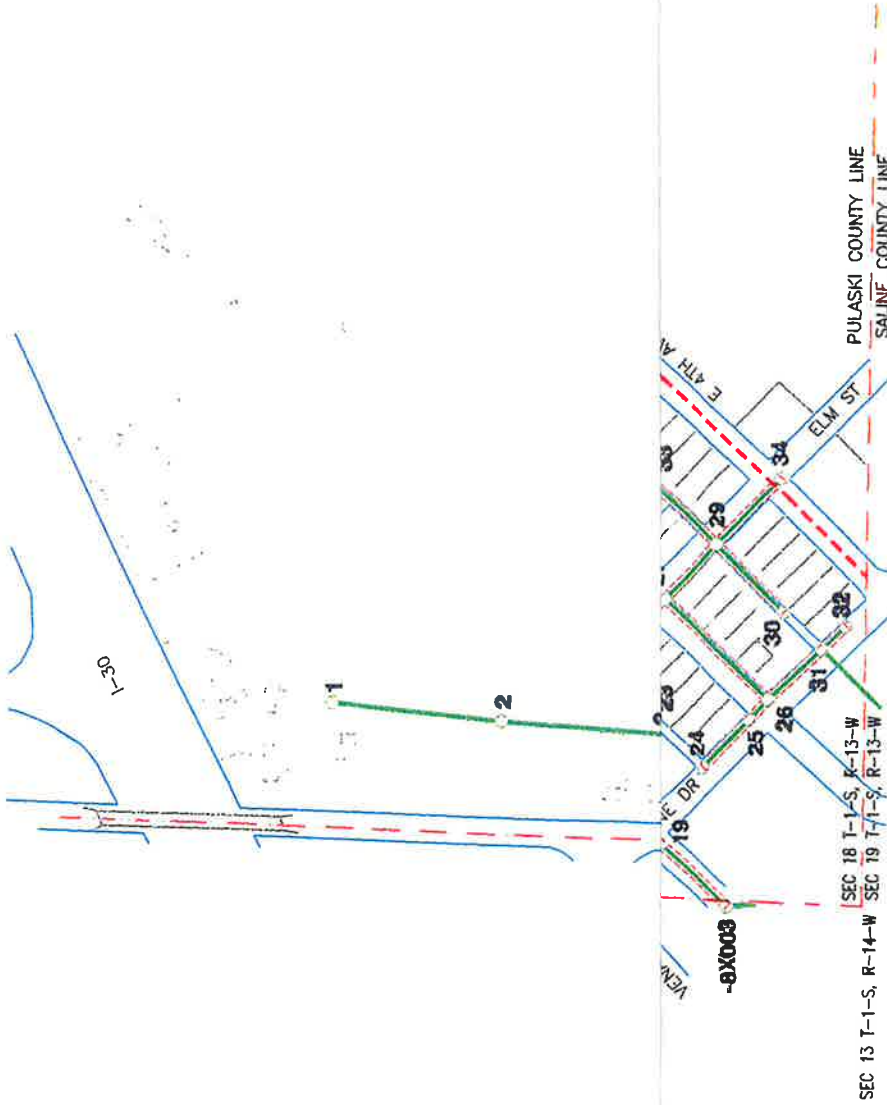
WITNESS MY HAND and official seal this ____ day of _____, 1997.

Notary Public

My Commission Expires: _____

0736H

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SHEET NUMBER

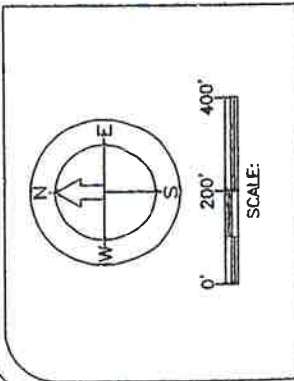
LITTLE ROCK WASTEWATER UTILITY

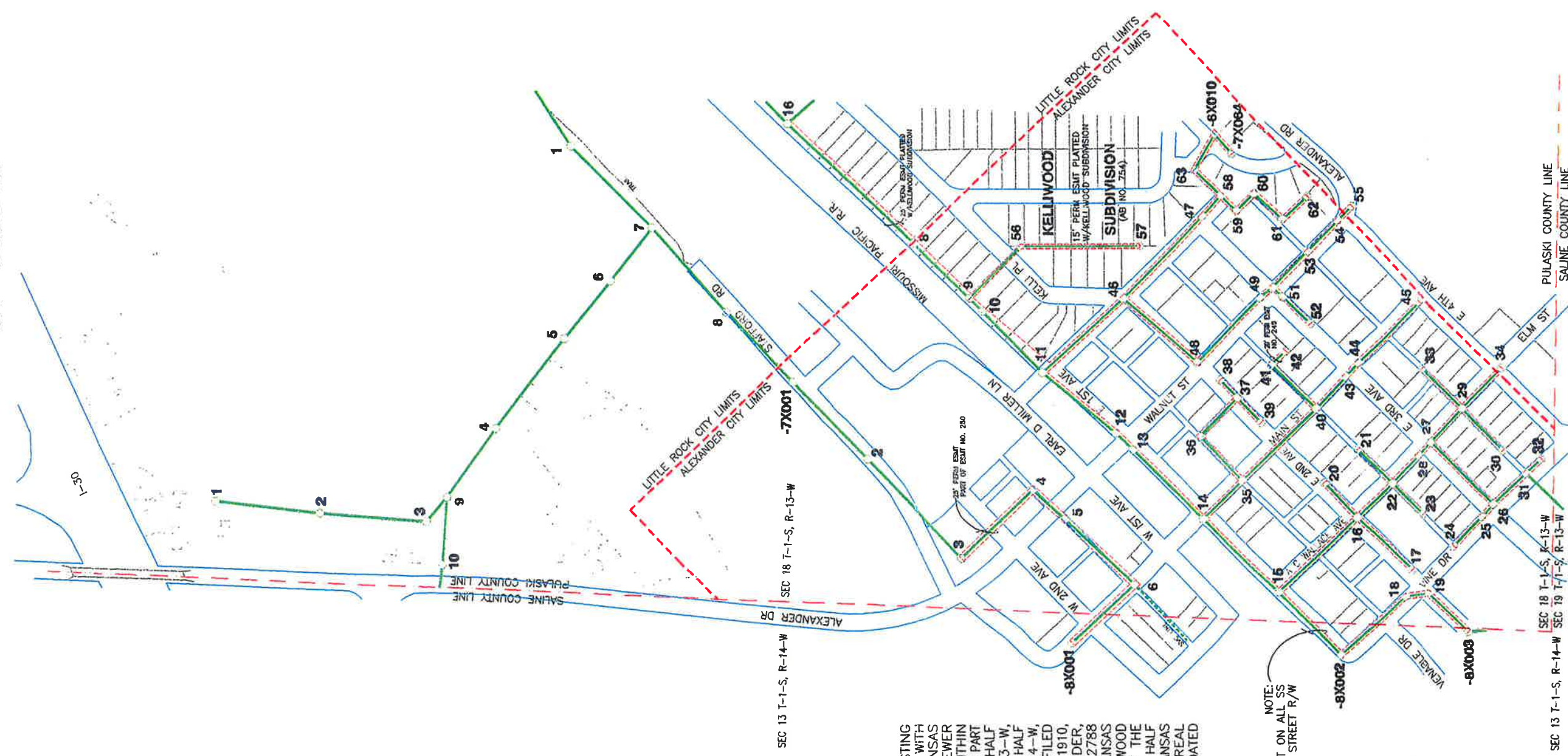
SCHEDULE I TO RIGHT-OF-WAY EASEMENT



24 — MANHOLE NUMBER
 — MANHOLE
 — SEWER MAIN
 - - - SERVICE LINE
 - - - UTILITY EASEMENT
 - - - BOUNDARY

PREPARED BY: EVANGELINE O'NEAL
 DATE: JULY 1997
 ZIP DRIVE
 D:\T-LUTHER\ALEXAND2.DWG

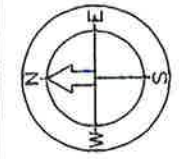




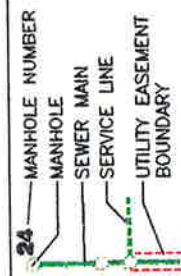
**SCHEDULE I
TO RIGHT-OF-WAY EASEMENT**

A DRAWING OF THE PUBLIC SEWER FACILITIES CONSISTING OF PIPES EIGHT INCHES OR LARGER AND MANHOLES WITH COVERS OWNED BY THE CITY OF LITTLE ROCK, ARKANSAS FOR THE USE AND THE BENEFIT OF THE SANITARY SEWER COMMITTEE OF LITTLE ROCK, ARKANSAS LOCATED WITHIN THE CITY OF ALEXANDER, ARKANSAS, A MUNICIPALITY LOCATED IN PART OF THE FRACTIONAL SOUTHWEST QUARTER AND WEST HALF OF THE SOUTHEAST QUARTER OF SECTION 18, T-1-S, R-13-W, PULASKI COUNTY, ARKANSAS, AND IN PART OF THE EAST HALF OF THE SOUTHEAST QUARTER OF SECTION 13, T-1-S, R-14-W, SALINE COUNTY, ARKANSAS, AS SHOWN ON THE PLAT FILED OF RECORD AT PLAT BOOK 1, PAGE 129 AND DATED JUNE 6, 1910, THE PLANNING AREA MAP OF THE CITY OF ALEXANDER, ARKANSAS, FILED OF RECORD AS INSTRUMENT NO. 82-12788 IN THE REAL ESTATE RECORDS OF PULASKI COUNTY, ARKANSAS AND DATED APRIL 15, 1982, AND THE REPLAT OF KELLIWOOD SUBDIVISION LOCATED WITHIN THE CORPORATE LIMITS OF THE CITY OF ALEXANDER, ARKANSAS, IN PART OF THE SOUTH HALF OF SECTION 18, T-1-S, R-13-W, PULASKI COUNTY, ARKANSAS FILED OF RECORD AT BOOK B, PAGE 278 IN THE REAL ESTATE RECORD OF PULASKI COUNTY, ARKANSAS AND DATED JULY 10, 1984.

NOTE:
20' ESMT ON ALL SS
& MH'S IN STREET R/W



0'
200'
400'
SCALE:



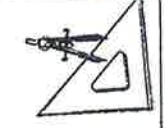
PREPARED BY: EVANGELINE O'NEAL
DATE: JULY 1997
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LITTLE ROCK WASTEWATER UTILITY

**SCHEDULE I
TO RIGHT-OF-WAY EASEMENT**

SHEET NUMBER



§ 403.1

40 CFR Ch. I (7-1-96)

- 403.10 Development and submission of NPDES State pretreatment programs.
- 403.11 Approval procedures for POTW pretreatment programs and POTW granting of removal credits.
- 403.12 Reporting requirements for POTW's and industrial users.
- 403.13 Variances from categorical pretreatment standards for fundamentally different factors.
- 403.14 Confidentiality.
- 403.15 Net/Gross calculation.
- 403.16 Upset provision.
- 403.17 Bypass.
- 403.18 Modification of POTW Pretreatment Programs.

APPENDIX A TO PART 403—PROGRAM GUIDANCE MEMORANDUM

APPENDIX B TO PART 403—[RESERVED]

APPENDIX C TO PART 403—[RESERVED]

APPENDIX D TO PART 403—SELECTED INDUSTRIAL SUBCATEGORIES CONSIDERED DILUTE FOR PURPOSES OF THE COMBINED WASTESTREAM FORMULA

APPENDIX E TO PART 403—SAMPLING PROCEDURES

APPENDIX F [RESERVED]

APPENDIX G TO PART 403—Pollutants Eligible for a Removal Credit

AUTHORITY: Sec. 51(c)(2) of the Clean Water Act of 1977, (Pub. L. 95-217) sections 204(b)(1)(C), 209(b)(2)(C)(iii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(b)(2)(C), 301(h)(5), 301(i)(2), 304(e), 304(g), 307, 308, 309, 402(b), 406 and 501(a) of the Federal Water Pollution Control Act (Pub. L. 92-500) as amended by the Clean Water Act of 1977 and the Water Quality Act of 1987 (Pub. L. 100-4).

SOURCE: 46 FR 9439, Jan. 23, 1981, unless otherwise noted.

§ 403.1 Purpose and applicability.

(a) This part implements sections 204(b)(1)(C), 209(b)(2)(C)(iii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(b)(2)(C), 301(h)(5), 301(i)(2), 304(e) and (g), 307, 308, 309, 402(b), 406, and 501(a) of the Federal Water Pollution Control Act as amended by the Clean Water Act of 1977 (Pub. L. 95-217) or "The Act". It establishes responsibilities of Federal, State, and local government, industry and the public to implement National Pretreatment Standards to control pollutants which pass through or interfere with treatment processes in Publicly Owned Treatment Works (POTWs) or which may contaminate sewage sludge.

(b) This regulation applies: (1) To pollutants from non-domestic sources covered by Pretreatment Standards which are indirectly discharged into or transported by truck or

rail or otherwise introduced into POTWs as defined below in § 403.3;

(2) To POTWs which receive wastewater from sources subject to National Pretreatment Standards;

(3) To States which have or are applying for National Pollutant Discharge Elimination System (NPDES) programs approved in accordance with section 402 of the Act; and

(4) To any new or existing source subject to Pretreatment Standards. National Pretreatment Standards do not apply to sources which Discharge to a sewer which is not connected to a POTW Treatment Plant.

(46 FR 9439, Jan. 23, 1981, as amended at 48 FR 2776, Jan. 21, 1983; 60 FR 23331, June 29, 1995)

§ 403.2 Objectives of general pretreatment regulations.

By establishing the responsibilities of government and industry to implement National Pretreatment Standards this regulation fulfills three objectives:

(a) To prevent the introduction of pollutants into POTWs which will interfere with the operation of a POTW, including interference with its use or disposal of municipal sludge;

(b) To prevent the introduction of pollutants into POTWs which will pass through the treatment works or otherwise be incompatible with such works; and

(c) To improve opportunities to recycle and reclaim municipal and industrial wastewaters and sludges.

§ 403.3 Definitions.

For the purposes of this part:

(a) Except as discussed below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR part 401 shall apply to this regulation.

(b) The term Act means Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq.

(c) The term Approval Authority means the Director in an NPDES State with an approved State pretreatment program and the appropriate Regional Administrator in a non-NPDES State or NPDES State without an approved State pretreatment program.

(d) The term *Approved POTW Pretreatment Program* or *Program of POTW Pretreatment Program* means a program administered by a POTW that meets the criteria established in this regulation (§§ 403.8 and 403.9) and which has been approved by a Regional Administrator or State Director in accordance with § 403.11 of this regulation.

(e) The term *Director* means the chief administrative officer of a State or Interstate water pollution control agency with an NPDES permit program approved pursuant to section 402(b) of the Act and an approved State pretreatment program.

(f) The term *Water Management Division Director* means one of the Directors of the Water Management Divisions within the Regional offices of the Environmental Protection Agency or this person's delegated representative.

(g) The term *Indirect Discharge* or *Discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under section 307(b), (c) or (d) of the Act.

(h) The term *Industrial User* or *User* means a source of Indirect Discharge.

(i) The term *Interference* means a Discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

(1) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(2) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

(j) The term *National Pretreatment Standard*, *Pretreatment Standard*, or *Standard* means any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307 (b) and (c) of the Act, which applies to Industrial Users. This term includes prohibitive discharge limits established pursuant to § 403.5.

(k)(1) The term *New Source* means any building, structure, facility or installation from which there is or may be a Discharge of pollutants, the construction of which commenced after the publication of proposed Pretreatment Standards under section 307(c) of the Act which will be applicable to such source if such Standards are thereafter promulgated in accordance with that section, *provided that*:

(i) The building, structure, facility or installation is constructed at a site at which no other source is located; or

(ii) The building, structure, facility or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

(iii) The production or wastewater generating processes of the building, structure, facility or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source should be considered.

(2) Construction on a site at which an existing source is located results in a modification rather than a new source if the construction does not create a new building, structure, facility or installation meeting the criteria of paragraphs (k)(1)(ii) or (k)(1)(iii) of this section but otherwise alters, replaces, or adds to existing process or production equipment.

(3) Construction of a new source as defined under this paragraph has commenced if the owner or operator has:

(i) Begun, or caused to begin as part of a continuous onsite construction program:

(A) Any placement, assembly, or installation of facilities or equipment; or

(B) Significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or

(ii) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.

(l) The terms *NPDES Permit* or *Permit* means a permit issued to a POTW pursuant to section 402 of the Act.

(m) The term *NPDES State* means a State (as defined in 40 CFR 122.2) or Interstate water pollution control agency with an NPDES permit program approved pursuant to section 402(b) of the Act.

(n) The term *Pass Through* means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

(o) The term *Publicly Owned Treatment Works* or *POTW* means a treatment works as defined by section 212 of the Act, which is owned by a State or municipality (as defined by section 502(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in section 502(4) of the Act, which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works.

(p) The term *POTW Treatment Plant* means that portion of the POTW which is designed to provide treatment (in-

cluding recycling and reclamation) of municipal sewage and industrial waste.

(q) The term *Pretreatment* means the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. The reduction or alteration may be obtained by physical, chemical or biological processes, process changes or by other means, except as prohibited by § 403.6(d). Appropriate pretreatment technology includes control equipment, such as equalization tanks or facilities, for protection against surges or slug loadings that might interfere with or otherwise be incompatible with the POTW. However, where wastewater from a regulated process is mixed in an equalization facility with unregulated wastewater or with wastewater from another regulated process, the effluent from the equalization facility must meet an adjusted pretreatment limit calculated in accordance with § 403.6(e).

(r) The term *Pretreatment requirements* means any substantive or procedural requirement related to Pretreatment, other than a National Pretreatment Standard, imposed on an Industrial User.

(s) The term *Regional Administrator* means the appropriate EPA Regional Administrator.

(t) *Significant Industrial User*. (1) Except as provided in paragraph (t)(2) of this section, the term *Significant Industrial User* means:

(i) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N; and

(ii) Any other industrial user that discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, non-contact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority as defined in 40 CFR 403.12(a) on the

Environmental Protection Agency

§ 403.5

basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

(2) Upon a finding that an industrial user meeting the criteria in paragraph (t)(1)(ii) of this section has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority (as defined in 40 CFR 403.12(a)) may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

(u) The term *Submission* means:

(1) A request by a POTW for approval of a Pretreatment Program to the EPA or a Director;

(2) A request by a POTW to the EPA or a Director for authority to revise the discharge limits in categorical Pretreatment Standards to reflect POTW pollutant removals; or

(3) A request to the EPA by an NPDES State for approval of its State pretreatment program.

[46 FR 9439, Jan. 23, 1981, as amended at 49 FR 5132, Feb. 10, 1984; 49 FR 29059, July 10, 1984; 51 FR 20430, June 4, 1986; 51 FR 23760, July 1, 1986; 52 FR 1600, Jan. 14, 1987; 53 FR 40510, Oct. 17, 1988; 55 FR 30123, July 24, 1990]

§ 403.4 State or local law.

Nothing in this regulation is intended to affect any Pretreatment Requirements, including any standards or prohibitions, established by State or local law as long as the State or local requirements are not less stringent than any set forth in National Pretreatment Standards, or any other requirements or prohibitions established under the Act or this regulation. States with an NPDES permit program approved in accordance with section 402 (b) and (c) of the Act, or States requesting NPDES programs, are responsible for developing a State pretreatment program in accordance with § 403.10 of this regulation.

§ 403.6 National pretreatment standards: Prohibited discharges.

(a)(1) *General prohibitions.* A User may not introduce into a POTW any pollutant(s) which cause Pass Through or Interference. These general prohibitions and the specific prohibitions in paragraph (b) of this section apply to each User introducing pollutants into a POTW whether or not the User is subject to other National Pretreatment Standards or any national, State, or local Pretreatment Requirements.

(2) *Affirmative Defenses.* A User shall have an affirmative defense in any action brought against it alleging a violation of the general prohibitions established in paragraph (a)(1) of this section and the specific prohibitions in paragraphs (b)(3), (b)(4), (b)(5), (b)(6), and (b)(7) of this section where the User can demonstrate that:

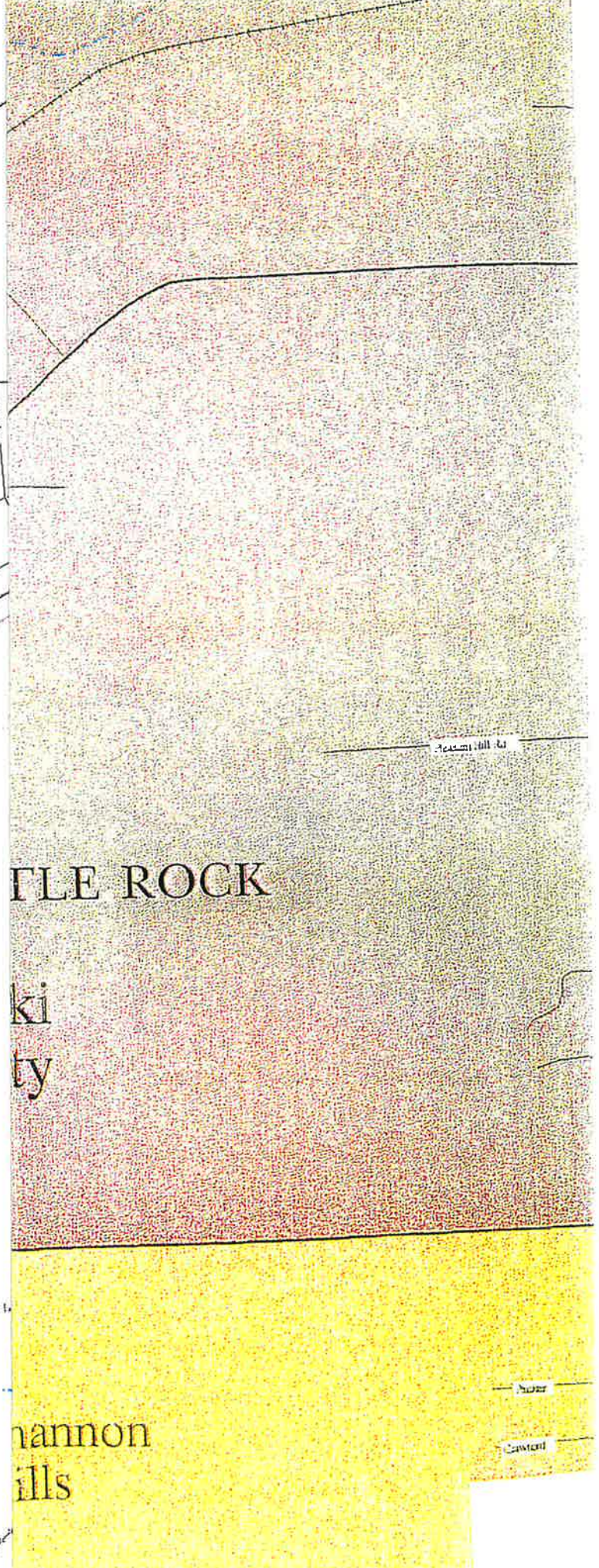
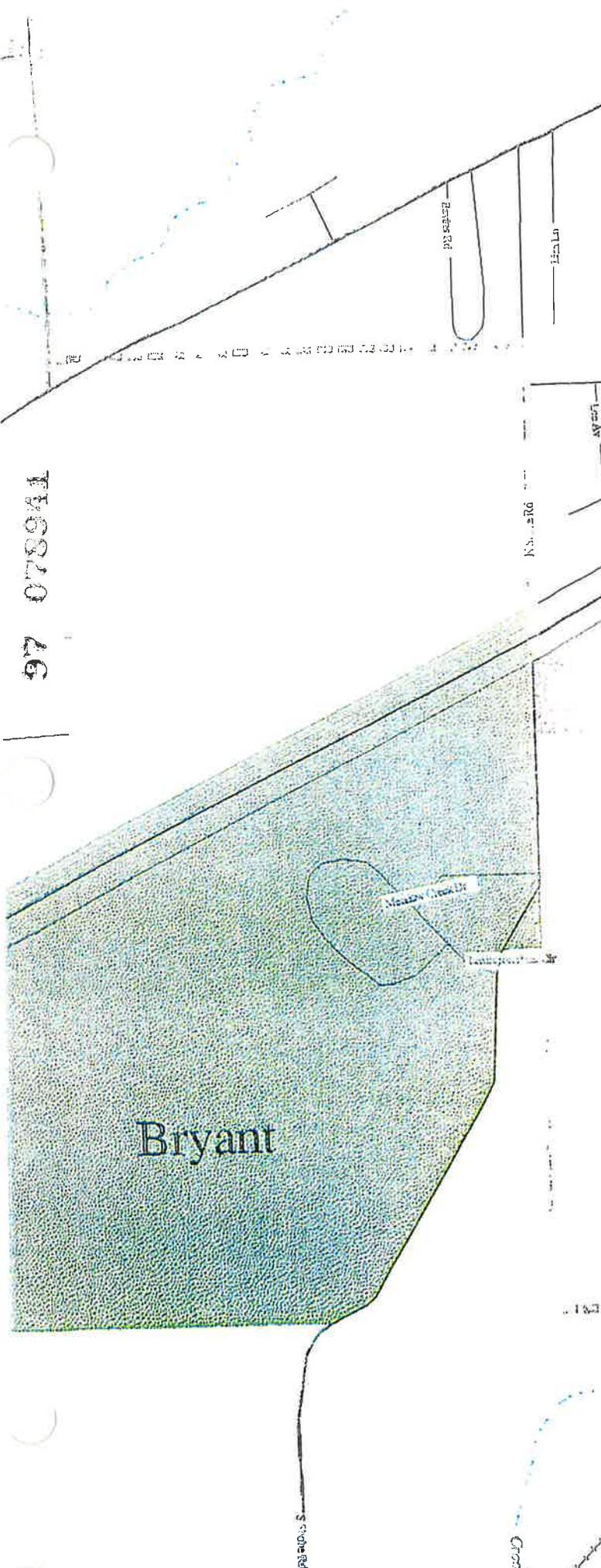
(i) It did not know or have reason to know that its Discharge, alone or in conjunction with a discharge or discharges from other sources, would cause Pass Through or Interference; and

(ii)(A) A local limit designed to prevent Pass Through and/or Interference, as the case may be, was developed in accordance with paragraph (c) of this section for each pollutant in the User's Discharge that caused Pass Through or Interference, and the User was in compliance with each such local limit directly prior to and during the Pass Through or Interference; or

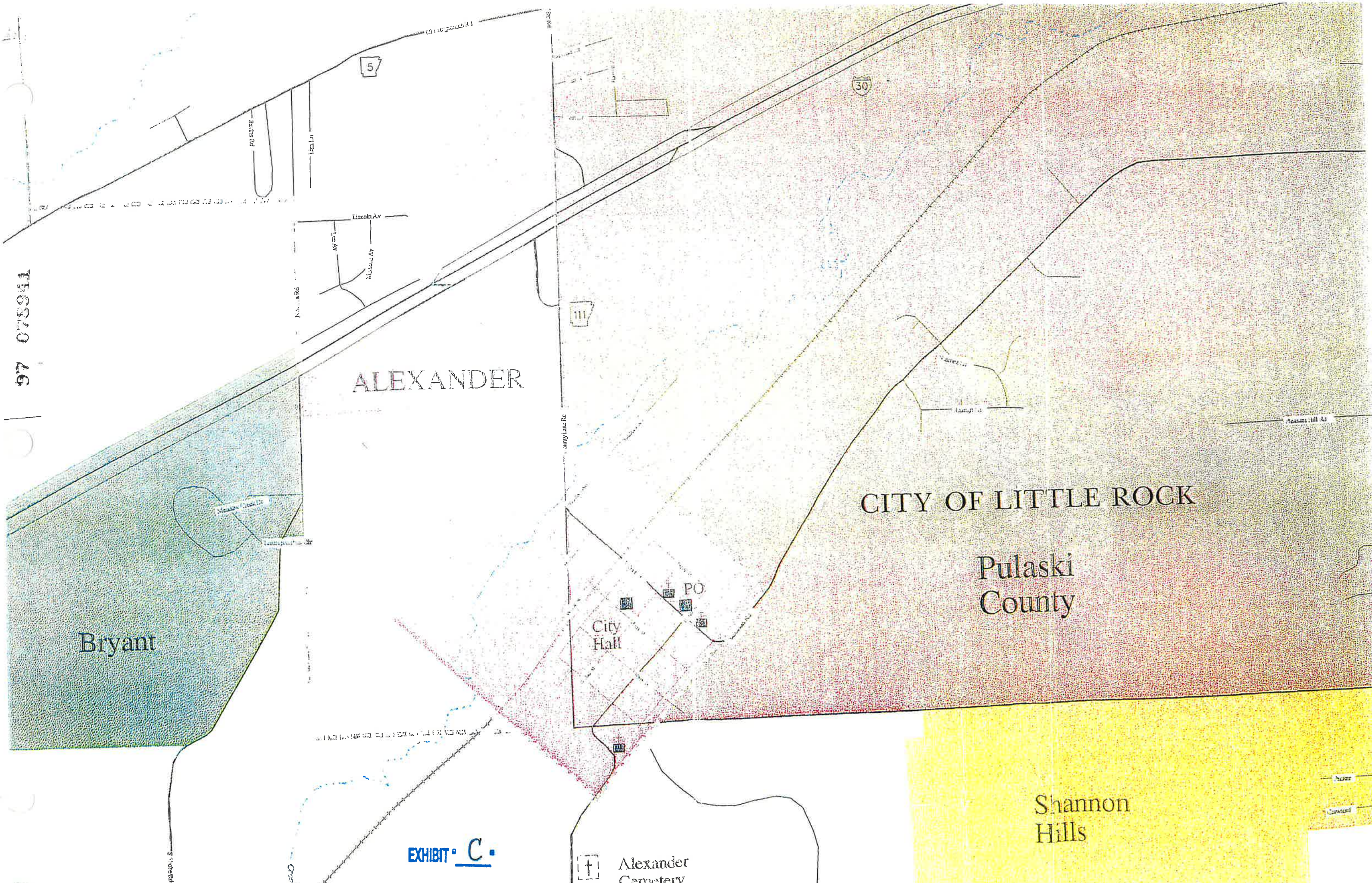
(B) If a local limit designed to prevent Pass Through and/or Interference, as the case may be, has not been developed in accordance with paragraph (c) of this section for the pollutant(s) that caused the Pass Through or Interference, the User's Discharge directly prior to and during the Pass Through or Interference did not change substantially in nature or constituents from the User's prior discharge activity when the POTW was regularly in compliance with the POTW's NPDES permit requirements and, in the case of Interference, applicable requirements for sewage sludge use or disposal.

(b) *Specific prohibitions.* In addition, the following pollutants shall not be introduced into a POTW:

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97 078941



ALEXANDER

CITY OF LITTLE ROCK

Pulaski County

Bryant

Shannon Hills

EXHIBIT C

 Alexander Cemetery

 City Hall
 PO

Lincoln Av
 Main St
 Market St
 N. S. Rd

30

5

111

Note
 Content

A G R E E M E N T

THIS AGREEMENT is made and entered into this 4 day of MARCH, 1980, between the MABELVALE-ALEXANDER SEWER IMPROVEMENT DISTRICT NO. 142 (the "District"), a public body corporate and politic, duly created by ordinance of the Board of Directors of the City of Little Rock, Arkansas, and the LITTLE ROCK SANITARY SEWER COMMITTEE (the "Committee"), a public body corporate and politic, duly created by ordinance of the Board of Directors of the City of Little Rock, Arkansas (references to the Committee shall also be deemed to be references to the Little Rock Wastewater Utility, the operating division of the Committee),

W-I-T-N-E-S-S-E-T-H:

WHEREAS, pursuant to the Constitution and laws of the State of Arkansas, particularly Title 20, Chapter 1 (Sections 20-101 et seq.), of the Arkansas Statutes Annotated (1968 Repl.), as amended, the District is authorized in furtherance of the public purpose of construction of sewers to contract for the construction, maintenance, utilization and operation thereof; and

WHEREAS, the Committee, pursuant to the Constitution and laws of the State of Arkansas, particularly Title 19, Chapter 41 (Sections 19-4101 et seq.) of the Arkansas Statutes Annotated (1968 Repl.) and ordinances of the City of Little Rock, Arkansas, is charged with effecting and supervising the construction, acquisition, improvement, equipment, custody, operation and maintenance of works for the collection, treatment and disposal of sewage and the collection of revenues therefrom for the service rendered thereby for the City of Little Rock, Arkansas; and

WHEREAS, the Committee has been awarded by the United States Environmental Protection Agency (the "EPA") Step 2 Grant Assistance for preparation of construction drawings

and specifications, and intends to make application with the EPA for Step 3 Grant Assistance for building and erection of a sewage treatment works under Project No. C-050426-1, known as "Little Rock Fourche" (the "EPA Grants"), which EPA Grants will provide up to 75% of the overall costs for developing plans and specifications and actual construction of a comprehensive extension of the Little Rock Sanitary Sewer System; and

WHEREAS, one benefit to be derived by the awarding of the EPA Grants to the Committee is the extension of sewer service by the Committee to certain areas contained within the boundaries of the District; and

WHEREAS, the District and the Committee desire to set forth their respective rights and responsibilities regarding the construction, payment of costs, ownership, operation and maintenance of the sewer works anticipated to be constructed by the Committee within the boundaries of the District, and to clarify and describe the functions of the parties during the time the said sewer works shall be pursued, planned, constructed and thereafter operated.

NOW, THEREFORE, for a valuable consideration, the sufficiency and receipt of which are hereby acknowledged, the parties hereto agree as follows:

1. Definitions. In addition to the words and terms elsewhere defined in this Agreement, the following words and terms shall have the following meanings:

"Grants-Assisted Project" means all interceptor sewers and appurtenances to be constructed within the boundaries of the District in accordance with the terms of the EPA Grants which are eligible for grant assistance under the EPA Grants.

"Non Grants-Assisted Project" means all sewer lines and related facilities to be constructed within the boundaries

of the District in accordance with the terms of the EPA Grants which are not eligible for grant assistance under the EPA Grants.

"Projects" means the Grants-Assisted Project and the Non Grants-Assisted Project.

"GAP District Costs" means, with respect to all costs incurred in connection with the construction of the Grants-Assisted Project (including, without limitation, costs of planning, engineering, right-of-way acquisition, surveying, appraisals and administration), all such costs in excess of funds received by the Committee under the EPA Grants in connection with the Grants-Assisted Project.

"NGAP District Costs" means all costs incurred in connection with the planning, engineering, right-of-way acquisition, surveying, appraising and administering, but excluding constructing, of the Non Grants-Assisted Project.

2. Construction to Boundaries of District. Provided that the Committee shall be awarded the Step 3 Grant Assistance portion of the EPA Grants and provided that the City of Little Rock shall provide to the Committee sufficient revenues to enable the Committee to perform its responsibilities under such Step 3 Grant Assistance, the Committee shall construct, at its expense, interceptor sewers and appurtenances and treatment works to bring sanitary sewer service to the boundaries of the District.

3. Grants-Assisted Project. (a) The Committee shall construct the Grants-Assisted Project in accordance with the terms of the EPA Grants. The District agrees to reimburse the Committee for all GAP District Costs.

(b) As part of the construction of the Grants-Assisted Project, it will be necessary for the Committee to acquire

certain rights-of-way and easements from property owners within the boundaries of the District. The District agrees to use its best efforts to assist the Committee in such acquisition, including, in this regard, acquiring such rights-of-way and easements in the name of the District (but at the expense of the Committee, subject to reimbursement of GAP District Costs) and subsequently conveying same to the Committee, when in the judgment of the Committee and the District such acquisition by the District would be desirable. Any such acquisition by the District shall be made in accordance with the requirements set forth in 40 Code of Federal Regulations, Chapter I, Part 4, Subpart F (§4.600 et seq.) and Appendix A thereto.

(c) During the period of construction of the Grants-Assisted Project, the Committee shall submit monthly certified reports to the District showing the costs incurred by the Committee in connection with such construction, and specifying the portion thereof which represents GAP District Costs. Within thirty (30) days of its receipt of each such certified report of costs, the District shall (i) if the District has at such times issued bonds of the District, pay to the Committee the amount of the GAP District Costs or (ii) if the District has at such time not issued bonds of the District, issue and deliver to the Committee the District's Certificate of Indebtedness, as described in paragraph 5, below, in the amount of the GAP District Costs as set forth in such report.

4. Non Grants-Assisted Project. (a) The District shall construct the Non Grants-Assisted Project as represented in the EPA Grants applications and such construction shall be completed in accordance with the Committee's latest standards and specifications for sewer construction.

(b) The Committee agrees to financially assist the District in payment of NGAP District Costs prior to the issuance of bonds of the District in the following manner:
During the period beginning on the date of this Agreement

and ending on the date of issuance of bonds of the District, the District shall submit monthly certified reports to the Committee showing the NGAP District Costs incurred by the District. The District shall attach to each such certified report (i) copies of all statements and invoices received by the District during the preceding month and specifying the portion thereof representing NGAP District Costs and (ii) the District's Certificate of Indebtedness, as described in paragraph 5, below, in the amount of the NGAP District Costs set forth in the said report. Within ten (10) days of its receipt of each such certified report with attached statements and invoices and Certificate of Indebtedness, the Committee shall pay directly to the billing parties the amounts of each such statement or invoice representing NGAP District Costs. The Committee shall provide copies of its checks in payment of such statements and invoices to the District.

5. District Certificates of Indebtedness. In order to accomplish the reimbursement to the Committee of GAP District Costs prior to the issuance of bonds of the District and in order to evidence the District's indebtedness to the Committee for NGAP District Costs advanced to the District by the Committee prior to the issuance of bonds of the District, the District agrees to issue, from time to time, its Certificates of Indebtedness, as authorized by Act No. 310 of 1941 and Act No. 163 of 1967, as amended, payable to the order of the Committee, dated the date of delivery and bearing interest at the rate of 9 % per annum, such Certificates of Indebtedness to be issued in anticipation of the issuance of bonds of the District for construction of a sewer system for the District. Upon delivery of the bonds, the Certificates of Indebtedness, to the extent then outstanding, together with accrued interest, shall be paid from the proceeds of such bonds.

6. Ownership of Projects. (a) The ownership and title to the Grants-Assisted Project shall be and remain at all times in the Committee. The District agrees to convey ownership and title to the Non Grants-Assisted Project to the Committee upon its substantial completion, and, in that regard, agrees to execute a Deed and Bill of Sale to the Non Grants-Assisted Project in favor of the Committee. The Committee shall operate and maintain the Projects. The right to establish and collect rates for user charges for the use of the Projects, including any program of industrial cost recovery, shall be and remain in the City of Little Rock, Arkansas.

(b) Notwithstanding the provisions of subparagraph 6(a), above, the District specifically retains the right to establish, collect and retain fees for connection with the Projects, or with sewer collection systems originating from the Projects, from property owners within or without the boundaries of the District and to assess or reassess benefits derived from the construction of the Projects, any subsequent extensions thereto and sewer collection systems originating therefrom.

7. Extensions to Project. (a) The Committee shall have the sole authority to grant approval to any extensions to the Projects for the purpose of extending sewer service to property both within and without the boundaries of the District, provided, however, that the District may offer its advice and counsel to the Committee. In this regard, the Committee acknowledges that the District owes an obligation to property owners within the District to provide them with sewer service on a priority basis and that, within the bounds of economic and engineering practicality, those properties within the District should be provided sewer service prior to significant extensions of sewer service originating from the Projects to property outside the District boundaries.

(b) The Committee shall notify the District promptly of the filing of any application for and the granting of any approval of any extension to the Projects, whether within or without the boundaries of the District.

8. Binding Effect. This Agreement shall inure to the benefit of and shall be binding upon the Committee, the District and their respective successors and assigns.

IN WITNESS WHEREOF, the parties have executed this Agreement on the date first hereinabove written.

MABELVALE-ALEXANDER SEWER
IMPROVEMENT DISTRICT NO. 142

By [Signature]
Commissioner

[Signature]
Commissioner

[Signature]
Commissioner

LITTLE ROCK SANITARY SEWER
COMMITTEE

By [Signature]
Chairman

LITTLE ROCK WASTEWATER UTILITY

By [Signature]
Manager

Calculation of Sewer Capacity Available to Alexander

Problem: Determine available capacity in 18" collector for Alexander growth & expansion.

Given: Pipe material = Concrete
Pipe diameter = 18"
Slope = 0.18 %
Design Capacity = 70% Full pipe
Existing Flow = 1.06 cfs

Solution:

Capacity of 18" when 100% full

$$Q = (1.49/n) * A * R^{0.666} * s^{0.5} \quad (\text{based on Manning formula})$$

Where Q = Flow in cfs
 n = Roughness Coefficient (0.014 for Concrete Pipe)
 A = Cross-sectional area of pipe
 R = Hydraulic Radius
 s = Slope of pipe

$$Q (100\% \text{ full}) = (1.49/0.014) * 3.1416 * 0.75^2 * (1.5/4)^{0.667} * 0.0018^{0.5}$$

$$Q (100\% \text{ full}) = 4.13 \text{ cfs}$$

Capacity at 70% full

Use attached chart for *Hydraulic Properties of Circular Sewers*

Ratio of design depth to diameter = 0.7

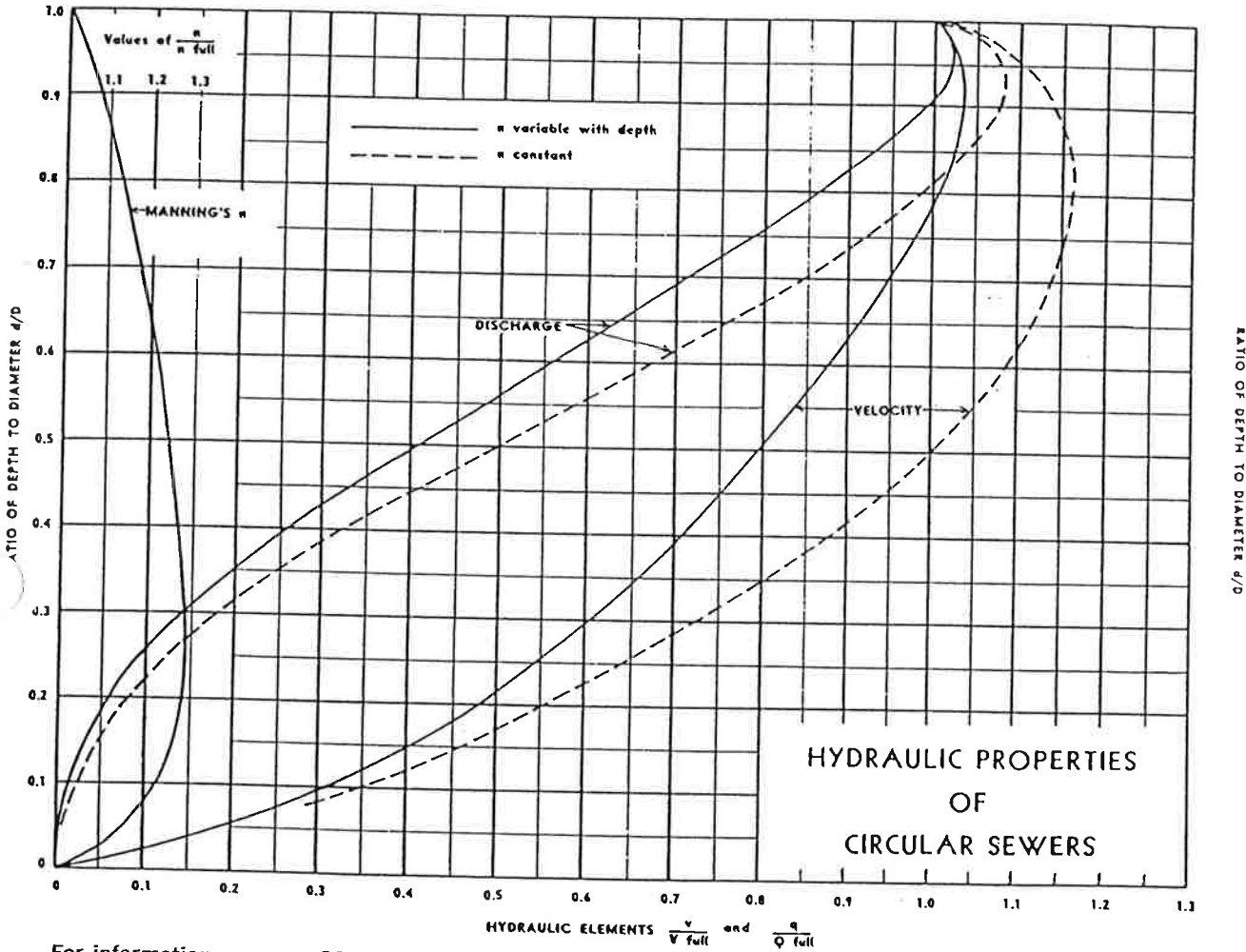
From Chart: Ratio of flow at 70% to flow full = 0.7

$$Q (70\% \text{ full}) = 4.13 * 0.7 = 2.89 \text{ cfs}$$

Capacity available for Alexander growth & expansion

$$Q (\text{available}) = 2.89 - 1.06 = 1.83 \text{ cfs or } \underline{820 \text{ gpm}}$$

97 078941



For information see page 22.



FILED FOR RECORD
IN DC BOOK 97 PAGE 45661

NOV 26 1997

AT 9:10 O'CLOCK A.M.
JIM CRONE, CIRCUIT CLERK
BY [Signature] DC

EXHIBIT ° E ° (page 2 of 2)

98 091832

**SEWER SERVICE CONTRACT FOR
COLLEGE STATION UNINCORPORATED AREA**

BETWEEN

**COLLEGE STATION SUBURBAN SEWER
IMPROVEMENT DISTRICT NO. 243**

and

**CITY OF LITTLE ROCK, ARKANSAS/
LITTLE ROCK SANITARY SEWER
COMMITTEE**

Dated: October 15, 1998,
Consisting of pages i, ii, 1-33
and Exhibit Nos. 1-4

FILED AND RECORDED
1998 NOV 17 P 2:56
CAROLYN STALEY
CIRCUIT COUNTY CLERK



**SEWER SERVICE CONTRACT FOR
COLLEGE STATION UNINCORPORATED AREA
BETWEEN
COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 and
CITY OF LITTLE ROCK, ARKANSAS/
LITTLE ROCK SANITARY SEWER COMMITTEE**

TABLE OF CONTENTS

1.	Sewage Treatment and Extension of Sanitary Sewer Service by Little Rock	4
2.	Charges for Sanitary Sewer Service	5
3.	Future Conveyance and Assignment by SID 243 to the Sewer Committee of Easements and Rights of Way	6
4.	Acceptance by Sewer Committee of Easement(s) and Assignment by SID 243 and Agreement to Operate and Maintain Sewer Facilities	7
5.	Transfer of Ownership of Sewer Facilities at a Future Date to be Agreed upon by the Parties	8
6.	Application of the Pulaski County and Little Rock Sewer Ordinances	9
7.	Future Connections with the Sanitary Sewer System in College Station Community Unincorporated Area	14
8.	Future Extensions of Service	15
9.	Extraterritorial Zoning of College Station Community and Certificate of Adoption of Legal Authority	17
10.	Title and Maintenance Responsibility for Public Sanitary Sewer Facilities Located and/or to be Located in College Station Community Unincorporated Area	18

11.	Title and Maintenance Responsibility for Building Sanitary Sewer or Private Service Lines	19
12.	Pre-Annexation	19
13.	Compliance with Sewer Service Rules and Regulations of Little Rock Wastewater Utility	20
14.	Term of Contract	21
15.	Assignment or Transfer	21
16.	Taxes	21
17.	Covenants Running with the Land	22
18.	Termination	23
19.	Liquidated Damages	24
20.	Notices	25
21.	Update or Regulations	26
22.	Governmental Function	26
23.	Invalid Provision Shall Not Invalidate Contract	26
24.	Contract Legally Binding	27
25.	Discrimination	27
26.	Plumbing Permit/Inspection	28
	Table of Exhibits	32

Exhibit 1: List of members and
landowners of SID 243

Exhibit 2: Map of the boundary of
SID 243

Exhibit 3: Copy of definitions contained
in C.F.R. §403.3, as amended

Exhibit 4: Mannings Formula consisting
of 2 pages

40

98 091832

SEWER SERVICE CONTRACT
FOR COLLEGE STATION UNINCORPORATED AREA BETWEEN
COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243
AND CITY OF LITTLE ROCK, ARKANSAS
LITTLE ROCK SANITARY SEWER COMMITTEE

THIS CONTRACT is entered into by and between the City of Little Rock, Arkansas and the Little Rock Sanitary Sewer Committee (both hereinafter collectively "Little Rock" with sometimes separate references to "City of Little Rock" and "the Sewer Committee") and College Station Suburban Sewer Improvement District No. 243, an improvement district duly organized and existing pursuant to the law of Arkansas ("SID 243") for itself and those members and landowners, their heirs, personal representatives, assigns or successors, (as listed on Exhibit "1" attached hereto) owning lands in the College Station Community unincorporated area outside the city limits of Little Rock, as shown on the map made Exhibit "2" attached hereto;

W I T N E S S E T H:

WHEREAS, SID 243 has requested Little Rock to provide sanitary sewer service and treatment of the lands within the unincorporated area of the boundary of SID 243, as shown

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1998 NOV 17 PM 2:56
CAROLYN STALEY
CIRCUIT COUNTY CLERK



on Exhibit "2", which Little Rock is willing to provide as set forth hereinafter; and,

WHEREAS, Little Rock, by its Mayor and Board of Directors, has directed the Little Rock Sanitary Sewer Committee that such sanitary sewer service will be provided by the Little Rock Wastewater Utility ("LRWU") subject to the provisions of this contract; and,

WHEREAS, Little Rock, and SID 243 desire to enter into a contract in accordance with the provisions of Ark. Code Ann. §14-235-212 containing those terms and conditions under which sanitary sewer service will be extended by Little Rock to the land located in the unincorporated area of the College Station community ("College Station Community") being contiguous to the city limits of Little Rock and within the boundary of SID 243, as shown on the map marked Exhibit "2" attached hereto, to be constructed by SID 243 in the future in that area, and also the land located in the College Station community lying north of SID 243 and outside the existing city limits, subject to the terms and conditions set forth in this contract; and,

WHEREAS, the residents of College Station community outside Little Rock have or will have an interest in lands

on which certain utility easements of the College Station sanitary sewer facilities ("Sewer Facilities") will be located, and,

WHEREAS, it being expressly agreed that any storm water facilities located in the College Station Community or constructed, owned and/or operated by the unincorporated area of the College Station Community as shown on the map marked Exhibit "2" attached hereto or SID 243 shall remain in the ownership of Pulaski County, SID 243, or landowners in the College Station Community, as the case may be, but in any event not Little Rock, and SID 243 shall have the responsibility for the operation, maintenance, and monitoring of any storm water facilities located on the land shown on Exhibit "2", and for all other purposes; and,

WHEREAS, The City of Little Rock, acting through the Sewer Committee operating LRWU, agrees to operate and maintain said Sewer Facilities subject to the terms and conditions contained herein;

NOW, THEREFORE, in consideration of the mutual benefits to be derived, it is hereby agreed by and between the parties that the City of Little Rock will, from and after the Effective Date (hereinafter defined) of this Agreement,

bill and receive payment for services of the System on behalf of the Owner and will provide for the maintenance and repair of the System under the terms and conditions as follows:

1. Sewage Treatment and Extension of Sanitary Sewer Service by Little Rock. Little Rock, acting through the Sewer Committee operating LRWU, agrees that the Sewer Facilities to be constructed in the College Station Community, as shown on Exhibit "2", as well as those on land located in the College Station Community lying north of SID 243 and outside the existing city limits, may be connected to Little Rock's sanitary sewer system in accordance with this contract subject to the approval of the Manager of the LRWU, including approved extensions as may be expressly approved in writing as set forth hereinafter, and Little Rock agrees to perform the appropriate treatment of the sewage in accordance with the applicable law, subject to the provisions of this contract; and SID 243 shall comply with all provisions of this contract and applicable federal and state laws and sewer ordinance of Pulaski County and Little Rock, as well as the rules and regulations of Little Rock applicable to the use, operation and maintenance of Little

Rock's sanitary sewer system referred to in this contract for the duration thereof, as well as any extensions thereof.

2. Charges for Sanitary Sewer Service. All charges for sanitary sewer services provided by Little Rock to customers residing within the unincorporated area of College Station Community, as shown on Exhibit "2", and/or to any customer through the Sewer Facilities referred to in this contract or extensions thereof, shall be included on the water bills of Little Rock Municipal Water Works in accordance with the existing Little Rock ordinances establishing rates for sanitary sewer service based on outside city rates, as those rates are currently established at and as these rates may be adjusted from time to time and referred to in the County Sewer Ordinance currently in effect and as may be from time to time amended in the future. In the event such sanitary sewer service is provided to customers who do not receive water service from Little Rock Municipal Water Works and, therefore, receive no water bills which would otherwise also contain sewer charges, those customers shall be billed in accordance with such procedures as Little Rock, acting through the Sewer Committee operating LRWU, may establish in order to collect

the outside city sewer rates for such sanitary sewer service according to the applicable rate ordinance, and as it may be amended in the future.

3. Future Conveyance and Assignment by SID 243 to the Sewer Committee of Easements and Rights of Way. At some date the parties may agree that SID 243 shall grant and assign by separate easements unto Little Rock for the use and benefit of the Sewer Committee any easements and rights of way situated within the unincorporated area of College Station Community in Pulaski County, Arkansas, in the form as provided by Little Rock through Little Rock Wastewater Utility, and further agrees to assign in the future (if necessary) any easements, whether now owned or hereafter acquired, including but not limited to all of those utility easements and rights of way as described acquired or to be acquired in the area shown as Exhibit "2", for the purpose of maintaining, operating, repairing or replacing the aforementioned Sewer Facilities as may be necessary in the Sewer Committee's judgment. However, it is agreed by the parties that no future agreement to assign any easements to the City of Little Rock will be entered into by the parties until after the date of closing of Rural Development loan #

3-60-0710806470 from the United States Department of Agriculture to College Station Sewer Improvement District # 243.

4. Acceptance by Sewer Committee of Easement(s) and Assignment by SID 243 and Agreement to Operate and Maintain Sewer Facilities. Little Rock hereby agrees at some future date to be agreed upon by the parties hereto to accept any sewer easement(s) ^{approved by LRWA} in the form of Exhibit "3" ^{le} from SID 243 in the unincorporated area of the College Station Community within the area shown in Exhibit "2", subject to the terms and conditions contained therein, and further covenants to operate and maintain said Sewer Facilities in good repair. It is expressly agreed, however, that no sanitary sewer line with an internal diameter of less than eight (8) inches shall be considered a public sanitary sewer, or otherwise be maintained by the Sewer Committee, and the "point of service" for maintenance responsibility assumed by the Sewer Committee shall be the "wye" connection or other means of connecting any building sanitary sewer to the public sanitary sewer. However, it is agreed by the parties that no future agreement by the SID to assign any easements to the City of Little Rock will be entered into by the parties

until after the date of closing of Rural Development loan #03-60-0710806470 from the United States Department of Agriculture to College Station Improvement District # 243.

5. Transfer of Ownership of Sewer Facilities at a Future Date to be Agreed upon by the Parties. It is understood by the parties hereto that the Sewer Facilities to be constructed by SID 243 within the unincorporated area of its boundary will be paid for by federal grant and loan funds administered by Rural Development, an agency of the U. S. Department of Agriculture, as well as grant and loan funds from the State of Arkansas Soil and Water Agency, Development Finance Authority and Economic Development Authority; and further that construction of the Sewer Facilities will commence sometime in the current year with an estimated time of completion of eighteen (18) months, more or less. The parties agree that the Sewer Facilities will be constructed in accordance with the standards of existing applicable sewer ordinances, rules and regulations referred to herein and, at some date in the future after completion and connection, the parties hereto **may agree** that the ownership of the Sewer Facilities will be transferred by SID 243 to Little Rock, subject to the approval of the

Manager of LRWU upon such terms and at such time when the parties hereto shall then agree and the transfer shall be documented by the execution of documents in the form approved by the parties and furnished by Little Rock, as authorized by its rules and regulations regulating sanitary sewers, including an assignment of easements, bill of sale and such other documents as may be necessary, copies of which have been furnished to SID 243 separately for the information of the parties hereto. However, it is agreed by the parties that any future transfer of ownership will not transpire until after the date of closing of Rural Development loan #3-60-0710806470 from the United States Department of Agriculture to College Station Sewer Improvement District #243.

6. Application of the Pulaski County and Little Rock Sewer Ordinances. The parties hereto agree that the use, operation and maintenance of the Sewer Facilities to be located in the unincorporated area of the College Station Community, as shown on Exhibit "2", and any extension thereof, shall be governed by the applicable provisions of the Pulaski County Sewer Ordinance(s) currently in effect and as may from time to time amended in the future, and also

the Little Rock sewer ordinances, rules, regulations, and state and federal laws applicable thereto, it being expressly agreed that in the event of conflict between any provision of the County ordinance and any provision of Little Rock's sewer ordinance, Little Rock's ordinance shall prevail; and Little Rock shall have the sole authority to interpret, apply and enforce said ordinances, rules, regulations and laws in accordance with the provisions contained therein; and the parties hereto further agree as follows:

(a) The operation and maintenance of the Sewer Facilities referred to herein, including any present or future service or extension thereof, shall be governed by the provisions of all existing and future ordinances enacted by Pulaski County, Arkansas and the City of Little Rock, Arkansas relating to the operation and maintenance of sanitary sewers including, but not limited to, sanitary sewer use and pretreatment requirements of any nature whatsoever; and the provisions of these ordinances shall be binding on the parties hereto, including the rates as may be from time to time specified in those ordinances.

(b) That the authority of the Sewer Committee includes, but is not limited to, the authority to:

(1) Deny or condition new or increased contributions of pollutants, or changes in the nature of pollutants, to the Publicly Owned Treatment Works ("POTW") owned by the Sewer Committee by Industrial Users where such contributions do not meet applicable Pre-treatment Standards and Requirements (as same are defined in applicable Federal and Arkansas statutes and regulations and ordinances of the City of Little Rock, as the same may be amended from time to time) or where such contributions would cause the POTW to violate its National Pollutants Discharge Elimination System ("NPDES") permit;

(2) Require compliance with applicable Pretreatment Standards and Requirements by Industrial Users;

(3) Control, through permit, contract, order, or similar means, the contribution to the POTW by each Industrial User to ensure compliance with applicable Pretreatment Standards and Requirements;

(4) Require a) the development of a compliance schedule by each Industrial User for the installation of technology required to meet applicable

Pretreatment Standards and Requirements; and, b) the submission of all notices and self-monitoring reports from Industrial Users as are necessary to assess and assure compliance by Industrial Users with Pretreatment Standards and Requirements, including but not limited to the reports required in Volume 40 of the Code of Federal Regulations at 40 C.F.R. §403.12, as adopted into Section 4 of Regulation No. 6 of the Regulations for State Administration of the National Pollutants Discharge Elimination System of the Arkansas Department of Pollution Control and Ecology, or any future amendment to these regulations, as same are administered and enforced by the Arkansas Department of Pollution Control and Ecology;

(5) Carry out all inspection, surveillance and monitoring procedures necessary to determine, independent of information supplied by Industrial Users, compliance or non-compliance with applicable Pretreatment Standards and Requirements by Industrial Users. Representatives of the POTW shall be authorized to enter any premises of any Industrial User in which a Discharge source or treatment system is located or in which records are required to be kept under applicable federal or state

regulations including but not limited to 40 C.F.R. §403.12(m) to assure compliance with Pretreatment Standards. Such authority shall be at least as extensive as the authority provided under Section 308 of the Clean Water Act of 1972, as amended, and any applicable Arkansas regulations and statutes including the Arkansas Water and Air Pollution Control Act, Act 472 of 1949, as amended, and ordinances of the City of Little Rock, as the same may be enacted or amended from time to time;

(6) Obtain remedies for noncompliance by any Industrial User with any Pretreatment Standard and Requirement. The Sewer Committee shall be entitled to seek injunctive relief for noncompliance by Industrial Users with Pretreatment Standards and Requirements. If the laws of the State of Arkansas now or hereafter authorize Pulaski County, Arkansas or Little Rock to enact ordinances or other local legislation to assess civil or criminal penalties for noncompliance by Industrial Users with Pretreatment Standards and Requirements, SID 243 covenants with the Sewer Committee that it will comply with such ordinances or other local legislation which Pulaski County, Arkansas or Little Rock may enact as soon as practical, and SID 243 expressly

agrees that this covenant may be enforced by the Sewer Committee in a Court of Equity in accordance with the law of Arkansas in Pulaski County, Arkansas which the parties expressly stipulate is the appropriate venue for any such action. If the laws of the State of Arkansas do not now or hereafter authorize such actions, then the Sewer Committee is authorized to enter into contracts with Industrial Users to assure compliance by Industrial Users with Pretreatment Standards and Requirements. Any such contract will provide for liquidated damages for violation of Pretreatment Standards and Requirements and will include an agreement by the Industrial User to submit to the remedy of specific performance for breach of contract, enforceable by a court situated in Pulaski County, Arkansas.

(7) The definitions set forth at 40 C.F.R. §403.3, as amended, are expressly incorporated by reference herein as if set forth word for word and a copy thereof is attached hereto marked Exhibit "3".

7. Future Connections with the Sanitary Sewer System in College Station Community Unincorporated Area. SID 243 or any person owning lands therein shall have no authority to extend or permit any future connections to the Sewer

Facilities referred to in this Contract and the parties hereto agree not to allow or permit any sanitary sewer extension to any area outside the College Station Community unincorporated area, as the boundaries exist on the date when this Contract is executed or when they may be changed in the future, without the prior written approval of Little Rock by resolution or ordinance of the Little Rock City Board of Directors and written approval by the Manager of LRWU. SID 243 further agrees not to allow or permit any future sanitary sewer main extensions or sanitary sewer connections or any combination of extensions and connections in any portion of the College Station Community unincorporated area, as shown on Exhibit "2", served or not currently served unless it obtains the prior approval in writing of the Little Rock Sanitary Sewer Committee after written application for such connections with full information of the reasons and proposed location of the connections.

8. Future Extensions of Service. Little Rock and the Sewer Committee shall not be obligated for and assume no liability for any future extension of service not specifically set forth herein, and no such extension shall

be made without the prior written approval of the governing body of Little Rock and the Sewer Committee. This Contract anticipates no more than 1,000 residential College Station Community connections which generate an amount of wastewater flow not to exceed a peak daily flow rate of 1,000 gallons per minute with the maximum flow rate being based on the capacity of the 15 inch diameter collector constructed to serve the College Station Community area, as determined by the Mannings formula set forth on Exhibit "4" attached hereto, consisting of two (2) pages; provided, however, there may be a combination of residential, commercial, and industrial users otherwise permitted by land use controls such as zoning, and subdivision regulations, on condition that the maximum peak daily wastewater flow rate for any combination of such permitted users does not exceed the peak daily wastewater flow rate of 1,000 gallons per minute as specified herein. In any event, anyone desiring such an extension of service beyond the existing facilities hereby served shall bear the full cost thereof, including all costs of any nature whatsoever involved in making such extension or making available such service and any connection fees set by the Sewer Committee, which shall have the sole authority

to do so. The further extension of service shall be in accordance with the rules and regulations of the Sewer Committee and subject to its approval at the time of the extension of service, as well as in accordance with any applicable policy of the City of Little Rock, as adopted by its City Board of Directors.

9. Extraterritorial Zoning of College Station Community and Certificate of Adoption of Legal Authority.

Before any sanitary sewer service is provided to the College Station Community under this contract through connections to or extensions of the Sewer Facilities referred to in this Contract, a land use plan for the College Station Community shall be adopted by Little Rock, and such land use plan shall include an extra-territorial zoning plan under Little Rock's zoning powers in order to protect Little Rock's sanitary sewer system and treatment plants from changes in land use which might include industrial users making prohibited discharges into Little Rock's sanitary sewer system in violation of law. The adoption by Little Rock of the appropriate legal authority, ordinance or resolution for the extra-territorial zoning shall be certified by the Little Rock Director of Planning to the Manager of LRWU

before any sanitary sewer service shall be provided under this Contract. The land use plan and extraterritorial zoning powers shall be maintained and enforced at all times and all parties agree to compliance with and enforcement of said land use plan.

10. Title and Maintenance Responsibility for Public Sanitary Sewer Facilities Located and/or to be Located in College Station Community Unincorporated Area. Title to any and all public sanitary sewer facilities subject to this contract being defined as those pipes or conduits having a diameter of eight (8) inches or larger, normally equipped with manholes located in rights of way or easements together with all appurtenances thereto, shall be in SID 243 subject to the understanding between the parties hereto that title to all or part of the sanitary sewer facilities may be transferred to Little Rock at a future date to be agreed upon by the parties hereto, provided however, any storm water facilities are not included as part of the Sewer Facilities herein referred to or to be assigned, and any storm water facilities shall remain the property of Pulaski County, SID 243, or the landowners, their heirs, assigns, personal representatives or successors, as the case may be,

and, in any event, during the term of this contract or until terminated, whichever occurs first, Little Rock shall have the maintenance responsibilities for the Sewer Facilities.

11. Title and Maintenance Responsibility for Building Sanitary Sewer or Private Service Lines. Title to and maintenance responsibility for any building sanitary sewer connecting each customer's public facilities to any public sanitary sewer line constructed in the College Station Community, as shown on Exhibit "2" attached hereto or private service line or to any extension thereof shall remain with the respective property owner(s), even though a portion of the building sanitary sewer or service line may be installed in a right of way or easement; and Little Rock shall have no liability or responsibility for the operation or maintenance of said building sanitary sewer.

12. Pre-Annexation. In addition to the service to be provided herein, and the rates and other matters set forth in this Contract, SID 243 for itself, its members, and all landowners situated in the College Station Community agree that, upon written request from Little Rock to do so, SID 243 and all said members and owners will execute for filing a petition to voluntarily annex property in the College

Station Community shown on Exhibit "2" to Little Rock; provided, however, (a) that Little Rock will make this request only for that property located in the College Station Community which is contiguous to the corporate boundaries of Little Rock, or is part of a tract of several parcels of property that together are contiguous to the corporate boundaries of Little Rock and (b) that no such request will be made if such annexation would terminate, restrict or be in derogation of the purpose of the Federal rural funding made available by Rural Development for construction of the Sewer Facilities. This provision does not mandate Little Rock to make this request. Furthermore, the City of Little Rock agrees that no such request will be made until after the date that Rural Development loan #3-60-0710806470 from the United States Department of Agriculture to College Station Sewer Improvement District has been closed.

13. Compliance With Sewer Service Rules and Regulations of Little Rock Wastewater Utility. In consideration for the extension of sanitary sewer service under this Contract, all members of or landowners in SID 243, hereby agree to comply with the rules and regulations regarding sanitary sewer service and use of the Sewer

Facilities of the LRWU and they further agree to execute such documents or separate agreements as may be requested by Little Rock for sanitary sewer service, including but not limited to the standard form water/sanitary sewer service agreement used by Little Rock, as currently in effect or as it may be revised in the future.

14. Term of Contract. Unless terminated earlier, the term of this Contract shall be for a period of fifteen (15) years from the date hereof at which time it will expire; provided, however, this Contract may be extended by the agreement of the parties hereto upon notice given by either party prior to the end of the term and adoption, thereafter, of the necessary approving ordinances or resolutions as required by law.

15. Assignment or Transfer. This Contract and the rights hereunder shall not be assigned or transferred by SID 243, except to Rural Development, an agency of the U. S. Department of Agriculture, and shall be binding upon the successors of all parties hereto, as well as any assigns permitted herein.

16. Taxes. SID 243 covenants and agrees to pay any and all taxes levied by the United States and the State of

Arkansas for the services provided and treatment of sewage pursuant to this contract, and shall comply with all federal, state, county and municipal laws, ordinances, rules and regulations pertaining to the treatment of sewage under this contract; and SID 243 further agrees to indemnify and hold harmless Little Rock for any loss or damage of any nature whatsoever sustained by Little Rock occasioned by the failure of SID 243 to comply with said laws, ordinances, rules and regulations by the authorized representatives residents or property owners in SID 243.

17. Covenants Running With the Land. It is the intention of the parties hereto that the terms and conditions herein specified are covenants which run with the land situated in College Station Community unincorporated area shown on Exhibit "2", and these terms and conditions shall be binding upon the SID 243 and landowners, their representatives, heirs, assigns, personal representatives or successors in title or any other person, firm or entity who acquires title to the said lands situated in College Station Community unincorporated area as shown on Exhibit "2" attached hereto in the future; and said covenants shall inure to the benefit of Little Rock, as well as the Sewer

Committee and LRWU, their successors or assigns, and said covenants shall be enforceable by Little Rock, the Sewer Committee, and/or LRWU, their successors or assigns at law or in equity against SID 243, its members, their heirs, successors, personal representatives or assigns or against any future owners of the title to said property situated within College Station Community, as shown on Exhibit "2", all of whom shall be obligated to comply with the provisions of this contract.

18. Termination. This Contract may be terminated by Little Rock if SID 243 fails to comply fully with any of the terms and provisions of this Contract. Termination of this Contract may occur only after actual written notice is given of the nature of the breach or non-performance of any provision of this contract. In the event of the termination of this Contract, all obligations of Little Rock to treat the sewage under this contract shall cease and SID 243, including all residents or customers in the College Station Community, shall stop using the Sewer Facilities and SID 243 shall immediately remove the sanitary sewer connection(s) made pursuant to this Contract to Little Rock's sanitary sewer system and pay Little Rock for any damages for which

SID 243 is legally liable. It is the intention of the parties hereto that in the event of termination, SID 243 shall be responsible for the treatment of the sewage upon termination of this Contract, failing which Little Rock shall be entitled to recover from SID 243, its members and residents or landowners using the Sewer Facilities in the College Station Community sanitary sewer charges for the use of the system connected to Little Rock's system and also liquidated damages, as hereinafter provided in this Contract, as well as such equitable relief to which Little Rock may be entitled for the failure of SID 243 or its members, residents or landowners, to remove said sanitary sewer connection(s) and cease use of the Sewer Facilities.

19. Liquidated Damages. SID 243 and Little Rock recognize that damages to Little Rock caused by SID 243's breach of this Contract or failure to perform the terms and conditions thereof will be substantial and difficult to determine or quantify, but that Little Rock will suffer financial loss as a consequence thereof. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Little Rock due to SID 243's breach of contract

or failure of performance in the event of termination of this contract by Little Rock. Accordingly, instead of requiring any such proof, Little Rock and SID 243 agree that as liquidated damages for breach of contract (not as a penalty) resulting in termination of this Contract by Little Rock, SID 243 shall pay Little Rock the sum of Five Hundred Dollars (\$500.00) for each day that expires after the effective date of termination of this Contract by Little Rock and SID 243's liability to make such payments shall continue until such date when SID 243 removes any and all connections made to Little Rock's sanitary sewer system pursuant to this Contract or until such other date designated by Little Rock in the event the breach of contract is cured to Little Rock's satisfaction.

20. Notices. All notices hereunder shall be in writing and shall be deemed to have been duly given when sent by certified mail, postage prepaid, as follows:

If to Little Rock:

Little Rock Wastewater Utility	AND	City of Little Rock
221 East Capitol Avenue		City Hall, 500 West Markham
Little Rock, Arkansas 72201		Little Rock, Arkansas 72201
Attn: Manager		Attn: City Manager and Mayor

If to SID 243:

College Station SID 243
P. O. Box 243
College Station, Arkansas 72053
Attn: Commissioners

21. Update or Regulations. All parties hereto agree to abide by the rules and regulations published from time to time concerning the treatment of sewage by Little Rock and all applicable federal, state, county and municipal regulations concerning construction, operating, maintenance, and protection of treatment of sewage pursuant to this Contract. Little Rock by the Sewer Committee acting through LRWU shall have the right at all times, if it deems necessary or appropriate, to inspect all individual tie-ons, connections to or extensions of the Sewer Facilities referred to in this Contract.

22. Governmental Function. The parties recognize that treatment of sewage pursuant to this agreement is a governmental function and this contract shall be performed by the parties hereto in their respective governmental capacities.

23. Invalid Provision Shall Not Invalidate Contract. The parties agree that in the event any paragraph, sentence, clause or word(s) of this Contract shall be held to be invalid, illegal or unenforceable, all other terms and provisions of this Contract shall remain in full force and effect, and this Contract shall be construed as if not

containing the particular provision or provisions held to be invalid.

24. Contract Legally Binding. All parties to the Contract agree to the terms contained herein and represent to each other that the terms of this Contract have been duly accepted and approved by the authorized representatives of the parties hereto; and all parties covenant to each other that all action required by law has been taken to make this Contract legally binding and enforceable and that the parties hereto shall have all of the rights and remedies under the law of Arkansas to enforce the terms of this Contract, any action on which the parties stipulate and agree shall be brought in Pulaski County, Arkansas.

25. Discrimination. The parties agree to make the services of said system available within its capacity to all persons in SID 243's area without discrimination as to race, color, religion, sex, national origin, age, marital status, or physical or mental handicap at those charges in accordance with the existing Little Rock ordinances establishing rates for sanitary sewer service based on outside rates, as those rates are currently established and as these rates may be adjusted from time to time in the

future by the City of Little Rock Board of Directors, as set forth in Paragraph No. 2 hereinbefore.

26. Plumbing Permit/Inspection. All applicants for sewer services shall be required to obtain and pay for a plumbing permit from the City of Little Rock and receive an inspection to meet the State and City Plumbing Code before the extension of sewer service, as provided herein.

IN WITNESS WHEREOF, the parties have caused this contract to be executed by their duly authorized representatives on the 15th day of October, 1998.



ATTEST:

CITY OF LITTLE ROCK, ARKANSAS

By James Dailey
Honorable James Dailey, Mayor

By Robbie Hancock
Honorable Robbie Hancock
City Clerk of Little Rock, Arkansas

LITTLE ROCK SANITARY
SEWER COMMITTEE

By Charles Gess
Chairman

ATTEST:

By Reggie A. Corbitt
Reggie A. Corbitt, Manager
Little Rock Wastewater Utility

COLLEGE STATION SUBURBAN SEWER
IMPROVEMENT DISTRICT NO. 243

By Arnell White
Chairman

By Mildred Walker
Secretary

APPROVED:

By Alfred Porter Jr.
Attorney for
Sewer Improvement District No. 243

TABLE OF EXHIBITS
OF
SEWER SERVICE CONTRACT FOR
COLLEGE STATION UNINCORPORATED AREA BETWEEN
COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243
and
CITY OF LITTLE ROCK, ARKANSAS
and
THE LITTLE ROCK SANITARY SEWER COMMITTEE

- EXHIBIT "1"** List of members and landowners of SID 243
- EXHIBIT "2"** Map of the boundary of SID 243 & legal description
- EXHIBIT "3"** Copy of definitions contained in 40 C.F.R. §403.3, as amended
- EXHIBIT "4"** Mannings Formula consisting of 2 pages

INVESTMENT SPECIALTIES INCORPORATED

Improvement Districts - Development - Appraisals

One Innwood Circle, Suite 101 • Little Rock, Arkansas 72211 • (501) 225-1236 • FAX (501) 224-3343

March 17, 1998

Don Hamilton
Little Rock Wastewater Utility
221 East Capitol
Little Rock, AR 72202

RAC	<input checked="" type="checkbox"/>
JAB	<input checked="" type="checkbox"/>
RLB	<input checked="" type="checkbox"/>
TLL	<input checked="" type="checkbox"/>
MMV	<input checked="" type="checkbox"/>
DFH	<input checked="" type="checkbox"/>
JBJ	<input type="checkbox"/>
LAL	<input type="checkbox"/>

MAR 18 1998

JF	<input type="checkbox"/>
BC	<input type="checkbox"/>
NT	<input type="checkbox"/>
COPY	<input type="checkbox"/>
FILE	<input type="checkbox"/>
RETURN	<input type="checkbox"/>
LIBRARY	<input type="checkbox"/>
POST	<input type="checkbox"/>

Re: College Station Suburban Sewer Improvement District No. 243

Dear Don:

This letter is written regarding your letter dated March 12, 1998 and our telephone conversation on February 26, 1998, in which you requested a copy of the College Station Sewer Improvement District No. 243 assessment rolls which my secretary stated she mailed to your attention.

I am forwarding another copy of Sewer Improvement District No. 243 assessment rolls. The first ten pages of the district assessment rolls are located within the City of Little Rock. These ten pages of parcels are also located within the Sewer Improvement District. However, city funds were utilized to construct these sewer lines and the Sewer Improvement District's assessment rolls reflect a zero charge of benefits on parcels served by the city. The parcels on page 11, charged annual assessments, represent property owners served by district constructed sewer lines.

In your letter you are also requested names, addressees, and phone numbers of property owners located outside Sewer Improvement District boundaries.

The District did not research any property records outside the Sewer Improvement District legal description. All District data required for the assessment roll was collected from the Pulaski County Assessor's records that do not list individual phone numbers.

If you have additional questions, please contact me.

EXHIBIT "1"

List of members and landowners of
SID 243, consisting of pages 1-92

Sincerely,

A handwritten signature in cursive script that reads "John M. Kapp".

John M. Kapp

JMK/jdd
Enclosure

cc: Theodore Eldridge
Paul Bowen
Jane Dickey
Austin Porter
Bob Trevino
Jim Phillips
Jim Lawson/Antonio Bozynski
Cy Carney
Pat Crossley
Hon. F. G. "Buddy" Villines
Hon. James Dailey
Vance Simelton
Reggie A. Corbitt
Rick L. Barger
Thad Luther
Stan Suel

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

PARCEL NO. DEED NO. DLNQ? RES	NAME C/O ADDRESS CITY ST ZIP	LEGAL DESCRIPTION	LANDVALUE IMPROVE TOTAL	BEFORE AFTER	COSTS DAMAGE	ASSD BEN ANNL CHR CODE
24L015010 0100	CARTER IKE C/O PO BOX 548 BENTON AR 72015	SANDERS ADDN BLK 001 LOTS 1-11 NOT SERVED	0 0 0	0 0 0	0 0 0	0.00 0.00 0.00
24L015010 0200	PEASTER MADISON 3719 PARK AVE LITTLE ROCK AR 72206	SANDERS ADDN BLK 001 S1/2 LOT 12 NOT SERVED	0 0 0	0 0 0	0 0 0	0.00 0.00 0.00
24L015010 0300	PEASTER ALFRED JR 3711 PARK AVE LITTLE ROCK AR 72206	SANDERS ADDN BLK 001 N1/2 LOT 12 NOT SERVED	0 0 0	0 0 0	0 0 0	0.00 0.00 0.00
24L015010 0400	MEECKINS VIRGIL L SR PO BOX 551 COLLEGE STATION AR 72053	SANDERS ADDN BLK 002 LOT 001 NOT SERVED	0 0 0	0 0 0	0 0 0	0.00 0.00 0.00
24L015010 0500	MEECKINS VIRGIL L SR PO BOX 551 COLLEGE STATION AR 72053	SANDERS ADDN BLK 002 LOT 002 NOT SERVED	0 0 0	0 0 0	0 0 0	0.00 0.00 0.00
24L015010 0600	MEECKINS VIRGIL L SR PO BOX 551 COLLEGE STATION AR 72053	SANDERS ADDN BLK 002 LOT 003 NOT SERVED	0 0 0	0 0 0	0 0 0	0.00 0.00 0.00
24L015010 0700	AKINS DWIGHT PO BOX 71 COLLEGE STATION AR 72053	SANDERS ADDN BLK 002 LOT 004 NOT SERVED	0 0 0	0 0 0	0 0 0	0.00 0.00 0.00
24L015010 0800	EALY WARREN G C/O PO BOX 592 COLLEGE STATION AR 72053	SANDERS ADDN BLK 002 LOT 005 NOT SERVED	0 0 0	0 0 0	0 0 0	0.00 0.00 0.00
24L015010 0900	EALY WARREN G C/O PO BOX 592 COLLEGE STATION AR 72053	SANDERS ADDN BLK 002 LOT 006 NOT SERVED	0 0 0	0 0 0	0 0 0	0.00 0.00 0.00
24L015010 1000	EALY WARREN G C/O PO BOX 592 COLLEGE STATION AR 72053	SANDERS ADDN BLK 002 LOT 007 NOT SERVED	0 0 0	0 0 0	0 0 0	0.00 0.00 0.00

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

2

24L015010	THOMAS ETHEL MAE	SANDERS ADDN BLK 002 LOT 008	NOT SERVED	0	0	0	0.00
1100				0	0	0	0.00
	PO BOX 51			0			
	COLLEGE STATION						
0.000	AR	72053					
24L015010	THOMAS ETHEL MAE	SANDERS ADDN BLK 002 LOT 009	NOT SERVED	0	0	0	0.00
1200				0	0	0	0.00
	PO BOX 51			0			
	COLLEGE STATION						
0.000	AR	72053					
24L015010	ZION WHEEL BAPTIST CHURCH	SANDERS ADDN BLK 002 LOT 010	NOT SERVED	0	0	0	0.00
1300				0	0	0	0.00
	PO BOX 58			0			
	COLLEGE STATION						
0.000	AR	72053					
24L015010	ZION WHEEL BAPTIST CHURCH	SANDERS ADDN BLK 002 LOT 011	NOT SERVED	0	0	0	0.00
1400				0	0	0	0.00
	PO BOX 58			0			
	COLLEGE STATION						
0.000	AR	72053					
24L015010	ZION WHEEL BAPTIST CHURCH	SANDERS ADDN BLK 002 LOT 012	NOT SERVED	0	0	0	0.00
1500				0	0	0	0.00
	PO BOX 58			0			
	COLLEGE STATION						
0.000	AR	72053					
24L015010	DOYNE DA FAMILY LTD	SANDERS ADDN BLK 002 LOT 13	NOT SERVED	0	0	0	0.00
1600				0	0	0	0.00
	PO BOX 166			0			
	COLLEGE STATION						
0.000	AR	72053					
24L015010	BERRY VIRGIL	SANDERS ADDN BLK 003 N1/2 LOTS 1&2	NOT SERVED	0	0	0	0.00
1700				0	0	0	0.00
	PO BOX 551			0			
	COLLEGE STATION						
0.000	AR	72053					
24L015010	MEECKINS VIRGIL LEE	SANDERS ADDN BLK 003 S1/2 LOTS 1&2	NOT SERVED	0	0	0	0.00
1800				0	0	0	0.00
	3800 PARK ST			0			
	COLLEGE STATION						
0.000	AR	72053					
24L015010	DIXON ELIJAH	SANDERS ADDN BLK 003 LOT 003	NOT SERVED	0	0	0	0.00
1900				0	0	0	0.00
	RT 2 BOX 286-T			0			
	LITTLE ROCK						
0.000	AR	72206					
24L015010	DOYNE D & A FAMILY LTD	SANDERS ADDN BLK 003 LOT 004	NOT SERVED	0	0	0	0.00
2000				0	0	0	0.00
	PO BOX 166			0			
	COLLEGE STATION						
0.000	AR	72053					
24L015010	DICKERSON MINNIE L	SANDERS ADDN BLK 003 LOT 005	NOT SERVED	0	0	0	0.00
2100				0	0	0	0.00
	C/O PO BOX 315			0			
	COLLEGE STATION						
0.000	AR	72053					
24L015010	DOYNE D & A FAMILY LTD	SANDERS ADDN BLK 003 LOT 006	NOT SERVED	0	0	0	0.00
2200				0	0	0	0.00
	PO BOX 166			0			
	COLLEGE STATION						
0.000	AR	72053					

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Account No	Property Name	Address	Service Status	0	0	0	0.00
24L015010 2300	CARTER IKE	SANDERS ADDN BLK 003 LOTS 7-9	NOT SERVED	0	0	0	0.00
	C/O PO BOX 548			0	0	0	0.00
NO	BENTON			0			
0.000	AR 72015						
24L015010 2400	LITTLE ROCK QUARRY CO INC	SANDERS ADDN BLK 003 LOT 010	NOT SERVED	0	0	0	0.00
	C/O IKE CARTER			0	0	0	0.00
	PO BOX 548			0			
NO	BENTON						
0.000	AR 72015						
24L015010 2500	CITY OF LITTLE ROCK	SANDERS ADDN BLK 003 LOT 011	NOT SERVED	0	0	0	0.00
	615 W MARKHAM ST			0	0	0	0.00
NO	LITTLE ROCK						
0.000	AR 72201						
24L015010 2600	CITY OF LITTLE ROCK	SANDERS ADDN BLK 003 LOTS 12&13	NOT SERVED	0	0	0	0.00
	615 W MARKHAM			0	0	0	0.00
NO	LITTLE ROCK						
0.000	AR 72201						
24L015010 2700	HADLEY GREGORY SR	SANDERS ADDN BLK 003 LOTS 14&15	NOT SERVED	0	0	0	0.00
	PO BOX 608			0	0	0	0.00
NO	COLLEGE STATION			0			
0.000	AR 72053						
24L015010 2800	DOYNE D & A FAMILY LTD	SANDERS ADDN BLK 003 LOT 16	NOT SERVED	0	0	0	0.00
	PO BOX 166			0	0	0	0.00
NO	COLLEGE STATION						
0.000	AR 72053						
24L015010 2900	BOATNER JOE JR	SANDERS ADDN BLK 003 LOT 17	NOT SERVED	0	0	0	0.00
	PO BOX 368			0	0	0	0.00
NO	COLLEGE STATION						
0.000	AR 72053						
24L015010 3000	BOATNER STEVIE & REKEITHA	SANDERS ADDN BLK 003 LOT 018	NOT SERVED	0	0	0	0.00
	PO BOX 1			0	0	0	0.00
NO	COLLEGE STATION						
0.000	AR 72053						
24L015010 3100	BOATNER STEVIE & REKEITHA	SANDERS ADDN BLK 003 LOT 019	NOT SERVED	0	0	0	0.00
	PO BOX 1			0	0	0	0.00
NO	COLLEGE STATION						
0.000	AR 72053						
24L015010 3200	BAKER ODELL V	SANDERS ADDN BLK 003 LOT 020	NOT SERVED	0	0	0	0.00
	PO BOX 238			0	0	0	0.00
NO	COLLEGE STATION						
0.000	AR 72053						
24L015010 3300	DOYNE DA FAMILY LTD	SANDERS ADDN BLK 003 LOT 021	NOT SERVED	0	0	0	0.00
	PO BOX 166			0	0	0	0.00
NO	COLLEGE STATION						
0.000	AR 72053						
24L015010 3400	DOYNE DA FAMILY LTD	SANDERS ADDN BLK 003 LOT 022	NOT SERVED	0	0	0	0.00
	PO BOX 166			0	0	0	0.00
NO	COLLEGE STATION						
0.000	AR 72053						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

4

Account No	Property Name	Address	Block/Lot	Served	0	0	0	0.00
24L015010 3500	DIXON ELIJAH	4808 E 39 TH ST LITTLE ROCK	SANDERS ADDN BLK 003 LOT 023	NOT SERVED	0	0	0	0.00
		0.000 AR 72206			0	0	0	0.00
24L015010 1600	DIXON ELIJAH	4808 E 39TH ST LITTLE ROCK	SANDERS ADDN BLK 003 LOT 024	NOT SERVED	0	0	0	0.00
		0.000 AR 72206			0	0	0	0.00
24L015010 3700	PEASTER JAMES LEE	PO BOX 259 COLLEGE STATION	SANDERS ADDN BLK 003 LOT 025	NOT SERVED	0	0	0	0.00
		0.000 AR 72053			0	0	0	0.00
24L015010 3800	PEASTER JAMES LEE	PO BOX 259 COLLEGE STATION	SANDERS ADDN BLK 003 LOT 026	NOT SERVED	0	0	0	0.00
		0.000 AR 72053			0	0	0	0.00
24L015010 3900	SPANN C & SIMMONS J R	C/O PO BOX 142 COLLEGE STATION	SANDERS ADDN BLK 004 LOT 001	NOT SERVED	0	0	0	0.00
		0.000 AR 72053			0	0	0	0.00
24L015010 4000	SCHUMAN F-R KAYE CO	PO BOX 814 LITTLE ROCK	SANDERS ADDN BLK 004 LOT 002	NOT SERVED	0	0	0	0.00
		0.000 AR 72203			0	0	0	0.00
24L015010 4100	HADLEY CURTIS & MARY	PO BOX 164490 LITTLE ROCK	SANDERS ADDN BLK 004 LOT 003	NOT SERVED	0	0	0	0.00
		0.000 AR 72216			0	0	0	0.00
24L015010 4200	HADLEY CURTIS & MARY	PO BOX 164490 LITTLE ROCK	SANDERS ADDN BLK 004 LOT 004	NOT SERVED	0	0	0	0.00
		0.000 AR 72216			0	0	0	0.00
24L015010 4201	SCHUMAN F-R KAYE CO	PO BOX 814 LITTLE ROCK	SANDERS ADDN BLK 004 LOT 005	NOT SERVED	0	0	0	0.00
		0.000 AR 72203			0	0	0	0.00
24L015010 4300	ZION WHEEL BAPTIST CHURCH	PO BOX 58 COLLEGE STATION	SANDERS ADDN BLK 004 LOT 006	NOT SERVED	0	0	0	0.00
		0.000 AR 72053			0	0	0	0.00
24L015010 4400	ZION WHEEL BAPTIST CHURCH	C/O ESTATE OF MAUD R RIFFEL 1021 FIRST PYRAMID BLDG LITTLE ROCK	SANDERS ADDN BLK 004 LOT 007	NOT SERVED	0	0	0	0.00
		0.000 AR 72201			0	0	0	0.00
24L015010 4400	SCHUMAN F-R KAYE CO	PO BOX 814 LITTLE ROCK	SANDERS ADDN BLK 004 LOT 008	NOT SERVED	0	0	0	0.00
		0.000 AR 72203			0	0	0	0.00

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

5

24L015010	LEVER LORETTA	SANDERS ADDN BLK 004 LOT 009 NOT SERVED	0	0	0	0.00
4500			0	0	0	0.00
	13910 COOPER ORBIT CV		0			
	LITTLE ROCK					
0.000	AR 72210					
24L015010	LEVER LORETTA	SANDERS ADDN BLK 004 LOT 010 NOT SERVED	0	0	0	0.00
4600			0	0	0	0.00
	13910 COOPER ORBIT CV		0			
	LITTLE ROCK					
0.000	AR 72210					
24L015010	PEASTER ALFRED	SANDERS ADDN BLK 004 LOTS 11&12 NOT SERVED	0	0	0	0.00
4700			0	0	0	0.00
	3801 PARK AVE		0			
	LITTLE ROCK					
0.000	AR 72206					
24L015010	WADE JEAN D	SANDERS ADDN BLK 004 S1/2 LOTS 13&14 NOT SERVED	0	0	0	0.00
4800			0	0	0	0.00
	PO BOX 321		0			
	COLLEGE STATION					
0.000	AR 72053					
24L015010	NELSON MAUDIE B	SANDERS ADDN BLK 004 N1/2 LOTS 13&14 NOT SERVED	0	0	0	0.00
4900			0	0	0	0.00
	PO BOX 426		0			
	COLLEGE STATION					
0.000	AR 72053					
24L015010	BOATNER JOE JR	SANDERS ADDN BLK 004 LOT 015 NOT SERVED	0	0	0	0.00
5000			0	0	0	0.00
	PO BOX 368		0			
	COLLEGE STATION					
0.000	AR 72053					
24L015010	FLOWERS HILDRED & SHARON	SANDERS ADDN BLK 004 LOT 016 NOT SERVED	0	0	0	0.00
5100			0	0	0	0.00
	PO BOX 32		0			
	COLLEGE STATION					
0.000	AR 72053					
24L015010	ILLING HORACE A	SANDERS ADDN BLK 004 LOT 017 NOT SERVED	0	0	0	0.00
5200			0	0	0	0.00
	PO BOX 108		0			
	SWEET HOME					
0.000	AR 72164					
24L015010	BOATNER JOE JR	SANDERS ADDN BLK 004 LOT 018 NOT SERVED	0	0	0	0.00
5300			0	0	0	0.00
	PO BOX 368		0			
	COLLEGE STATION					
0.000	AR 72053					
24L015010	MONTGOMERY JAMES	SANDERS ADDN BLK 004 LOT 019 NOT SERVED	0	0	0	0.00
5400			0	0	0	0.00
	4106 W 26TH		0			
	LITTLE ROCK					
0.000	AR 72204					
24L015010	HADLEY CURTIS & MARY	SANDERS ADDN BLK 004 LOT 020 NOT SERVED	0	0	0	0.00
5500			0	0	0	0.00
	PO BOX 164490		0			
	LITTLE ROCK					
0.000	AR 72216					
24L015010	HADLEY CURTIS & MARY	SANDERS ADDN BLK 004 LOT 021 NOT SERVED	0	0	0	0.00
5600			0	0	0	0.00
	PO BOX 164490		0			
	LITTLE ROCK					
0.000	AR 72216					

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

6

24L015010	HADLEY CURTIS & MARY	SANDERS ADDN BLK 004 LOT 022 NOT SERVED	0	0	0	0.00
5700			0	0	0	0.00
	PO BOX 164490		0			
NO	LITTLE ROCK					
0.000	AR 72216					
24L015010	HADLEY CURTIS & MARY	SANDERS ADDN BLK 004 LOT 023 NOT SERVED	0	0	0	0.00
5800			0	0	0	0.00
	PO BOX 164490		0			
NO	LITTLE ROCK					
0.000	AR 72216					
24L015010	SPANN C & SIMMONS J	SANDERS ADDN BLK 004 LOT 024 NOT SERVED	0	0	0	0.00
5900			0	0	0	0.00
	C/O PO BOX 142		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	THOMAS RICKEY H	SANDERS ADDN BLK 005 LOT 001 NOT SERVED	0	0	0	0.00
6000			0	0	0	0.00
	13502 FRAZIER PIKE		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	THOMAS RICKEY H	SANDERS ADDN BLK 005 LOT 002 NOT SERVED	0	0	0	0.00
6100			0	0	0	0.00
	13502 FRAZIER PIKE		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	THOMAS RICKEY H	SANDERS ADDN BLK 005 LOT 003 NOT SERVED	0	0	0	0.00
6200			0	0	0	0.00
	13502 FRAZIER PIKE		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	THOMAS RICKEY H	SANDERS ADDN BLK 005 LOT 004 NOT SERVED	0	0	0	0.00
6300			0	0	0	0.00
	13502 FRAZIER PIKE		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	THOMAS RICKEY H	SANDERS ADDN BLK 005 LOT 005 NOT SERVED	0	0	0	0.00
6400			0	0	0	0.00
	13502 FRAZIER PIKE		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	BOATNER JOE	SANDERS ADDN BLK 005 LOT 006 NOT SERVED	0	0	0	0.00
6500			0	0	0	0.00
	PO BOX 368		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	BOATNER JOE	SANDERS ADDN BLK 005 LOT 007 NOT SERVED	0	0	0	0.00
6600			0	0	0	0.00
	PO BOX 368		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	BOATNER JOE JR	SANDERS ADDN BLK 005 LOT 008 NOT SERVED	0	0	0	0.00
6700			0	0	0	0.00
	PO BOX 368		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	SOUTHERN INV CO	SANDERS ADDN BLK 005 LOT 009 NOT SERVED	0	0	0	0.00
6800			0	0	0	0.00
	PO BOX 22433		0			
NO	LITTLE ROCK					
0.000	AR 72221					

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

7

24L015010	BELL VERA ANN	SANDERS ADDN BLK 005 LOT 010 NOT SERVED	0	0	0	0.00
6900			0	0	0	0.00
	4907 E 39TH ST		0			
	LITTLE ROCK					
0.000	AR 72206					
IL015010	HESTER DIANE	SANDERS ADDN BLK 005 LOT 011 NOT SERVED	0	0	0	0.00
7000			0	0	0	0.00
	C/O RT 2 BOX 283-B		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	GARDNER IZORA	SANDERS ADDN BLK 005 LOT 012 NOT SERVED	0	0	0	0.00
7100			0	0	0	0.00
	PO BOX 240		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	HESTER ANNIE MAE	SANDERS ADDN BLK 005 LOT 013 NOT SERVED	0	0	0	0.00
7200			0	0	0	0.00
	5101 FRAZIER PIKE		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	REED ALICE MAE	SANDERS ADDN BLK 005 LOT 014 NOT SERVED	0	0	0	0.00
7300			0	0	0	0.00
	C/O RT 2 BOX 283-B		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	MASON NANCY	SANDERS ADDN BLK 005 LOT 015 NOT SERVED	0	0	0	0.00
7400			0	0	0	0.00
	PO BOX 542		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	DOYNE DA FAMILY LTD	SANDERS ADDN BLK 005 LOT 016 NOT SERVED	0	0	0	0.00
7500			0	0	0	0.00
	PO BOX 166		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	BOATNER JOE JR	SANDERS ADDN BLK 005 LOT 017 NOT SERVED	0	0	0	0.00
7600			0	0	0	0.00
	PO BOX 368		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	DOYNE DA FAMILY LTD	SANDERS ADDN BLK 005 LOT 018 NOT SERVED	0	0	0	0.00
7700			0	0	0	0.00
	PO BOX 166		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	SCHUMAN F-R KAYE CO	SANDERS ADDN BLK 005 LOT 019 NOT SERVED	0	0	0	0.00
7800			0	0	0	0.00
	PO BOX 814		0			
NO	LITTLE ROCK					
0.000	AR 72203					
24L015010	THOMAS RICKEY H	SANDERS ADDN BLK 005 LOT 020 NOT SERVED	0	0	0	0.00
7900			0	0	0	0.00
	13502 FRAZIER PIKE		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	THOMAS RICKEY H	SANDERS ADDN BLK 005 LOT 021 NOT SERVED	0	0	0	0.00
8000			0	0	0	0.00
	13502 FRAZIER PIKE		0			
NO	LITTLE ROCK					
0.000	AR 72206					

24L015010	THOMAS RICKEY H	SANDERS ADDN BLK 005 LOT 022 NOT SERVED	0	0	0	0.00
8100			0	0	0	0.00
	13502 FRAZIER PIKE		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	THOMAS RICKEY H	SANDERS ADDN BLK 005 LOT 023 NOT SERVED	0	0	0	0.00
8200			0	0	0	0.00
	13502 FRAZIER PIKE		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	THOMAS RICKEY H	SANDERS ADDN BLK 005 LOT 024 NOT SERVED	0	0	0	0.00
8300			0	0	0	0.00
	13502 FRAZIER PIKE		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	SUMMONS SYLVESTER	SANDERS ADDN BLK 006 LOTS 1-3 NOT SERVED	0	0	0	0.00
8400			0	0	0	0.00
	PO BOX 5		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	SNIPES ROSA	SANDERS ADDN BLK 006 LOT 004 NOT SERVED	0	0	0	0.00
8500			0	0	0	0.00
	1414 MARSHALL ST		0			
NO	LITTLE ROCK					
0.000	AR 72202					
24L015010	ADAMS PATRICIA A	SANDERS ADDN BLK 006 LOT 005 NOT SERVED	0	0	0	0.00
8600			0	0	0	0.00
	PO BOX 121		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	ROBERTS EARNESTINE	SANDERS ADDN BLK 006 LOT 006 NOT SERVED	0	0	0	0.00
8700			0	0	0	0.00
	PO BOX 367		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	SOUTHERN INV CO	SANDERS ADDN BLK 006 LOT 007 NOT SERVED	0	0	0	0.00
8800			0	0	0	0.00
	PO BOX 22433		0			
NO	LITTLE ROCK					
0.000	AR 72221					
24L015010	CARTER IKE	SANDERS ADDN BLK 006 LOT 008 NOT SERVED	0	0	0	0.00
8900			0	0	0	0.00
	C/O PO BOX 548		0			
NO	BENTON					
0.000	AR 72015					
24L015010	NORTHWEST LAND CO INC	SANDERS ADDN BLK 006 LOT 009 NOT SERVED	0	0	0	0.00
9000			0	0	0	0.00
	C/O PEOPLES MORTGAGE CO		0			
	PO BOX 670		0			
NO	FT SMITH					
0.000	AR 72902					
24L015010	BROADWAY QUINT T	SANDERS ADDN BLK 006 LOT 010 NOT SERVED	0	0	0	0.00
9100			0	0	0	0.00
	PO BOX 206		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	DOYNE DA FAMILY LTD	SANDERS ADDN BLK 006 LOT 011 NOT SERVED	0	0	0	0.00
9200			0	0	0	0.00
	PO BOX 166		0			
NO	COLLEGE STATION					
0.000	AR 72053					

24L015010	ST MATTHEWS SPIRIT TEMPLE	SANDERS ADDN BLK 006 LOTS 12&13 NOT	0	0	0	0.00
9300		SERVED	0	0	0	0.00
	3717 JONES		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	TAYLOR ALFONZO	SANDERS ADDN BLK 006 LOT 014 NOT SERVED	0	0	0	0.00
4400			0	0	0	0.00
	PO BOX 622		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	BROWN BOBBIE J	SANDERS ADDN BLK 006 LOT 015 NOT SERVED	0	0	0	0.00
9500			0	0	0	0.00
	PO BOX 622		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	BROWN BOBBIE J	SANDERS ADDN BLK 006 LOT 016 NOT SERVED	0	0	0	0.00
9600			0	0	0	0.00
	PO BOX 622		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	WARREN BRENDA	SANDERS ADDN BLK 007 LOT 001 NOT SERVED	0	0	0	0.00
9700			0	0	0	0.00
	5901 JONES ST		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015010	LEWIS CAROLYN & CALVIN	SANDERS ADDN BLK 007 LOT 002 NOT SERVED	0	0	0	0.00
9800			0	0	0	0.00
	PO BOX 457		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015010	TRASS GERALDINE	SANDERS ADDN BLK 007 LOT 003 NOT SERVED	0	0	0	0.00
9900			0	0	0	0.00
	1145 S STANLEY AVE		0			
NO	LOS ANGELES					
0.000	CA 90019					
24L015011	OGLESBY BETTYE M	SANDERS ADDN BLK 007 LOT 004 NOT SERVED	0	0	0	0.00
0000			0	0	0	0.00
	11357 S UNION		0			
NO	CHICAGO					
0.000	IL 60625					
24L015011	MT NEBO AME CHURCH	SANDERS ADDN BLK 007 LOT 005 NOT SERVED	0	0	0	0.00
0100			0	0	0	0.00
	PO BOX 656		0			
NO	COLLEGE STATION					
0.000	AR 72053					
24L015011	MT NEBO AME CHURCH	SANDERS ADDN BLK 007 LOT 006 NOT SERVED	0	0	0	0.00
0200			0	0	0	0.00
	RT 2 BOX 314		0			
NO	LITTLE ROCK					
0.000	AR 72206					
24L015011	HINES WALTER J JR	SANDERS ADDN BLK 007 LOT 007 NOT SERVED	0	0	0	0.00
0300			0	0	0	0.00
	2600 MLK JR BLVD		0			
NO	LITTLE ROCK					
0.000	AR 72204					
24L015011	WILSON PHILLIS A	SANDERS ADDN BLK 007 LOT 008 NOT SERVED	0	0	0	0.00
0400			0	0	0	0.00
	1145 S STANLEY AVE		0			
NO	LOS ANGELES					
0.000	CA 90019					

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner	Address	Area (Ac)	Value	Assessed Value	Other Value	Other Value
24L020020 0200	PUL CO SCHOOL DIST	E 15 AC OF W 30 AC OF NE NE EXC W 208 6FT OF S 1044FT 19 1N 11W E X E M P T	200	1000	0	0.00	0.00
		201 S BROADWAY SUITE 310 LITTLE ROCK, AR 72201	10.000	200	0	0.00	0.00
24L020020 0500	MT NEBO A M E CHURCH	E220.44' OF N395.34' OF NE NE 19-1N-11W	50	250	270	450	15.00
		P O BOX 656 COLLEGE ST, AR 72053	2.000	50	0	0	0
24L021020 0100	DOYNE ALBERT TRUST	CARDEN SUB BLK 004 LOT 004 NOT SERVED	0	0	0	0.00	0.00
		PO BOX 3 COLLEGE STATION AR 72053	0.000	0	0	0	0.00
24L021020 0200	DOYNE VIVIAN	CARDEN SUB BLK 000 LOT 005 NOT SERVED	0	0	0	0.00	0.00
		PO BOX 111 COLLEGE STATION AR 72053	0.000	0	0	0	0.00
24L021020 0300	CHAPMAN PETER	CARDEN SUB BLK 000 LOT 006 NOT SERVED	0	0	0	0.00	0.00
		5012 FRAZIER PIKE LITTLE ROCK AR 72206	0.000	0	0	0	0.00
24L021020 0400	PILGRIM BAPTIST CHURCH	CARDEN SUB BLK 000 LOT 007 NOT SERVED	0	0	0	0.00	0.00
		PO BOX 179 GENEVIA AR 72053	0.000	0	0	0	0.00
24L021020 0500	THOMAS RICKEY H	CARDEN SUB BLK 000 LOT 10 NOT SERVED	0	0	0	0.00	0.00
		13502 FRAZIER PIKE LITTLE ROCK AR 72206	0.000	0	0	0	0.00
24L021020 0600	DOYNE VIRGIL D	CARDEN SUB BLK 000 PT LOT 10 NOT SERVED	0	0	0	0.00	0.00
		PO BOX 166 COLLEGE STATION AR 72053	0.000	0	0	0	0.00
24L021030 0700	DANGERFIELD JOHN L	CARDEN SUB BLK-000 PT LOT 10 NOT SERVED	0	0	0	0.00	0.00
		4912 FRAZIER PIKE LITTLE ROCK AR 72206	0.000	0	0	0	0.00
24L021030 1200	DOYNE D & A FAMILY LTD	SUBURBAN VILLAGE OF HARRINGTON BLK 001 LOT 012 NOT SERVED	0	0	0	0.00	0.00
		PO BOX 166 COLLEGE STATION AR 72053	0.000	0	0	0	0.00
24L021030 1300	DOYNE D & A FAMILY LTD	SUBURBAN VILLAGE OF HARRINGTON BLK 001 LOT 013 NOT SERVED	0	0	0	0.00	0.00
		PO BOX 166 COLLEGE STATION AR 72053	0.000	0	0	0	0.00
24L021030 1400	PILGRIM MISSIONARY BAPTIST	SUBURBAN VILLAGE OF HARRINGTON BLK 001 LOT 014 NOT SERVED	0	0	0	0.00	0.00
		PO BOX 179 COLLEGE STATION AR 72053	0.000	0	0	0	0.00

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Account No	Name	Address	City	State	Zip	Block	Lot	Service	Rate	Charge	Balance
24L021030 2700	HARRIS JOE WILLIE	PO BOX 552	COLLEGE STATION	AR	72053	SUBURBAN VILLAGE OF HARRINGTON	BLK 002 LOT 005	NOT SERVED	0 0 0	0 0 0	0.00 0.00 0.00
24L021030 2800	COLLINS CHARLIE	PO BOX 521	COLLEGE STATION	AR	72053	SUBURBAN VILLAGE OF HARRINGTON	BLK 002 LOT 006	NOT SERVED	0 0 0	0 0 0	0.00 0.00 0.00
24L021030 2900	COLLINS CHARLIE	PO BOX 521	COLLEGE STATION	AR	72053	SUBURBAN VILLAGE OF HARRINGTON	BLK 002 LOT 007	NOT SERVED	0 0 0	0 0 0	0.00 0.00 0.00
24L021030 3000	WALKER ANTHONY & ANITA	PO BOX 155	COLLEGE STATION	AR	72053	SUBURBAN VILLAGE OF HARRINGTON	BLK 002 LOT 008	NOT SERVED	0 0 0	0 0 0	0.00 0.00 0.00
24L021030 3100	CHAPMAN PETER	5012 FRAZIER PIKE	LITTLE ROCK	AR	72206	SUBURBAN VILLAGE OF HARRINGTON	BLK 002 LOT 009	NOT SERVED	0 0 0	0 0 0	0.00 0.00 0.00
24L021030 3200	CHAPMAN PETER	5012 FRAZIER PIKE	LITTLE ROCK	AR	72206	SUBURBAN VILLAGE OF HARRINGTON	BLK 002 LOT 010	NOT SERVED	0 0 0	0 0 0	0.00 0.00 0.00
24L021030 3300	CHAPMAN PETER	5012 FRAZIER PIKE	LITTLE ROCK	AR	72206	SUBURBAN VILLAGE OF HARRINGTON	BLK 002 LOT 011	NOT SERVED	0 0 0	0 0 0	0.00 0.00 0.00
24L021030 3400	CHAPMAN PETER	5012 FRAZIER PIKE	LITTLE ROCK	AR	72206	SUBURBAN VILLAGE OF HARRINGTON	BLK 002 LOT 012	NOT SERVED	0 0 0	0 0 0	0.00 0.00 0.00
24L021030 3500	CARTER IKE	C/O PO BOX 548	BENTON	AR	72015	SUBURBAN VILLAGE OF HARRINGTON	BLK 002 LOT 013	NOT SERVED	0 0 0	0 0 0	0.00 0.00 0.00
24L021030 3600	PURVIS MILEY	642 E 76TH ST #2	CHICAGO	IL	60619	SUBURBAN VILLAGE OF HARRINGTON	BLK 002 LOT 014	NOT SERVED	0 0 0	0 0 0	0.00 0.00 0.00
24L021030 3700	PURVIS MILEY	642 E 76TH ST # 2	CHICAGO	IL	60619	SUBURBAN VILLAGE OF HARRINGTON	BLK 002 LOT 015	NOT SERVED	0 0 0	0 0 0	0.00 0.00 0.00
24L021030 3800	PURVIS MILEY	642 E 76TH ST # 2	CHICAGO	IL	60619	SUBURBAN VILLAGE OF HARRINGTON	BLK 002 LOT 016	NOT SERVED	0 0 0	0 0 0	0.00 0.00 0.00

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Address	Area (sq ft)	Area (sq ft)	Area (sq ft)	Area (sq ft)
24R01800 00200	JONES ELIJAH	PT NW SW BEGSW COR SEC18 E2002 40'TO ER/W MOP RR N30*06W AL SD R/W 2439 4 'TOPOBN30*06W AL SD R/W100' NE43 5' TO WR/WFRAZIER PIKES95'W35'TO POB 18 1N 11	218	10890	900	1500
NO	3220 FRAZIER PK LITTLE ROCK, 0.090 AR 722069608		1960	12390	0	50.00
24R01800 00300	MCKINSTRY JOS	PT NW SW SEC 18 BEG SW COR SEC 18 E 2002 40'TO E R/W MOP RR N30*06W ALSD R/W2539 4'TB N30*06W AL SD R/W 65' E52'S65'W43 5'TO POB 18 1N 11	50	250	270	450
NO	6613 4TH CT NO BIRMINGHAM, 0.070 AL 35206		0	700	0	15.00
24R01800 00400	IRBY ROBERTA KEOWN	PT NW SW BEG SW COR SEC 18 E2002 40' TO E R/W/MOPRRN30*06W AL SD R/W 2604 4'TO POB N30*06W ALSDR/W 90' E 65'S 90'W52'TO POB 18 1N 11	224	8850	846	1410
NO	3212 FRAIZER PK LITTLE ROCK, 0.120 AR 72206		1546	10260	0	47.00
24R01800 00500	KEOWN WM P	PT NW SW BEG SW COR SEC18E2002 40'TO E R/W MOP RR N30*06WAL SDR/W 2694 4' TO POB N30*06WAL SD R/W 85' E 70'S80 ' W65'TO POB 18 1N 11	226	11350	954	1590
NO	3224 FRAZIER PIKE LITTLE ROCK 0.130 AR 722069608		2044	12940	0	53.00
24R01800 00600	KEOWN WEBSTER	PT NW SW BEGSWCOR SEC18E2002 40'TO E R/W MOP RR N30*06WALSD R/W 2778 4' TB N30*06 W AL SD R/W61' E83 6' S66' W70'TO POB 18 1N 11	222	15130	1116	1860
NO	3204 FRAZIER PIKE LITTLE ROCK, 0.110 AR 722069608		2804	16990	0	62.00
24R01800 00700	GILKEY KATRESHA C/O BARBARA J KEOWN GILKEY 3124 FRAZIER PIKE LITTLE ROCK, 0.140 AR 722069602	PT NW SW BEG SW COR SEC 18E2002 40 ' TO E R/W MOP RRN30*06WALSD R/W 2840 4'TO POB N30*06WAL SD R/W74'E91 5' S70*W83 6'TO POB 18 1N 11	4	3450	630	1050
NO			686	4500	0	35.00
24R01800 00800	KEOWN WOODROW	PT NW SW BEG SW COR SEC18E2002 40 ' TO E R/W MOP RRN30*06WAL SD R/W 2914 4'TO POB N30*06WALSD R/W 108'E104 'TO W R/W FRAZIER PIKE S AL SDR/W93' W 91.5'TO POB BEGSWCORSEC 18E2002.40 'TO E R/W MOP RR N30*06WALSDR/W2122 .40'TO POB N30*06W 317'E35'S122.8'TO R/W CO RD SW 195'TO POB 18 1N 11	272	15900	1116	1860
NO	3124 FRAZIER PI LITTLE ROCK 0.360 AR 722069801		2908	17760	0	62.00
24R01800 00900	KINDERVATER G	ALL THAT PT NW SW LYING E OFF FRAZIER PIKE, 18 1N 11W	176	880	270	450
NO	3905 BRUNO LITTLE ROCK, 6.330 AR 722096715		0	1330	0	15.00
24R01800 01400	MMM CO - BLDG 220-6E-02 C/O 3M TAX DIVISION 3M CENTER ST PAUL, MN 55144	ALL OF N1/2 SW SW LYING N OF MOP RR CO SWITCH TRACT 18 1N 11W	50	250	270	450
NO			0	700	0	15.00
24R01800 01500	REBSAMEN INSURANCE INC C/O H MAURICE MITCHELL 320 W CAPITOL SUITE 1000 LITTLE ROCK, 7.590 AR 722013525	PT E1/2 SE BEG 135'S & 100' E OF NW COR S140' E185' NW TO BEG & BEG 425' S & 450'E OF NW COR S151 1' E190 3' NW TO BEG & BEG 576 1'S * 640 3'E OF NW COR S342.1' E290' NW TO BEG & BEG 750'S OF NE COR W300' N184.8' W260' TO ER/W OF ST S'LY AL R/W APPROX 975 FT E305.7' N683.1' TO BEG 18-1N-11W	152	760	270	450
NO			0	1210	0	15.00

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Address	Area (sq ft)	Volume (cu ft)	Value	Area (sq ft)	Volume (cu ft)	Value
24R01849 00100	POWELL JESSIE	WORKMAN'S GARDENS BLK-000 LOT-001	1672	23270	1116	1860		
	PO BX 402		2982	25130	0	62.00		
NO	COLLEGE STATION,		4654					
0.000	AR 72053							
24R01849 0200	POWELL JESSIE	WORKMAN'S GARDENS BLK-000 LOT-002	1632	8160	270	450		
	PO BOX 402		0	8610	0	15.00		
NO	COLLEGE STATION,		1632					
0.000	AR 72053							
24R01849 00300	HOUSTON MERLENE BRIGGS	WORKMAN'S GARDENS BLK-000 LOT-003 PT TR 3 BEG 80'S OF NW COR E410' S80 46' W410' N80 46' TO BEG	714	3570	270	450		
	5121 LOWDEN RD		0	4020	0	15.00		
NO	LITTLE ROCK,		714					
0.000	AR 722069157							
24R01849 00400	NELSON JESSIE & PORTER T	WORKMAN'S GARDENS BLK-000 LOT-003 WORKMANS GDNS S 60' OF TR 3	582	16670	1116	1860		
	PO BOX 11		2752	18530	0	62.00		
NO	COLLEGE STATION,		3334					
0.000	AR 72053							
24R01849 00500	COMIC LIZZIE	WORKMAN'S GARDENS BLK-000 LOT-003 WORKMANS GDNS N 80' OF 3	714	16480	1062	1770		
	1701 EAST 145TH		2582	18250	0	59.00		
NO	LITTLE ROCK,		3296					
0.000	AR 72206							
24R01849 00600	POWE GERALDINE T ETAL	WORKMAN'S GARDENS BLK-000 LOT-004	1612	17950	900	1500		
	7731 4TH AV SOUTH		1978	19450	0	50.00		
NO	BIRMINGHAM		3590					
0.000	AL 35206							
24R01849 0700	POWE GERALDINE T ETAL	WORKMAN'S GARDENS BLK-000 LOT-005 WORKMANS GDNS N 1/2 TR 5 LOW LOT	902	4510	54	90		
	7713 4TH AVE SOUTH		0	4600	0	3.00		
NO	BIRMINGHAM		902					
0.000	AL 35206							
24R01849 00800	POWE GERALDINE T ETAL	WORKMAN'S GARDENS BLK-000 LOT-005 WORKMANS GARDEN S 1/2 TR 5	900	14600	954	1590		
	7731 4TH AVE SOUTH		2020	16190	0	53.00		
NO	BIRMINGHAM		2920					
0.000	AL 35206							
24R01849 00900	MACKINTRUSH	WORKMAN'S GARDENS BLK-000 LOT-006 TR 6 EXC N150' OF W150' LOW LOT	1238	6190	54	90		
	1519 S HARRISON		0	6280	0	3.00		
NO	LITTLE ROCK,		1238					
0.000	AR 72204							
24R01849 01000	WILLIAMS DAVID & HELEN	WORKMAN'S GARDENS BLK-000 LOT-006 N150' OF W150' OF TR 6	550	6650	684	1140		
	P O BOX 388		780	7790	0	38.00		
NO	COLLEGE STATION,		1330					
0.000	AR 72053							
24R01849 01100	SNYDER D M & MAGGIE	WORKMAN'S GARDENS BLK-000 LOT-007 N1/2 OF TR 7	538	2690	270	450		
	8627 S MARSH FIELDS		0	3140	0	15.00		
NO	CHICAGO,		538					
0.000	IL 60620							
24R01849 011849	WASHINGTON WILLIE C &	WORKMAN'S GARDENS BLK-000 LOT-007 S1/2 OF TR 7	538	2690	270	450		
	PO BOX 164043		0	3140	0	15.00		
NO	LITTLE ROCK,		538					
0.000	AR 72216							

24R01849 01200	CITY OF LITTLE ROCK 2401 CRISP DR LITTLE ROCK 0.000 AR 72202	WORKMAN'S GARDENS BLK-000 LOT-008 WORKMAN GDNS E 111' OF TR 8	548 3846 4394	21970 21970	0 0	0.00 0.00
24R01849 01300	WEITHERSPOON ESTELLA M P O BOX 224 COLLEGE STATION 0.000 AR 72053	WORKMAN'S GARDENS BLK-000 LOT-008 WORKMANS GDN W 50' OF E 211' TR 8	350 0 350	1750 2200	270 0	450 15.00
24R01849 01400	ASSESSOR BUSINESS RECORD 201S BROADWAY ST 310 LITTLE ROCK 0.000 AR 722011521	WORKMAN'S GARDENS BLK-000 LOT-008 CONTROL SEE TR 17 FOR W 5' OF TR 8	0 0 0	0 0	0 0	0.00 0.00
24R01849 01500	WEITHERSPOON ELIZABETH R 1650 WYNNEDOWNE TR SMYRNA 0.000 GA 300802478	WORKMAN'S GARDENS BLK-000 LOT-008 WORKMANS GDNS W 50' OF E 161' OF TR 8	350 0 350	1750 2200	270 0	450 15.00
24R01849 01600	CITY OF LITTLE ROCK 2401 CRISP DR LITTLE ROCK, 0.000 AR 72202	WORKMAN'S GARDENS BLK-000 LOT-009	738 0 738	3690 3690	0 0	0.00 0.00
24R01849 01700	HEMPHILL WILLIE M 5386 31TH ST DETROIT 0.000 MI 48210	WORKMAN'S GARDENS BLK-000 LOT-010 WORKMANS GDNS TR 10 EXC N 50' & EXC S 50' OF N 100' OF S 108 7' OF W 50'	698 1658 2356	11780 13190	846 0	1410 47.00
24R01849 01800	MACK EARLIE & GLADYS C/O GLADYS HOLLINGSWORTH 803 W BRONS PEORIA 0.000 IL 61604	WORKMAN'S GARDENS BLK-000 LOT-010 WORKMANS GDNS W 59' OF N 50' TR 10	230 0 230	1150 1600	270 0	450 15.00
24R01849 01900	WASHINGTON ROBERT & EMMA 3619 E 35TH ST LITTLE ROCK 0.000 AR 722069171	WORKMAN'S GARDENS BLK-000 LOT-010 WORKMANS GDN S 50' OF N 100' OF S 108 7' OF W 50' OF TR 10	230 252 482	2410 3460	630 0	1050 35.00
24R01849 02000	MACK EARLIE C/O GLADYS HOLLINGSWORTH 803 W BRONS PEORIA 0.000 IL 61604	WORKMAN'S GARDENS BLK-000 LOT-010 WORKMANS GDNS E 150' OF N 50' TR 10	310 0 310	1550 2000	270 0	450 15.00
24R01849 02100	MACK EARLIE C/O GLADYS HOLLINGSWORTH 803 W BRONS PEORIA 0.000 IL 61604	WORKMAN'S GARDENS BLK-000 LOT-011	902 322 1224	6120 7170	630 0	1050 35.00
24R01849 02200	KEOWN WEBSTER 3204 FRAZIER PIKE LITTLE ROCK, 0.000 AR 722069608	WORKMAN'S GARDENS BLK-000 LOT-012	1042 0 1042	5210 5660	270 0	450 15.00
24R01849 02300	THOMPSON ARCHIE D PO BOX 164215 LITTLE ROCK, 0.000 AR 72216	WORKMAN'S GARDENS BLK-000 LOT-013 WORKMANS GDNS PT W1/2 TR 13 BEG 100' E OF SW COR N 100' E 20' N90' E89' S80' W40' S110' W69' TO BEG	642 3538 4180	20900 23030	1278 0	2130 71.00

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 16

24R01849 02400	BELL C CURTIS & MARY W P O BOX 164102 LITTLE ROCK, AR 72216	WORKMAN'S GARDENS BLK-000 LOT-013 WORKMANS GDNS PT W 1/2 TR 13 BEG 20 FT E & 175' N OF SW COR E 100' N 75 FT W 100' S 75' TO BEG	268 4514 4782	23910 26400	1494 0	2490 83.00	
24R01849 02500	MISSOURI MARION P O BOX 340 COLLEGE STATION AR 72053	WORKMAN'S GARDENS BLK-000 LOT-013 PT W1/2 TR 13 BEG 668' N OF SW COR N209' S209' W209' TO BEG	774 0 774	3870 4320	270 0	450 15.00	
24R01849 02600	WASHINGTON ROBT 3619 E 35TH ST LITTLE ROCK, AR 722069171	WORKMAN'S GARDENS BLK-000 LOT-013 WORKMANS GDNS PT W 1/2 TR 13 BEG 459'N OF SW COR N 209' E 209' S 209' W 209' TO BEG	774 4964 5738	28690 31270	1548 0	2580 86.00	
24R01849 02700	WASHINGTON WILLIE C PO BX 164043 LITTLE ROCK, AR 72216	WORKMAN'S GARDENS BLK-000 LOT-013 WORKMANS GDNS PT W 1/2 TR 13 BEG 20' E & 100'N OF SW COR N 75' E 100' S 75' W 100' TO BEG	268 4554 4822	24110 26600	1494 0	2490 83.00	
24R01849 02800	BANKS GEORGIA C/O WALTER BANKS P O BOX 393 COLLEGE STATION, AR 72053	WORKMAN'S GARDENS BLK-000 LOT-013 WORKMANS GDNS PT W 1/2 OF TR 13 BEG 250'N OF THE SW COR TH E 209' N 209' W 209' S 209' TO BEG	774 3524 4298	21490 23620	1278 0	2130 71.00	
24R01849 02900	JOHNSON ALMA LEE C/O 3518 MARYLAND LITTLE ROCK, AR 72204	WORKMAN'S GARDENS BLK-000 LOT-013 WORKMAN GDNS PT W 1/2 OF LT 13 BEG 20 FT E OF SW COR TH E80 FT N 100 FT W 80 FT TH S 100 FT TO BEG	274 0 274	1370 1820	270 0	450 15.00	
24R01849 03000	LITTLE ROCK AIRPORT 2401 CRISP DR LITTLE ROCK, AR 722097152	WORKMAN'S GARDENS BLK-000 LOT-013 WORKMANS GDNS PT W 1/2 OF TR 13 BEG AT SE COR OF W 1/2 OF TR 13 TH N ALONG E LINE OF W 1/2 OF TR 13-110'W 40' S 110' E 40' TO BEG	260 2434 2694	13470 13470	0 0	0.00 0.00	
24R01849 03100	BOWIE GEO 3612 E 36TH ST LITTLE ROCK, AR 722069162	WORKMAN'S GARDENS BLK-000 LOT-013 WORKMANS GDN E 1/2 TR 13 EXC TR 50' E & W BY 100' N & S IN SE COR 4 055	3026 0 3026	15130 15580	270 0	450 15.00	
24R01849 03200	WASHINGTON ROSE LEE C/O WILLIE WASHINGTON PO BOX 164043 LITTLE ROCK, AR 72216	WORKMAN'S GARDENS BLK-000 LOT-013 WORKMANS GDNS A TR OF LAND 50' E & W BY 100' N & S IN SE COR E 1/2 TR 13	270 2112 2382	11910 13500	954 0	1590 53.00	
24R01849 03201	NELSON LOUISE 4600 GRAND AV LITTLE ROCK, AR 722042807	WORKMAN'S GARDENS BLK-000 LOT-013 PT W1/2 TR 13 BEG 120'E & 190'N OF SW COR N60' E89' S60' W89' TO BEG	256 0 256	1280 1730	270 0	450 15.00	
24R01849 03300	WILLIAMS HELEN 3618 E 35TH ST LITTLE ROCK, AR 72206	WORKMAN'S GARDENS BLK-000 LOT-014 WORKMAN GDNS W 150' OF TR 14 EXC S 65' OF E 75' EXC N 50' OF S 380' OF E 75' W 150' EXC N 100' OF S 165' OF E 75' OF W 150' & W50' THERE TO	464 0 464	2320 2770	270 0	450 15.00	
24R01849 03400	WETHERSPOON ROSIE L 12922 HWY 365 LITTLE ROCK, AR 72206	WORKMAN'S GARDENS BLK-000 LOT-014 WORKMAN GDN PT E 100' TR 14 BG 150'E OF SW CR N 306 8' E 76' S4* E 307 8' W 100' TB	544 0 544	2720 3170	270 0	450 15.00	

Parcel ID	Owner	Address	Area (sq ft)	Area (sq ft)	Area (sq ft)	Area (sq ft)
24R01849 03500	WILLIAMS ROBT H	WORKMAN'S GARDENS BLK-000 LOT-014 WORKMAN GDNS S 65' OF E 75' OF W 150' OF 14	268 4478	23730 26130	1440 0	2400 80.00
	PO BOX 302 GENEVA, 0.000 AR 72053		4746			
24R01849 03600	SQUARE DEAL INC	WORKMAN'S GARDENS BLK-000 LOT-014 WORKMANS GDNS N 50' OF S 380' OF E 75' OF W 150' TR 14	250 0	1250 1700	270 0	450 15.00
	101 E WASHINGTON NO LITTLE ROCK, 0.000 AR 721145637		250			
24R01849 03700	WILLIAMS PERCY JR	WORKMAN'S GARDENS BLK-000 LOT-014 WORKMAN GDNS PT TR 14 N 100' OF S 165' OF E 75' OF W 150'	310 3142	17260 19210	1170 0	1950 65.00
	PO BOX 164406 LITTLE ROCK, 0.000 AR 72216		3452			
24R01849 03800	HEIFNER ROY	WORKMAN'S GARDENS BLK-000 LOT-014 WORKMAN GDNS PT E 100' TR 14 BG 150' E OF SW CR N 381 8' BG N 474 2' TO NLN SD TR N 88* E 31' S 4* E 476 9' W 75' TO POB 14	536 1088	8120 9350	738 0	1230 41.00
	BOX 504 COLLEGE STATION, 0.000 AR 72053		1624			
24R01849 03900	WATERS RUELL	WORKMAN'S GARDENS BLK-000 LOT-014 WORKMAN GARDENS PT E100' TR 14 BG 150' E OF SW CR N306 8' TB N75' N88* E75' S4* 28' E75' W76' TO POB	242 2184	12130 13720	954 0	1590 53.00
	3410 LITE LN COLLEGE STATION 0.000 AR 720539999		2426			
24R01849 03901	WILLIAMS MAMIE	WORKMAN'S GARDENS BLK-000 LOT-014 WORKMANS GARDENS W50' OF TR 14	872 3906	23890 26110	1332 0	2220 74.00
	PO BOX 302 COLLEGE STAITON 0.000 AR 72253		4778			
24R01849 04000	HOLDER FRANCES E	WORKMAN'S GARDENS BLK-000 LOT-017 WORKMAN GDNS W 110' OF TR 17	500 2668	15840 17610	1062 0	1770 59.00
	PO BOX 164058 LITTLE ROCK, 0.000 AR 72216		3168			
24R01849 04100	CITY OF LR FOR LR AIRPORT	WORKMAN'S GARDENS BLK-000 LOT-017 WORKMAN GDN W55 5' OF E106' OF TR 17	366 0	1830 1830	0 0	0.00 0.00
	2401 CRISP DR LITTLE ROCK, 0.000 AR 72202		366			
24R01849 04200	STRINGFELLOW LAURA/WILLIE	WORKMAN'S GARDENS BLK-000 LOT-017 WORKMAN GDNS E 50 5' OF TR 17 & W 5' OF TR 8	366 1972	11690 13190	900 0	1500 50.00
	2525 LAUREL LN PLANO, 0.000 TX 75074		2338			
24R01849 04300	WASHINGTON WILLIE C ETAL	WORKMAN'S GARDENS BLK-000 LOT-018 TR 18 LESS & EXC BEG NW COR TH S150' TH E100' TH N150' TH W100'	562 0	2810 3260	270 0	450 15.00
	PO BOX 164043 LITTLE ROCK, 0.000 AR 72216		562			
24R01849 04400	CITY OF LITTLE ROCK	WORKMAN'S GARDENS BLK-000 LOT-018 TR 18 BEG NW COR TH S75' TH E100' TH N75' TH W100' TO POB	268 0	1340 1340	0 0	0.00 0.00
	2401 CRISP DR RM 5 LITTLE ROCK, 0.000 AR 72202		268			
24R01849 04500	CITY OF LR FOR LR AIRPORT	WORKMAN'S GARDENS BLK-000 LOT-018 TR 18 BEG 75' S OF NW COR TH S75' TH E100' TH N75' TH W75'	268 0	1340 1340	0 0	0.00 0.00
	2401 CRISP DR LITTLE ROCK, 0.000 AR 72202		268			

Parcel ID	Owner Name	Address	Area	Value	Area	Value	Area	Value
24R01849 04700	ADAMS JAMES	WORKMAN'S GARDENS BLK-000 LOT-019 PT W 111' OF TR 19 BEG SW COR E11' N100' E100' N102' W111' TO NW COR S202' TO BEG	712 0 712	3560 4010	270 0	450 15.00		
NO 0.000	P O BOX 164633 LITTLE ROCK, AR 72206							
24R01849 04800	JOHNSON WILSON & MINNIE	WORKMAN'S GARDENS BLK-000 LOT-019 WORKMANS GDNS PT TR 19 BEG SE COR N 70' W 105' S 70' E 105' TO BEG	306 2032 2338	11690 13280	954 0	1590 53.00		
NO 0.000	4620 HOFFMAN RD LITTLE ROCK, AR 72053							
24R01849 04900	PHILLIPS WM	WORKMAN'S GARDENS BLK-000 LOT-019 WORKMANS GDNS BEG 70'N OF SE COR N 54' W105' S54' E105' TO BEG PT TR 19	280 0 280	1400 1850	270 0	450 15.00		
NO 0.000	3915 JONES LITTLE ROCK, AR 722063745							
24R01849 05000	THORNTON JAMES	WORKMAN'S GARDENS BLK-000 LOT-019 PT TR 19 BEG NE COR W105' S78' E105' N78' TO POB EXC E70' OF N78' OF TR 19	232 5336 5568	27840 30600	1656 0	2760 92.00		
NO 0.000	3512 BUD LN COLLEGE STATION AR 720539999							
24R01849 05001	CITY OF LITTLE ROCK	WORKMAN'S GARDENS BLK-000 LOT-019 E70' OF N78' OF TR 19	276 0 276	1380 1380	0 0	0.00 0.00		
NO 0.000	500 W MARKHAM ST RM 338 LITTLE ROCK, AR 72201							
24R01849 05100	DAVENPORT EMMA	WORKMAN'S GARDENS BLK-000 LOT-019 PT TR 19 BEG 105' W OF SE COR N 100' W100' S100'E100' TO BEG	350 0 350	1750 2200	270 0	450 15.00		
NO 0.000	1530 MARTIN LUTHER KING JR BERKLEY, CA 94709							
24R01849 05200	BLACKMAN DELLA M	WORKMAN'S GARDENS BLK-000 LOT-020 TR 20 EXC E50' & EXC W60' OF N100' & EXC THE S50' OF W75' OF E150' FMD 85359	510 0 510	2550 2910	216 0	360 12.00		
NO 0.459	4306 E 39TH LITTLE ROCK, AR 722063722							
24R01849 05205	VAUGHN ROSIE D CARTER	WORKMAN'S GARDENS BLK-000 LOT-020 THE S50' OF W75' OF E150' OF TR 20	112 1392 1504	7520 8840	792 0	1320 44.00		
NO 0.000	P O BOX 164044 LITTLE ROCK, AR 722164044							
24R01849 05300	VICENT JESSIE	WORKMAN'S GARDENS BLK-000 LOT-020 WORKMANS GDNS N152' OF E50' OF TR 20	310 1872 2182	10910 12410	900 0	1500 50.00		
NO 0.000	P O BOX 12 BALDWIN MI 49304							
24R01849 05400	DICKERSON WALTER L	WORKMAN'S GARDENS BLK-000 LOT-020 WORKMANS GDN W 60' OF N 100' OF 20	286 5934 6220	31100 34040	1764 0	2940 98.00		
NO 0.000	3623E 35TH ST LITTLE ROCK AR 722069171							
24R01849 05500	VICENT JESSIE	WORKMAN'S GARDENS BLK-000 LOT-020 WORKMAN GDNS S 50' OF E 50' OF TR 20 FMD 85360	250 2428 2678	13390 15160	1062 0	1770 59.00		
96-7061 NO 0.086	PO BOX 12 BALDWIN MI 49304							
24R01849 05600	WASHINGTON EMMA	WORKMAN'S GARDENS BLK-000 LOT-029 WORKMAN GDNS TR 29 EXC A TR DESC AS BEG AT NW COR OF TR 29 TH E 150' S 50' W 150' TH N 50' TO BEG	390 2000 2390	11950 13540	954 0	1590 53.00		
NO 0.000	3619 E 35TH ST LITTLE ROCK, AR 722069171							

Parcel ID	Owner Name	Address	Area	Value	Value	Value	Value
24R01849 05700	WASHINGTON ROBERT & EMMA	WORKMAN'S GARDENS BLK-000 LOT-029 WORKMAN GDN PT TR 29 BEG AT NW COR TH E 150' TH S 50' W 150' TH N 50' TO BEG	310 5400 5710	28550 31310	1656 0	2760 92.00	
	NO	LITTLE ROCK					
	0.000	AR 722069171					
4R01849 05701	HINTON MORRIS	WORKMAN'S GARDENS BLK-000 LOT-029 IMPROVEMENTS ONLY PT TR 29 BEG AT NW COR TH E 150' TH S50' W150' TH N50' TO POB	0 4812 4812	24060 26640	1548 0	2580 86.00	
	NO	LITTLE ROCK					
	0.000	AR 722069171					
24R01849 05800	JOYNER LUCINDA H	WORKMAN'S GARDENS BLK-000 LOT-030	512 0 512	2560 3010	270 0	450 15.00	
	NO	C/O MILDRED LEWIS JELKS 2757 W 6TH ST RIALTO,					
	0.000	CA 92376					
24R01849 05900	ADAMS JAMES	WORKMAN'S GARDENS BLK-000 LOT-031 S51' TR 31	352 2848 3200	16000 17860	1116 0	1860 62.00	
	NO	P O BOIX 164633 LITTLE ROCK,					
	0.000	AR 72206					
24R01849 06000	WESSON JOE JR	WORKMAN'S GARDENS BLK-000 LOT-031 WORKMANS GDN N 50' TR 31	350 0 350	1750 2200	270 0	450 15.00	
	NO	2805 LOMA LITTLE ROCK,					
	0.000	AR 72206					
24R01849 06100	ELLIS-DAVENPORT	WORKMAN'S GARDENS BLK-000 LOT-032 WORKMAN GDNS ALL 32 EXC 50' N & S BY 100' E & W IN SW COR	432 0 432	2160 2610	270 0	450 15.00	
	NO	1530 MARTIN L KING JR WAY BERKELEY,					
	0.000	CA 94709					
4R01849 06200	JOHNSON RAY	WORKMAN'S GARDENS BLK-000 LOT-032 WORKMANS GDNS PT TR 32 BEG SW COR N 50' E 100' S 50' W 100' TO BEG EXC PT RES FOR FRAZIER RD	200 0 200	1000 1450	270 0	450 15.00	
	NO	C/O REX JOHNSON PO BOX 192005 LITTLE ROCK,					
	0.000	AR 72219					
24R01861 00100	SLAY CALVIN	FRISBY SUB BLK 004 LOT 015	302 3000 3302	16510 18460	1170 0	1950 65.00	
	NO	C/O PO BOX 304 LITTLE ROCK					
	0.000	AR 72203					
24R01861 00300	YOUNG LULA & J ROBINSON	FRISBY SUB BLK 004 LOT 019	302 0 302	1510 1960	270 0	450 15.00	
	NO	PO BOX 195 COLLEGE STATION					
	0.000	AR 72053					
24R01861 00400	COLCLOUGH THELMA L	FRISBY SUB BLK 004 LOTS 20,21,AND22	526 11000 11526	57630 62460	2898 0	4830 161.00	
	NO	PO BOX 374 COLLEGE STATION					
	0.000	AR 72053					
24R01861 00500	MOORE FRED	FRISBY SUB BLK 004 LOT 023	302 2210 2512	12560 14150	954 0	1590 53.00	
	NO	PO BOX 596 COLLEGE STATION					
	0.000	AR 72053					
24R01861 00600	MOORE FRED	FRISBY SUB BLK 004 LOT 024	302 1600 1902	9510 10920	846 0	1410 47.00	
	NO	3514 E 38TH ST COLLEGE STATION					
	0.000	AR 72053					

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 20

24R01861 00700	ROCK HILL MISSIONARY C/O 1916 SCHILLER LITTLE ROCK AR 72202	FRISBY SUB BLK 005 LOTS 1&2 EXEMPT	302 0 302	1510 2410	540 0	900 30.00	
24R01861 00800	WASHINGTON MONICA PO BOX 154 COLLEGE STATION AR 72053	FRISBY SUB BLK 005 LOT 003	414 3512 3926	19630 21760	1278 0	2130 71.00	
24R01861 00900	ALEXANDER ELIJAH 5104 145TH ST LITTLE ROCK AR 72206	FRISBY SUB BLK 005 LOT 005	302 0 302	1510 1960	270 0	450 15.00	
24R01861 01000	KELLEY BRANDON & BUTLER D 3619 JONES LITTLE ROCK AR 72206	FRISBY SUB LOT 006 & E 1/2 OF LOT 007 BLK 005	358 3200 3558	17790 19740	1170 0	1950 65.00	
24R01861 01100	SLAY CALVIN C/O PO BOX 304 LITTLE ROCK AR 72203	FRISBY SUB W1/2 OF LOT 007 & E1/2 OF LOT 008 BLK 005	302 5080 5382	26910 29580	1602 0	2670 89.00	
24R01861 01200	MATTHEWS FRANK & W F 4921 W 20TH LITTLE ROCK AR 72204	FRISBY SUB W1/2 OF LOT 8 & ALL OF LOT 9 BLK 005	358 0 358	1790 2240	270 0	450 15.00	
24R01861 01300	BLANTON ALICE ETAL 16611 LEISURE ST DETROIT MI 48235	FRISBY SUB LOT 010 BLK 005	302 0 302	1510 1960	270 0	450 15.00	
24R01861 01400	COOPER KATIE 703 S CAMPBELL CHICAGO IL 60612	FRISBY SUB S70' OF LOTS 11 & 12 BLK 005	302 0 302	1510 1960	270 0	450 15.00	
24R01861 01600	LITTLE ROCK QUARRY CO INC C/O IKE CARTER PO BOX 548 BENTON AR 72015	FRISBY SUB LOT 013 BLK 005	302 0 302	1510 1960	270 0	450 15.00	
24R01861 01700	LITTLE ROCK QUARRY CO INC C/O IKE CARTER PO BOX 548 BENTON AR 72015	FRISBY SUB LOTS 14 & 15 BLK 005	414 0 414	2070 2250	108 0	180 6.00	
24R01861 01800	SHEPHERD ERMA & STOUTS PO BOX 591 COLLEGE STATION AR 72053	FRISBY SUB LOT 016 BLK 005	302 3000 3302	16510 18460	1170 0	1950 65.00	
24R01861 01801	DOYNE D&A FAMILY LTD PO BOX 166 COLLEGE STATION AR 72053	FRISBY SUB LOT 17 BLK 005	302 1600 1902	9510 10920	846 0	1410 47.00	

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 21

24R01861 01900	ADAMS CURTIS 4010 NEELY RD LITTLE ROCK AR 72206	FRISBY SUB LOT 18 BLK 005	302 1972 2274	11370 12870	900 0	1500 50.00
24R01861 J2000	ADAMS CURTIS 4010 NEELY RD LITTLE ROCK AR 72206	FRISBY SUB LOT 19 BLK 005	302 0 302	1510 1960	270 0	450 15.00
24R01861 02100	ADAMS ABE C/O SAM ADAMS 2811 BARBER ST LITTLE ROCK AR 72206	FRISBY SUB LOT 20 BLK 005	302 0 302	1510 1960	270 0	450 15.00
24R01861 02200	WOODS JOHNNY C/O LINDA FAYE BATTLE 101 W WEDGEWOOD #5 HINESVILLE GA 31313	FRISBY SUB LOT 21 BLK 005	302 10 312	1560 2010	270 0	450 15.00
24R01861 02300	WOODS JOHNNIE V C/O LINDA FAYE BATTLE 101 W WEDGEWOOD # 5 HINESVILLE GA 31313	FRISBY SUB LOT 22 BLK 005	302 0 302	1510 1960	270 0	450 15.00
24R01861 02400	CRAWFORD MOSES PO BOX 532 COLLEGE STATION AR 72053	FRISBY SUB LOT 23 BLK 005	302 570 872	4360 5410	630 0	1050 35.00
24R01861 02500	BLACKMON DEBORAH S C/O 8500 LINE AVE SHREVEPORT LA 71106	FRISBY SUB LOT 24 BLK 005	302 6152 6454	32270 35300	1818 0	3030 101.00
24R01861 02700	CARTER IKE PO BOX 548 BENTON AR 72015	FRISBY SUB N1/2 OF LOTS 1 & 2 BLK 007	638 0 638	3190 3640	270 0	450 15.00
24R01861 02800	GORDON EDITH MAE C/O PO BOX 208 COLLEGE STATION AR 72053	FRISBY SUB S1/2 LOTS 1 & 2 BLK 007, CR 56649	346 134 480	2400 2850	270 0	450 15.00
24R01861 02900	LITTLE ROCK QUARRY INC C/O IKE CARETR PO BOX 548 BENTON AR 72015	FRISBY SUB LOT 3 BLK 007	302 0 302	1510 1960	270 0	450 15.00
24R01861 03000	THOMAS HAROLD W 7300 FOURCHE DAM PIKE LITTLE ROCK AR 72206	FRISBY SUB LOT 4 BLK 007	302 0 302	1510 1960	270 0	450 15.00
24R01861 03100	WINGFIELD MARTIN R C/O 3M TAX DEPT 3M CENTER BLDG 220-6E ST PAUL MN 55144	FRISBY SUB LOT 5 BLK 007	302 0 302	1510 1960	270 0	450 15.00

24R01861 03200	KELLEY OBIE 3619 JONES LITTLE ROCK AR 72206	FRISBY SUB LOT 6 BLK 007	302 0 302	1510 1960	270 0	450 15.00	
24R01861 J3400	D & A DOYNE FAMILY LTD PO BOX 166 COLLEGE STATION AR 72053	FRISBY SUB LOTS 12 & 13 BLK 007 LOW LOTS	414 0 414	2070 2250	108 0	180 6.00	
24R01861 03500	SOUTHERN INV CO PO BOX 22433 LITTLE ROCK AR 72221	FRISBY SUB LOT 14 BLK 007	302 0 302	1510 1960	270 0	450 15.00	
24R01861 03600	STANDRIDGE ODELL J 2129 B DEAN MARTIN DR CABOT AR 72023	FRISBY SUB LOTS 15 & 16 BLK 007	414 0 414	2070 2970	540 0	900 30.00	
24R01861 03700	SCRIBNER WALTER P 5020 ADAMS HILL LN LITTLE ROCK AR 72206	FRISBY SUB LOT 17 BLK 007	302 0 302	1510 1960	270 0	450 15.00	
24R01861 03800	PORTER GORDON C/O PO BOX 289 GENEVIA AR 72053	FRISBY SUB LOT 18 BLK 007	302 1566 1868	9340 10750	846 0	1410 47.00	
24R01861 03900	WINFREY DURLEY PO BOX 22 COLLEGE STATION AR 72053	FRISBY SUB LOT 1 BLK 008	302 10262 10564	52820 57380	2736 0	4560 152.00	
24R01861 04000	WINFREY DURLEY PO BOX 22 COLLEGE STATION AR 72053	FRISBY SUB LOT 2 BLK 008	302 0 302	1510 1960	270 0	450 15.00	
24R01861 04100	DELONEY BRENDA RT 2 BOX 530 LITTLE ROCK AR 72206	FRISBY SUB LOT 3 BLK 008	302 1816 2118	10590 12090	900 0	1500 50.00	
24R01861 04200	LITTLE ROCK QUARRY CO INC C/O IKE CARTER PO BOX 548 BENTON AR 72015	FRISBY SUB LOT 4 BLK 008	302 0 302	1510 1960	270 0	450 15.00	
24R01861 04300	ADAMS ABE C C/O JAMES ADAMS 3004 BERMUDA LN LITTLE ROCK AR 72206	FRISBY SUB LOT 5 BLK 008	302 2400 2702	13510 15190	1008 0	1680 56.00	
24R01861 04400	ADAMS ABE C C/O GERALDINE ADAMS PO BOX 631 COLLEGE STATION AR 72053	FRISBY SUB LOT 6 BLK 008	302 3052 3354	16770 18720	1170 0	1950 65.00	

24R01861 04500	ADAMS ESSIE PO BOX 246 COLLEGE STATION AR 72053	FRISBY SUB LOT 7 BLK 008	302 1956 2258	11290 12790	900 0	1500 50.00	
NO 0.000							
24R01861 04600	LITTLE ROCK QUARRY CO INC C/O IKE CARTER PO BOX 548 BENTON AR 72015	FRISBY SUB LOT 8 BLK 008	302 0 302	1510 1510	0 0	0.00 0.00	
NO 0.000							
24R01861 04700	ADAMS CURTIS 4010 NEELY RD LITTLE ROCK AR 72206	FRISBY SUB LOT 9 BLK 008	302 0 302	1510 1960	270 0	450 15.00	
NO 0.000							
24R01861 04800	LEE ELSIE MAE C/O MID STATE HOMES PO BOX 31601 TAMPA FL 33631	FRISBY SUB LOT 10 BLK 008	302 4920 5222	26110 28690	1548 0	2580 86.00	
NO 0.000							
24R01861 04900	HADLEY HAZEL LEE PO BOX 244 COLLEGE STATION AR 72053	FRISBY SUB LOTS 11 & 12 BLK 008	414 2400 2814	14070 15750	1008 0	1680 56.00	
NO 0.000							
24R01861 05000	SPANN C C & SIMMONS J PO BOX 142 COLLEGE STATION AR 72053	FRISBY SUB LOTS 13 & 14 BLK 008	414 1000 1414	7070 8300	738 0	1230 41.00	
NO 0.000							
24R01861 05100	SIMMONS JOHN R 1117 KAVANUGH # 2 LITTLE ROCK AR 72205	FRISBY SUB LOTS 15-17 BLK 008	526 2766 3292	16460 18320	1116 0	1860 62.00	
NO 0.000							
24R01861 05200	RIDGLE CHARLIE & IDA PO BOX 287 COLLEGE STATION AR 72053	FRISBY SUB LOT 18 BLK 008	302 3252 3554	17770 19810	1224 0	2040 68.00	
NO 0.000							
24R01861 05300	PHILLIPS ALONZO & ADA PO BOX 17553 N LITTLE ROCK AR 72116	FRISBY SUB LOT 19 BLK 008	302 2822 3124	15620 17480	1116 0	1860 62.00	
NO 0.000							
24R01861 05400	ASSEMBLY OF GOD CHURCH C/O 3023 MCCOMB LITTLE ROCK AR 72206	FRISBY SUB LOTS 20-22 BLK 008 EXEMPT	906 16000 16906	84530 90170	3384 0	5640 188.00	
NO 0.000							
24R01861 05500	WINFREY DURLEY & CYNTHIA PO BOX 22 LITTLE ROCK AR 72206	FRISBY SUB LOT 23 BLK 008	302 424 726	3630 4680	630 0	1050 35.00	
NO 0.000							
24R01861 05600	HENSON LLOYD P EST OF C/O CORNELIUS HENSON PO BOX 567 COLLEGE STATION, AR 72053	MEAD BLK-00A LOT-001	256 0 256	1280 1730	270 0	450 15.00	
NO 0.000							

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 24

Account No	Owner Name	Address	Block/Lot	Area	Value	Assessed Value	Special Assessments	Total Value
24R01867 00200	HENSON LLOYD P EST OF C/O CORNELIUS HENSON PO BOX 567	MEAD BLK-00A LOT-002		270	1350	270	450	
				0	1800	0	15.00	
				270				
NO 0.000	COLLEGE STATION, AR 72053							
24R01867 J0300	NASH ZETTIE	MEAD BLK-00A LOT-003		270	1350	270	450	
				0	1800	0	15.00	
				270				
NO 0.000	COLLEGE STATION, AR 72053							
24R01867 00400	NASH ZETTIE	MEAD BLK-00A LOT-004		266	1510	270	450	
				36	1960	0	15.00	
				302				
NO 0.000	COLLEGE STATION, AR 72053							
24R01867 00401	HENSON LEMUEL	MEAD BLK-00A LOT-004 IMPROVEMENTS ONLY MEAD LT 4 BLK A		0	3790	684	1140	
				758	4930	0	38.00	
				758				
NO 0.000	COLLEGE STATION, AR 72053							
24R01867 00500	GIVENS ARTHONIA	MEAD BLK-00B LOT-001 LOW LOT		312	1560	54	90	
				0	1650	0	3.00	
				312				
NO 0.000	3611 E 37TH ST LITTLE ROCK, AR 72206							
24R01867 00600	GIVENS FRED	MEAD BLK-00B LOT-002		270	17350	1170	1950	
				3200	19300	0	65.00	
				3470				
NO 0.000	3611 E 37TH ST LITTLE ROCK, AR 722069159							
24R01867 00700	GIVENS ARTHONIA	MEAD BLK-00B LOT-003		270	4350	684	1140	
				600	5490	0	38.00	
				870				
NO 0.000	3611 E 37TH ST LITTLE ROCK, AR 72206							
24R01867 00800	TUCKER ARTHONIA	MEAD BLK-00B LOT-004		270	1350	270	450	
				0	1800	0	15.00	
				270				
NO 0.000	3611 E 37TH ST LITTLE ROCK, AR 72206							
24R01867 00900	WILLIAMS SANDRA	MEAD BLK-00B LOT-005		270	1350	270	450	
				0	1800	0	15.00	
				270				
NO 0.000	15743 MONICA CT FONTANA CA 92336							
24R01867 01100	WHITE WILLIE MAE	MEAD BLK-00B LOT-006		270	6350	738	1230	
				1000	7580	0	41.00	
				1270				
NO 0.000	PO BOX 374 COLLEGE STATION, AR 72053							
24R01867 01200	KEOWN WOODROW OR MABLE	MEAD BLK-00B LOT-007		270	1350	270	450	
				0	1800	0	15.00	
				270				
NO 0.000	3124 FRAZIER PIKE LITTLE ROCK, AR 722069602							
24R01867 01300	DAVIS SHEILA	MEAD BLK-00B LOT-008 E4' OF LT 8 AND ALL OF LT 9		278	10930	900	1500	
				1908	12430	0	50.00	
				2186				
NO 0.000	P O BOX 62 COLLEGE STATION AR 72053							

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Address	Block/Lot	Area	Value	Assessed Value	Area	Value
24R01867 01400	ARMSTRONG ROSIE LEE	C/O V L FLOWERS 3823 JONES LITTLE ROCK, AR 72206	MEAD BLK-00B LOT-008 MEADS W36' OF LT 8 B	262	1310	270	450	15.00
NO 0.000				0	1760	0		
24R01867 1500	JOHNSON MS BOBBIE	PO BOX 255 COLLEGE STATION, AR 72053	MEAD BLK-00B LOT-010	270	12960	1008	1680	56.00
NO 0.000				2322	14640	0		
24R01867 01600	SCOTT ETHEL LEE	PO BOX 525 COLLEGE STATION AR 72053	MEAD BLK-00B LOT-011	270	17140	1170	1950	65.00
NO 0.000				3158	19090	0		
24R01867 01700	EACKLES VICTOR V & OWEEDA	PO BOX 263 COLLEGE STATION, AR 72053	MEAD BLK-00B LOT-012	258	19000	1278	2130	71.00
NO 0.000				3542	21130	0		
24R01867 01800	EACKLES VICTOR V & OWEEDA	PO BOX 263 COLLEGE STATION, AR 72053	MEAD BLK-00B LOT-013	230	1150	270	450	15.00
NO 0.000				0	1600	0		
24R01867 01900	CLICK EVELYN & ELIJAH	P O BOX 225 GENEVIA, AR 72053	MEAD BLK-00C LOT-001	354	1770	270	450	15.00
NO 0.000				0	2220	0		
24R01867 02000	SIMMONS KATHERINE	518 SKYLINE DR NO LITTLE ROCK, AR 721169230	MEAD BLK-00C LOT-002	270	4850	630	1050	35.00
NO 0.000				700	5900	0		
24R01867 02100	SIMMONS KATHERINE S	518 SKYLINE DR NO LITTLE ROCK, AR 721169230	MEAD BLK-00C LOT-003	270	1350	270	450	15.00
NO 0.000				0	1800	0		
24R01867 02200	MID STATE HOMES/WALTER JIM	C/O SELMON F WILSON P O BOX 525 COLLEGE STATION, AR 72053	MEAD BLK-00C LOT-004 LTS 4 & 5 BLK C	350	24440	1494	2490	83.00
NO 0.000				4538	26930	0		
24R01867 02400	MCDONALD DAVID C & WF	PO BOX 212 GENEVA, AR 72053	MEAD BLK-00C LOT-006	270	1350	270	450	15.00
NO 0.000				0	1800	0		
24R01867 02500	MCDONALD DAVID	PO BOX 212 GENEVA, AR 72053	MEAD BLK-00C LOT-007	270	11550	954	1590	53.00
NO 0.000				2040	13140	0		
24R01867 02600	MCDONALD DAVID	PO BOX 212 GENEVIA, AR 72053	MEAD BLK-00C LOT-008	270	14320	1062	1770	59.00
NO 0.000				2594	16090	0		

24R01867 02700	ROCK HILL BAPT CH RT 2 BOX 647A LITTLE ROCK AR 72206	MEAD BLK-00C LOT-009	270 0 270	1350 1800	270 0	450 15.00	
NO 0.000							
24R01867 02800	GORDON EARRIE MAE PO BOX 595 COLLEGE STATION AR 72053	MEAD BLK-00C LOT-010	270 378 648	3240 4290	630 0	1050 35.00	
NO 0.000							
24R01867 02900	GORDON EARRIE MAE PO BOX 595 COLLEGE STATION AR 72053	MEAD BLK-00C LOT-011	270 0 270	1350 1800	270 0	450 15.00	
NO 0.000							
24R01867 03000	GORDON EARRIE MAE PO BOX 595 COLLEGE STATIN AR 72053	MEAD BLK-00C LOT-012	270 500 770	3850 4900	630 0	1050 35.00	
NO 0.000							
24R01867 03100	KELLEY CARLA P O BOX 94 COLLEGE STATION AR 72053	MEAD BLK-00C LOT-013	270 2400 2670	13350 15030	1008 0	1680 56.00	
NO 0.000							
24R01867 03200	KELLEY CARLA P O BOX 94 COLLEGE STATION AR 72053	MEAD BLK-00C LOT-014	270 0 270	1350 1800	270 0	450 15.00	
NO 0.000							
24R01867 03300	GRAY ROSIE LEE 1309 E 3RD AV PINE BLUFF, AR 71601	MEAD BLK-00C LOT-015	270 0 270	1350 1800	270 0	450 15.00	
NO 0.000							
24R01867 03400	SAVAGE JAMES JR P O BOX 149 COLLEGE STATION, AR 72053	MEAD BLK-00C LOT-016 ALL LOTS 16 & 17	350 0 350	1750 2650	540 0	900 30.00	
NO 0.000							
24R01867 03600	CLICK EVELYN & ELIJAH PO BOX 225 GENEVIA, AR 72053	MEAD BLK-00C LOT-018	270 0 270	1350 1800	270 0	450 15.00	
NO 0.000							
24R01867 03700	CLICK EVELYN & ELIJAH P O BOX 225 GENEVIA, AR 72053	MEAD BLK-00C LOT-019	270 0 270	1350 1800	270 0	450 15.00	
NO 0.000							
24R01867 03800	CLICK EVELYN & ELIJAH PO BOX 225 GENEVIA, AR 72053	MEAD BLK-00C LOT-020	268 0 268	1340 1790	270 0	450 15.00	
NO 0.000							
24R01867 03900	CLICK EVELYN & ELIJAH P O BOX 225 GENEVIA, AR 72053	MEAD BLK-00C LOT-021	258 0 258	1290 1740	270 0	450 15.00	
NO 0.000							

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Address	Block/Lot	Area	Value	Area	Value	Area	Value
24R01867 04000	DOYNE VIRGIL D	PO BOX 166 COLLEGE STATION, AR 72053	MEAD BLK-00D LOT-001 MEADS LT 1 EXC THE W40' D	220 0 220	1100 1550	270 0	450 15.00		
24R01867 4100	LOWERY IDA MAE	254 D WARREN AV LAKEWOOD NJ 08701	MEAD BLK-00D LOT-001 THE W40' OF LT 1 & ALL OF LT 28 FMD 85934	260 0 260	1300 2320	612 0	1020 34.00		+
24R01867 04200	NASH HOWARD & RODERICK	P O BOX 292 COLLEGE STATION, AR 72053	MEAD BLK-00D LOT-002	270 0 270	1350 1800	270 0	450 15.00		
24R01867 04300	NASH HOWARD & RODERICK	P O BOX 292 COLLEGE STATION, AR 72053	MEAD BLK-00D LOT-003	270 0 270	1350 1800	270 0	450 15.00		
24R01867 04400	DAVIS SHEILA	PO BOX 62 COLLEGE STATION AR 72053	MEAD BLK-00D LOT-004 AND E1/2 LT 5	310 1600 1910	9550 10960	846 0	1410 47.00		
24R01867 04401	HAYES MILDRED	PO BOX 322 COLLEGE STATION, AR 72053	MEAD BLK-00D LOT-005 W1/2 LT 5 & ALL LT 6	310 4000 4310	21550 23860	1386 0	2310 77.00		
24R01867 04500	HENSON JAMES M	C/O 3208 HINDRICKS ROBBINS, IL 60472	MEAD BLK-00D LOT-007	270 0 270	1350 1800	270 0	450 15.00		
24R01867 04600	HENSON JAMES M	C/O 3208 HINDRICKS ROBBINS, IL 60472	MEAD BLK-00D LOT-008	270 0 270	1350 1800	270 0	450 15.00		
24R01867 04700	HENSON JAMES M	C/O 3208 HINDRICKS ROBBINS, IL 60472	MEAD BLK-00D LOT-009	270 0 270	1350 1800	270 0	450 15.00		
24R01867 04800	MACON LEROY	P O BOX 131 COLLEGE STATION, AR 72053	MEAD BLK-00D LOT-010 MEADS LTS 10&11 D	350 13400 13750	68750 74390	3384 0	5640 188.00		
24R01867 04900	MACON BEATRICE	3611 E 39TH ST LITTLE ROCK, AR 722063755	MEAD BLK-00D LOT-012	270 0 270	1350 1800	270 0	450 15.00		
24R01867 05000	TR 1ST PENECOSTAL CH	1617 S MARTIN LITTLE ROCK, AR 72206	MEAD BLK-00D LOT-013 MEADS	270 8154 8424	42120 45870	2250 0	3750 125.00		

24R01867 05100	WINFREY WAYMAN 3604 3-M RD LITTLE ROCK, AR 72206	MEAD BLK-00D LOT-014	270 1272 1542	7710 9030	792 0	1320 44.00	
NO 0.000							
24R01867 05200	WINFREY MILTON & ETAL PO BOX 601 COLLEGE STATION, AR 72053	MEAD BLK-00D LOT-015 MEADS LTS 15 THRU 17 D	430 4276 4706	23530 25930	1440 0	2400 80.00	
NO 0.000							
24R01867 05300	WINFREY MILTON PO BOX 601 COLLEGE STATION, AR 720530601	MEAD BLK-00D LOT-018	270 0 270	1350 1800	270 0	450 15.00	
NO 0.000							
24R01867 05400	WINFREY LILLIAN P O BOX 22 COLLEGE STATION, AR 72053	MEAD BLK-00D LOT-019	270 0 270	1350 1800	270 0	450 15.00	
NO 0.000							
24R01867 05500	HENSON CORNEALIOUS 3616 3-M RD COLLEGE STATION AR 72053	MEAD BLK-00D LOT-020	270 7992 8262	41310 44970	2196 0	3660 122.00	
NO 0.000							
24R01867 05600	HENSON CORNEALIOUS & WF 3616 3-M RDICA COLLEGE STATION AR 72053	MEAD BLK-00D LOT-021	270 0 270	1350 1800	270 0	450 15.00	
NO 0.000							
24R01867 05700	HENSON CORNEALIOUS & WF 3616 3-M RD COLLEGE STATION AR 72053	MEAD BLK-00D LOT-022	270 0 270	1350 1800	270 0	450 15.00	
NO 0.000							
24R01867 05800	CLOUD LILLIAN P TR & TRUSTEE 10 OLD FORGE CT LITTLE ROCK, AR 72207	MEAD BLK-00D LOT-024 E1/2 LOT 24 & ALL LOT 25	318 5052 5370	26850 29520	1602 0	2670 89.00	
NO 0.000							
24R01867 05801	WALKER WILMA GREER 3907 COMPANY ST COLLEGE STATION, AR 72053	MEAD BLK-00D LOT-023 ALL LOT 23 & W1/2 OF 24	318 4724 5042	25210 27700	1494 0	2490 83.00	
NO 0.000							
24R01867 05900	NASH HOWARD & RODERICK P O BOX 292 COLLEGE STATION, AR 72053	MEAD BLK-00D LOT-026	270 0 270	1350 1800	270 0	450 15.00	
NO 0.000							
24R01867 06000	NASH HOWARD & RODERICK P O BOX 292 COLLEGE STATION, AR 72053	MEAD BLK-00D LOT-027	270 2402 2672	13360 15040	1008 0	1680 56.00	
NO 0.000							
24R01867 06200	DOYNE VIRGIL D TRUSTEE PO BOX 166 COLLEGE STATION, AR 72053	MEAD BLK-00D LOT-029	270 2380 2650	13250 14930	1008 0	1680 56.00	
NO 0.000							

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Address	Block/Lot	Area	Value	Area	Value
24R01867 06300	BROWN TIMOTHY	3414E 41ST ST COLLEGE STATION AR 72035	MEAD BLK-00D LOT-030	284 2122 2406	12030 13620	954 0	1590 53.00
24R01867 06400	KELLEY ROSE	4519 FRAZIER PIKE LITTLE ROCK, AR 722069642	MEAD BLK-00E LOT-001	262 0 262	1310 1760	270 0	450 15.00
24R01867 06500	ADAMS RUTHIE & STUBBS	3801 W SHORT 2ND PINE BLUFF, AR 71602	MEAD BLK-00E LOT-002	270 0 270	1350 1800	270 0	450 15.00
24R01867 06600	SPARKS WILLIE H	C/O PO BOX 173 GENEVIA, AR 72053	MEAD BLK-00E LOT-003	270 5000 5270	26350 29020	1602 0	2670 89.00
24R01867 06700	SPARKS WILLIE H	C/O PO BOX 173 GENEVIA, AR 72053	MEAD BLK-00E LOT-004	270 800 1070	5350 6490	684 0	1140 38.00
24R01867 06800	BANKS WILLIE	10109 LICHFIELD LITTLE ROCK, AR 72204	MEAD BLK-00E LOT-005 MEADS EXC E40' BAL OF 5 THRU 7 E	334 4954 5288	26440 29020	1548 0	2580 86.00
24R01867 06900	BANKS WM SR	PO BOX 201 COLLEGE STATION, AR 72053	MEAD BLK-00E LOT-005 MEADS E40' OF LTS 5 THRU 7 E	270 598 868	4340 5390	630 0	1050 35.00
24R01867 07000	KIRK THOS L	3658 FOREST TRAIL DR GRAND PRARIE, TX 75051	MEAD BLK-00E LOT-008	206 0 206	1030 1480	270 0	450 15.00
24R01867 07100	KIRK THOS L	3658 FOREST TRAIL DR GRAND PRARIE, TX 75051	MEAD BLK-00E LOT-009	172 0 172	860 1310	270 0	450 15.00
24R01867 07200	KIRK THOS L	3658 FOREST TRAIL DR GRAND PRARIE, TX 75051	MEAD BLK-00E LOT-010	156 0 156	780 1230	270 0	450 15.00
24R01867 07300	LEWIS BISHOP HENRY	C/O 2717 SHORT REEKER PINE BLUFF, AR 71601	MEAD BLK-00E LOT-011	270 0 270	1350 1800	270 0	450 15.00
24R01867 07400	LEWIS MATTIE LEE	C/O 2717 SHORT REEKER PINE BLUFF, AR 71601	MEAD BLK-00E LOT-012	262 0 262	1310 1760	270 0	450 15.00

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Account Number	Property Name	Address	Block/Lot	Assessed Value	Market Value	Special Assessments	Total Value
24R01867 07500	WILLIAMS DONALD R	MEAD BLK-00F LOT-001		270	23740	1440	2400
				4478	26140	0	80.00
	PO BOX 137			4748			
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867 J7600	EVANS DOWELL S	MEAD BLK-00F LOT-002		270	1350	270	450
				0	1800	0	15.00
	PO BOX 137			270			
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867 07700	EVANS DOWELL S	MEAD BLK-00F LOT-003		270	1350	270	450
				0	1800	0	15.00
	PO BOX 137			270			
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867 07800	WILLIAMS FREDDIE	MEAD BLK-00F LOT-003 MEADS LTS 2&3 F IMPROVEMENTS ONLY		0	14150	1116	1860
				2830	16010	0	62.00
	3712 FRAZIER PIKE			2830			
NO	LITTLE ROCK						
0.000	AR 722069627						
24R01867 07900	HOUSOTN DONNA L	MEAD BLK-00F LOT-004		270	1350	270	450
				0	1800	0	15.00
	PO BOX 137			270			
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867 08100	EVANS HELEN	MEAD BLK-00F LOT-005		270	13440	1008	1680
				2418	15120	0	56.00
	PO BOX 137			2688			
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867 08200	HOUSTON DONNA L	MEAD BLK-00F LOT-006		270	1350	270	450
				0	1800	0	15.00
	PO BOX 137			270			
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867 08300	PULASKI COUNTY C/O COURT HOUSE	MEAD BLK-00G LOT-000 MEADS EX E M P T ALL G		0	0	0	0.00
				0	0	0	0.00
	LITTLE ROCK,						
0.000	AR 72201						
24R01867 08400	JACKSON DEE	MEAD BLK-00H LOT-001		270	1350	270	450
	C/O BOX 553			0	1800	0	15.00
				270			
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867 08500	SOLMSON ROBT M	MEAD BLK-00H LOT-002		270	1350	270	450
				0	1800	0	15.00
	889 RIDGELAKE BL			270			
NO	MEMPHIS,						
0.000	TN 381209425						
24R01867 08600	SOLMSON ROBT M	MEAD BLK-00H LOT-003		270	1350	270	450
				0	1800	0	15.00
	889 RIDGELAKE BL			270			
NO	MEMPHIS,						
0.000	TN 38120						
24R01867 08700	KING HAYWARD	MEAD BLK-00H LOT-004		270	17350	1170	1950
				3200	19300	0	65.00
	PO BOX 298			3470			
NO	COLLEGE STATION,						
0.000	AR 72053						

24R01867	KING HAYWOOD	MEAD BLK-00H LOT-005	270	10620	900	1500	
08800	C/O ROSE ANN MITCHELL		1854	12120	0	50.00	
	8259 S PEORIA ST		2124				
NO	CHICAGO,						
0.000	IL 60620						
24R01867	BANKHEAD JOE L	MEAD BLK-00H LOT-006	270	12110	954	1590	
08900	C/O VALERIE GIDEON		2152	13700	0	53.00	
	1660 MARK AV #G		2422				
NO	ELGIN						
0.000	IL 60123						
24R01867	GIDEON ANNIE & VALLORIE	MEAD BLK-00H LOT-007	270	1350	270	450	
08901	C/O VALLORIE GIDEON		0	1800	0	15.00	
	1660 MARK AV #G		270				
NO	ELGIN,						
0.000	IL 60123						
24R01867	BANKHEAD AUGUSTUS	MEAD BLK-00H LOT-008	270	1350	270	450	
08902	C/O VALERIE GIDEON		0	1800	0	15.00	
	1660 MARK AV #G		270				
NO	ELGIN						
0.000	IL 60123						
24R01867	BANKHEAD JAMES A	MEAD BLK-00H LOT-009	270	1350	270	450	
08903	C/O VALERIE GIDEON		0	1800	0	15.00	
	1660 MARK AV #G		270				
NO	ELGIN						
0.000	IL 60123						
24R01867	WILLIAMS REUBEN	MEAD BLK-00H LOT-010	270	1350	270	450	
09000	C/O VALERIE GIDEON		0	1800	0	15.00	
	1660 MARK AV #G		270				
NO	ELGIN						
0.000	IL 60123						
24R01867	PLEASANT HILL CHURCH	MEAD BLK-00H LOT-011 MEADS EXEMPT 11	270	134550	4050	6750	
09100		H	26640	141300	0	225.00	
	3801 E 38TH ST		26910				
NO	LITTLE ROCK,						
0.000	AR 72206						
24R01867	PLEASANT HILL CME CH	MEAD BLK-00H LOT-012 MEADS EXEMPT A/C	270	1350	270	450	
09200		30268 12 H	0	1800	0	15.00	
	3801 E 38TH ST		270				
NO	LITTLE ROCK,						
0.000	AR 72206						
24R01867	PLEASANT HILL CHRISTIAN	MEAD BLK-00H LOT-013 LOW LOT	270	1350	54	90	
09300			0	1440	0	3.00	
	PO BOX 584		270				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867	PLEASANT HILL CHRISTIAN	MEAD BLK-00H LOT-014 LOW LOT	270	1350	54	90	
09400			0	1440	0	3.00	
	PO BOX 584		270				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867	PLEASANT HILL CME CH	MEAD BLK-00H LOT-015 STREET CUT	270	1350	54	90	
09500			0	1440	0	3.00	
	PO BOX 584		270				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867	PLEASANT HILLS CME	MEAD BLK-00H LOT-016	270	3850	630	1050	
09600			500	4900	0	35.00	
	P O BOX 584		770				
NO	COLLEGE STATION,						
0.000	AR 72053						

Parcel ID	Owner Name	Address	Block/Lot	Area	Value	Area	Value	Area	Value
24R01867 09700	GILBERT JOHN T	11806 VERONICA NO LITTLE ROCK, AR 72118	MEAD BLK-00H LOT-017	270 3000 3270	16350 18300	1170 0	1950 65.00		
24R01867 J9800	GILBERT JOHN T	11806 VERONICA NO LITTLE ROCK, AR 72118	MEAD BLK-00H LOT-018	270 1040 1310	6550 7780	738 0	1230 41.00		
24R01867 09900	BARNES NELSON	C/O 1916 S SCHILLER	MEAD BLK-00H LOT-019	270 2138 2408	12040 13630	954 0	1590 53.00		
24R01867 10000	BARNES B NELSON & WF	C/O 1916 S SCHILLER	MEAD BLK-00H LOT-020 LOW LOT	270 0 270	1350 1440	54 0	90 3.00		
24R01867 10100	BANKS MED	RT 2 BOX 615 LITTLE ROCK, AR 72206	MEAD BLK-00H LOT-021 LOW LOT	264 0 264	1320 1410	54 0	90 3.00		
24R01867 10200	BANKS MED	RT 2 BOX 615 LITTLE ROCK, AR 72206	MEAD BLK-00H LOT-022	250 5600 5850	29250 32100	1710 0	2850 95.00		
24R01867 10300	BANKS WILLIE	C/O LOIS GOINS 10109 LICHFIELD LITTLE ROCK, AR 72204	MEAD BLK-00H LOT-023	238 14360 14598	72990 78630	3384 0	5640 188.00		
24R01867 10400	SOLMSON ROBT M & ETAL	889 RIDGELAKE BL MEMPHIS, TN 381209425	MEAD BLK-00H LOT-024	266 0 266	1330 1780	270 0	450 15.00		
24R01867 10500	BANKS WILLIE	C/O LOIS GOINS 10109 LICHFIELD LITTLE ROCK, AR 72204	MEAD BLK-00H LOT-025	254 0 254	1270 1720	270 0	450 15.00		
24R01867 10600	BANKS WILLIE	C/O LOIS GOINS 10109 LICHFIELD LITTLE ROCK, AR 72204	MEAD BLK-00H LOT-026	244 0 244	1220 1670	270 0	450 15.00		
24R01867 10700	BANKS WILLIE	C/O LOIS GOINS 10109 LICHFIELD LITTLE ROCK, AR 72204	MEAD BLK-00H LOT-027	270 1998 2268	11340 12840	900 0	1500 50.00		
24R01867 10800	BANKS GEORGIE	C/O LOIS GOINS 10109 LICHFIELD LITTLE ROCK, AR 72204	MEAD BLK-00H LOT-028	270 0 270	1350 1800	270 0	450 15.00		

24R01867	BANKS GEORGIA	MEAD BLK-00H LOT-029	270	10730	900	1500	
10900	C/O HARRY BANKS		1876	12230	0	50.00	
	8040 DANWOOD		2146				
NO	LITTLE ROCK,						
0.000	AR 722048312						
24R01867	BANKS ROSETTA	MEAD BLK-00H LOT-030	270	12310	954	1590	
1000			2192	13900	0	53.00	
	3514E 39TH ST		2462				
NO	LITTLE ROCK						
0.000	AR 722063755						
24R01867	BANKS GEORGIE	MEAD BLK-00H LOT-031	270	1350	270	450	
11100	C/O HARRY BANKS		0	1800	0	15.00	
	8040 DANWOOD		270				
NO	LITTLE ROCK,						
0.000	AR 722048312						
24R01867	HOUSTON JIMMIE L SR	MEAD BLK-00H LOT-032	270	11350	954	1590	
11200			2000	12940	0	53.00	
	P O BOX 21		2270				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867	HOUSTON JIMMIE L SR	MEAD BLK-00H LOT-033	262	21310	1386	2310	
11300			4000	23620	0	77.00	
	PO BOX 21		4262				
NO	COLLEGE STATION						
0.000	AR 72053						
24R01867	PRINCE JOE EDW	MEAD BLK-00I LOT-001	270	34520	1926	3210	
11400			6634	37730	0	107.00	
	P O BOX 167		6904				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867	PRINCE JOE EDW	MEAD BLK-00I LOT-002	270	1350	54	90	
11500			0	1440	0	3.00	
	P O BOX 167		270				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01867	POWELL MINNIE LEE	MEAD BLK-00I LOT-003	270	1350	54	90	
11600	C/O LUCIOUS POWELL		0	1440	0	3.00	
	6400 SHIRLEY DR		270				
NO	LITTLE ROCK,						
0.000	AR 722041573						
24R01867	POWELL MINNIE LEE	MEAD BLK-00I LOT-004	270	1350	54	90	
11700	C/O LUCIOUS POWELL		0	1440	0	3.00	
	6400 SHIRLEY DR		270				
NO	LITTLE ROCK,						
0.000	AR 722041573						
24R01867	POWELL MINNIE LEE	MEAD BLK-00I LOT-005	270	1350	270	450	
11800			0	1800	0	15.00	
	6400 SHIRLEY DR		270				
NO	LITTLE ROCK,						
0.000	AR 722041573						
24R01867	POWELL MINNIE LEE	MEAD BLK-00I LOT-006	270	1350	270	450	
11900			0	1800	0	15.00	
	6400 SHIRLEY DR		270				
NO	LITTLE ROCK,						
0.000	AR 722041573						
24R01867	PEASTER JAMES VENETTA	MEAD BLK-00I LOT-007 MEADS LTS 7 & 8	350	51410	2628	4380	
12000			9932	55790	0	146.00	
	PO BOX 259		10282				
NO	COLLEGE STATION,						
0.000	AR 72053						

Account No	Address	Block/Lot	Area	Area	Area	Area
24R01867 12200	ATKINSON FLORA 2415 S IZARD LITTLE ROCK, AR 722062030	MEAD BLK-001 LOT-009	270 0 270	1350 1800	270 0	450 15.00
NO 0.000						
24R01867 12300	WILLIAMS C 2415 S IZARD ST LITTLE ROCK, AR 722062030	MEAD BLK-001 LOT-010	270 0 270	1350 1440	54 0	90 3.00
NO 0.000						
24R01867 12400	KEOWN WOODROW ETAL 3124 FRAZIER PIKE LITTLE ROCK, AR 722069602	MEAD BLK-001 LOT-011	270 0 270	1350 1440	54 0	90 3.00
NO 0.000						
24R01867 12500	KEOWN WOODROW ETAL 3124 FRAZIER PIKE LITTLE ROCK, AR 722069602	MEAD BLK-001 LOT-012	270 0 270	1350 1440	54 0	90 3.00
NO 0.000						
24R01867 12600	BIVENS BOBBIE JOE C/O 2603 SO HARRISON LITTLE ROCK, AR 72204	MEAD BLK-001 LOT-013 MEADS LT 13 & E 1/2 OF 14 I	310 0 310	1550 1640	54 0	90 3.00
NO 0.000						
24R01867 12700	BIVENS BOBBIE J 2603 SO HARRISON LITTLE ROCK, AR 722045171	MEAD BLK-001 LOT-014 MEADS W 1/2 OF LT 14 I	234 0 234	1170 1260	54 0	90 3.00
NO 0.000						
24R01867 12800	BIVENS BOBBIE J C/O 2603 SO HARRISON LITTLE ROCK, AR 72204	MEAD BLK-001 LOT-015	270 0 270	1350 1800	270 0	450 15.00
NO 0.000						
24R01867 12900	BUTLER HOWARD 3619 JONES ST LITTLE ROCK, AR 72206	MEAD BLK-001 LOT-016	270 0 270	1350 1800	270 0	450 15.00
NO 0.000						
24R01867 13000	HENSON DIMPLE PO BOX 567 COLLEGE STATION, AR 72053	MEAD BLK-001 LOT-017	270 0 270	1350 1800	270 0	450 15.00
NO 0.000						
24R01867 13100	WILLIS HENRY RT 2 BOX 628 LITTLE ROCK, AR 72206	MEAD BLK-001 LOT-018	270 0 270	1350 1800	270 0	450 15.00
NO 0.000						
24R01867 13200	HENSON NEXDEEN 3705 E 37TH ST LITTLE ROCK, AR 72206	MEAD BLK-001 LOT-019	270 0 270	1350 1800	270 0	450 15.00
NO 0.000						
24R01867 13300	WILLIS HENRY P O BOX 544 COLLEGE STATION AR 72053	MEAD BLK-001 LOT-020	270 0 270	1350 1800	270 0	450 15.00
NO 0.000						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 35

24R01867 13400	WILLIS HENRY P O BOX 544 COLLEGE STATION AR 72053	MEAD BLK-001 LOT-021	270 0 270	1350 1800	270 0	450 15.00
24R01867 3500	HENSON NEXDEEAN WILLIS 3705E 37TH ST LITTLE ROCK AR 722069161	MEAD BLK-001 LOT-022	274 1474 1748	8740 10060	792 0	1320 44.00
24R01867 13600	BANKHEAD GROVER C C/O 11629 S ABERDEEN CHICAGO, IL 60643	MEAD BLK-001 LOT-023	256 0 256	1280 1730	270 0	450 15.00
24R01867 13700	BANKHEAD GROVER C C/O 11629 S ABERDEEN CHICAGO, IL 60643	MEAD BLK-001 LOT-024	246 0 246	1230 1680	270 0	450 15.00
24R01867 13800	THOMPSON BERNICE 3717 FRAZIER PK LITTLE ROCK AR 722069628	MEAD BLK-001 LOT-025	278 2338 2616	13080 14760	1008 0	1680 56.00
24R01867 13900	WILLIAMSON LOVELY 3200 LOUISIANA LITTLE ROCK, AR 722063190	MEAD BLK-001 LOT-026	262 0 262	1310 1400	54 0	90 3.00
24R01867 14000	MCADOO BETTY MAE 1315 W 104TH LOS ANGELES, CA 90044	MEAD BLK-001 LOT-027	252 0 252	1260 1350	54 0	90 3.00
24R01867 14100	MCADOO BETTY MAE 1315 W 104TH LOS ANGELES, CA 90044	MEAD BLK-001 LOT-028	270 0 270	1350 1440	54 0	90 3.00
24R01867 14200	BOGAN IDA 6850 S PEORIA CHICAGO, IL 60621	MEAD BLK-001 LOT-029	270 0 270	1350 1800	270 0	450 15.00
24R01867 14300	BANKHEAD ANNIE M 6850 PEORIA CHICAGO, IL 60621	MEAD BLK-001 LOT-030	270 0 270	1350 1800	270 0	450 15.00
24R01867 14400	BANKHEAD ANNIE M 6850 PEORIA CHICAGO, AR 60621	MEAD BLK-001 LOT-031	270 0 270	1350 1800	270 0	450 15.00
24R01867 15000	BANKHEAD ANNIE M 6850 PEORIA CHICAGO, IL 60621	MEAD BLK-001 LOT-032	270 2340 2610	13050 14730	1008 0	1680 56.00

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Block/Lot	Area	Value	Assessment	Other	Special
24R01867 14600	JOHNSON ARTHUR L & EVELYN	MEAD BLK-001 LOT-033	270	1350	270	450	
	8259 S PEORIA ST		0	1800	0	15.00	
	CHICAGO,		270				
NO	0.000 IL 60620						
24R01867 14700	JOHNSON ARTHUR L & EVELYNN	MEAD BLK-001 LOT-034	270	1350	270	450	
	8259 S PEORIA ST		0	1800	0	15.00	
	CHICAGO,		270				
NO	0.000 IL 60620						
24R01867 14800	ALEXANDER ELIJAH	MEAD BLK-001 LOT-035	270	1350	270	450	
	5104 145TH ST		0	1800	0	15.00	
	LITTLE ROCK,		270				
NO	0.000 AR 722069696						
24R01867 14900	ALEXANDER ELIJAH	MEAD BLK-001 LOT-036	270	1350	270	450	
	5104 145TH ST		0	1800	0	15.00	
	LITTLE ROCK,		270				
NO	0.000 AR 72206						
24R01867 15000	PLEASANT HILL CHRISTIAN	MEAD BLK-001 LOT-037	276	1380	270	450	
	P O BOX 584		0	1830	0	15.00	
	COLLEGE STATION		276				
NO	0.000 AR 72053						
24R01867 15100	KELLEY BRANDON/BUTLER	MEAD BLK-001 LOT-038	270	1350	270	450	
	3619 JONES ST		0	1800	0	15.00	
	LITTLE ROCK,		270				
NO	0.000 AR 722063739						
24R01867 15200	KELLEY BRANDON/BUTLER	MEAD BLK-001 LOT-039	270	1350	270	450	
	3619 JONES ST		0	1800	0	15.00	
	LITTLE ROCK,		270				
NO	0.000 AR 722063739						
24R01867 15300	KINCHEN LEMAR	MEAD BLK-001 LOT-040 MEADS LTS 40&41	350	21750	1386	2310	
	P O BOX 194		4000	24060	0	77.00	
	COLLEGE STATION		4350				
NO	0.000 AR 72053						
24R01867 15400	KINCHEN ELIZABETH II	MEAD BLK-001 LOT-042	270	1350	270	450	
	P O BOX 194		0	1800	0	15.00	
	COLLEGE STATION,		270				
NO	0.000 AR 72053						
24R01867 15500	THORNTON JOSEPHINE/JONES	MEAD BLK-001 LOT-043	270	23350	1440	2400	
	3808E 38TH ST		4400	25750	0	80.00	
	COLLEGE STATION		4670				
NO	0.000 AR 720539999						
24R01867 15600	THORNTON JOSEPHINE/JONES	MEAD BLK-001 LOT-044	270	1350	270	450	
	3808 EAST 38TH ST		0	1800	0	15.00	
	LITTLE ROCK,		270				
NO	0.000 AR 72206						
24R01867 15700	MACKINTRUSH WALTER & WIFE	MEAD BLK-001 LOT-045	270	13400	1008	1680	
	1519 SO HARRISON		2410	15080	0	56.00	
	LITTLE ROCK,		2680				
NO	0.000 AR 72204						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Account No	Property Owner	Address	Block/Lot	Assessed Value	Market Value	Special Assessments	Total Value
24R01867 15800	MACKINTRUSH WALTER & WIFE	1519 SO HARRISON LITTLE ROCK, AR 72204	MEAD BLK-00I LOT-046	270 3264 3534	17670 19710	1224 0	2040 68.00
24R01867 5900	JACKSON ROSA LEE	PO BOX 424 COLLEGE STATION, AR 72053	MEAD BLK-00J LOT-001	270 0 270	1350 1800	270 0	450 15.00
24R01867 16000	GRIFFIN LOVITA KELLEY	127 ALMOND CV SHERWOOD AR 72116	MEAD BLK-00J LOT-002 MEADS LTS 2&3 J	350 0 350	1750 2650	540 0	900 30.00
24R01867 16100	CARTER IKE	C/O PO BOX 548 BENTON, AR 72015	MEAD BLK-00J LOT-004 MEADS LTS 4&5 J	350 0 350	1750 2650	540 0	900 30.00
24R01867 16200	ROBERTS IDELL	3615 E 36TH ST LITTLE ROCK, AR 722069163	MEAD BLK-00J LOT-006 MEADS LTS 6&7 J	350 0 350	1750 2650	540 0	900 30.00
24R01867 16300	ALEXANDER ELIJAH SR	5104 145TH ST LITTLE ROCK, AR 722069696	MEAD BLK-00J LOT-008	270 0 270	1350 1800	270 0	450 15.00
24R01867 16400	LR MUNICIPAL AIRPORT	1 AIRPORT RD LITTLE ROCK, AR 72202	MEAD BLK-00J LOT-009	276 2734 3010	15050 15050	0 0	0.00 0.00
24R01867 16500	LR MUNICIPAL AIRPORT	1 AIRPORT RD LITTLE ROCK, AR 72202	MEAD BLK-00J LOT-010 EXEMPT CR 51672	0 0 0	0 0	0 0	0.00 0.00
24R01867 16600	DAVIE JAMES H	C/O 501 E 23RD LITTLE ROCK, AR 72206	MEAD BLK-00J LOT-011	270 0 270	1350 1800	270 0	450 15.00
24R01867 16700	DAVIE JAMES H	C/O 501 E 23RD LITTLE ROCK, AR 72206	MEAD BLK-00J LOT-012	270 0 270	1350 1800	270 0	450 15.00
24R01867 16800	CITY OF LR FOR LR AIRPORT	2401 CRISP DR LITTLE ROCK, AR 72202	MEAD BLK-00J LOT-013	270 0 270	1350 1350	0 0	0.00 0.00
24R01867 16900	CITY OF LITTLE ROCK	2401 CRISP DR LITTLE ROCK, AR 72202	MEAD BLK-00J LOT-014	270 4014 4284	21420 21420	0 0	0.00 0.00

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Account No	Owner Name	Address	Parcel ID	Area	Value	Assessed Value	Special Assessments	Other	Total
24R01867 18200	BOWIE GEORGE	3612 E 36TH ST LITTLE ROCK	MEAD BLK-00J LOT-028 MEADS S25' OF 28 & ALL OF 29 J	260 410 670	3350 4400	630 0		1050 35.00	
NO 0.000	AR 72206								
24R01867 8300	SIMMONS JOHN R	1117 KAVANAUGH #2 LITTLE ROCK,	MEAD BLK-00J LOT-030 MEADS LT 30-31-32-33-34 & 35 J	604 5180 5784	28920 31590	1602 0		2670 89.00	
NO 0.000	AR 72205								
24R01867 18400	HAYES SAMMY	P O BOX 171 COLLEGE STATION,	MEAD BLK-00J LOT-036	270 2144 2414	12070 13660	954 0		1590 53.00	
NO 0.000	AR 72053								
24R01867 18500	HAYES SAMMY	P O BOX 171 COLLEGE STATION,	MEAD BLK-00J LOT-037	270 6344 6614	33070 36190	1872 0		3120 104.00	
NO 0.000	AR 72053								
24R01867 18600	HAYES SAMMY	P O BOX 171 COLLEGE STATION,	MEAD BLK-00J LOT-038	270 0 270	1350 1800	270 0		450 15.00	
NO 0.000	AR 72053								
24R01867 18700	MONTGOMERY LAURA K	RT 2 BOX 612 LITTLE ROCK,	MEAD BLK-00J LOT-039	270 0 270	1350 1800	270 0		450 15.00	
NO 0.000	AR 72206								
24R01867 18800	DAVIS ALMA F & GLILMORE R	2908 WELCH ST LITTLE ROCK,	MEAD BLK-00J LOT-040	270 0 270	1350 1800	270 0		450 15.00	
NO 0.000	AR 72206								
24R01867 18900	WILLIAMSON IMOGENE M	C/O 207 DONAGHEY BLDG LITTLE ROCK,	MEAD BLK-00J LOT-041	270 0 270	1350 1800	270 0		450 15.00	
NO 0.000	AR 72206								
24R01867 19000	WILLIAMSON IMOGENE M	C/O 207 DONAGHEY BLDG LITTLE ROCK,	MEAD BLK-00J LOT-042	270 0 270	1350 1800	270 0		450 15.00	
NO 0.000	AR 72206								
24R01867 19100	WILLIAMSON IMOGENE M	C/O 207 DONAGHEY BLDG LITTLE ROCK,	MEAD BLK-00J LOT-043	270 0 270	1350 1800	270 0		450 15.00	
NO 0.000	AR 72206								
24R01867 19200	WILLIAMSON IMOGENE M	C/O 207 DONAGHEY BLDG LITTLE ROCK,	MEAD BLK-00J LOT-044	270 0 270	1350 1800	270 0		450 15.00	
NO 0.000	AR 72206								
24R01867 19300	ELMORE JOHNNIE L	C/O EXIE B MAXWELL 533 EVERETT KANSAS CITY	MEAD BLK-00J LOT-045 MEADS LTS 45&46 J	350 0 350	1750 1930	108 0		180 6.00	
NO 0.000	KS 66101								

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 40

Parcel ID	Owner Name	Address	Block/Lot	Area	Value	Area	Value	Area	Value
24R01867 19400	GOINS ELMER WILEY	PO BOX 74 COLLEGE STATION, AR 72053	MEAD BLK-00J LOT-047 MEADS LTS 47 THRU 49 J	430 5856 6286	31430 34370	1764 0	2940 98.00		
24R01867 9500	GREER THEODIS JR	4124 FISHER ST KANSAS CITY KS 66103	MEAD BLK-00J LOT-050	296 2260 2556	12780 14460	1008 0	1680 56.00		
24R01867 19600	GREER THEODIS JR	4124 FISHER ST KANSAS CITY KS 66103	MEAD BLK-00J LOT-051 MEADS W16' OF 51 J	222 0 222	1110 1560	270 0	450 15.00		
24R01867 19700	STEWART LOUISE & KATRINA	P O BOX 518 COLLEGE STATION AR 72053	MEAD BLK-00J LOT-051 MEADS E24' OF 51 & W32' OF 52 J	302 6034 6336	31680 34710	1818 0	3030 101.00		
24R01867 19800	POPE JOSEPHINE C/O DOROTHY MANOU	1536 W 45TH LOS ANGELES, CA 90062	MEAD BLK-00J LOT-052 MEADS E8'OF 52 ALL 53 & W8'OF 54 J	302 358 660	3300 4350	630 0	1050 35.00		
24R01867 19900	ANDERSON MARIETTA	128 SKYLINE DR APT #C ROCK SPRINGS, WY 82901	MEAD BLK-00J LOT-054 MEADS E32'OF 54 & W24' OF 55 J	302 14 316	1580 2030	270 0	450 15.00		
24R01867 20000	WALTON RUDOLPH	PO BOX 274 COLLEGE STATION, AR 72053	MEAD BLK-00J LOT-055 MEADS E16' OF 55 & ALL 56 J	302 4200 4502	22510 24820	1386 0	2310 77.00		
24R01867 20900	SMITH ISSAC M	3721 E 36TH ST LITTLE ROCK, AR 722069165	MEAD BLK-00K LOT-011	270 2600 2870	14350 16120	1062 0	1770 59.00		
24R01867 21000	SMITH ISSAC M	3721 E 36TH ST LITTLE ROCK, AR 722069165	MEAD BLK-00K LOT-012	270 2738 3008	15040 16810	1062 0	1770 59.00		
24R01867 21100	WALTERS ARLENE JR	3724 E 36TH ST LITTLE ROCK, AR 72206	MEAD BLK-00K LOT-013	270 0 270	1350 1800	270 0	450 15.00		
24R01867 21200	WALTERS ARLENE JR	3724E 36TH ST LITTLE ROCK AR 722069164	MEAD BLK-00K LOT-014	270 3200 3470	17350 19300	1170 0	1950 65.00		
24R01867 21300	WALTERS ELLA MAE	3724 E 36TH ST LITTLE ROCK, AR 722069164	MEAD BLK-00K LOT-015	270 2708 2978	14890 16660	1062 0	1770 59.00		

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Account No	Property Description	Assessment Type	Area	Value	Area	Value	Area	Value
24R01867 22500	BOWIE GEO R 3612E 36TH ST LITTLE ROCK	MEAD BLK-00K LOT-027	270	1350	270	450	15.00	
NO	0.000 AR 722069162		0	1800	0			
R01867 22600	MACKINTRUSH WALTER & WIFE 1519 SO HARRISON LITTLE ROCK,	MEAD BLK-00K LOT-028	270	1350	270	450	15.00	
NO	0.000 AR 72204		0	1800	0			
24R01867 22700	WELLS EUGENE TRUSTEE 1166 W GRANT ST WILMINGTON	MEAD BLK-00K LOT-029 MEADS LTS 29&30 K	338	1690	540	900	30.00	
NO	0.000 CA 90744		0	2590	0			
24R01867 22800	HADLEY D C MAX P O BOX 164490 LITTLE ROCK,	MEAD BLK-00K LOT-031	246	1720	270	450	15.00	
NO	0.000 AR 72216		98	2170	0			
24R01873 00200	ASSESSOR BUSINESS RECORD 201S BROADWAY ST 310 LITTLE ROCK	COLLEGE PARK BLK-004 LOT-004 PT BLK'S 4 & 5 COLLEGE PARK ADDN BEG SW COR BLK 5 N1* 49' E ALONG W LN 284 35' TO A PT ON S RW HWY 440 S87* 56' E204.45' S50* 53' E ALONG SW'LY RW ANNIE M BANKHEAD DR 354.45' S37* 49' 25" W79' TO A PT ON N RW LN EAST 33RD ST N88* 48' W AL S LN BLK'S 4 & 5 440' TO POB	0	0	0	0.00		
NO	0.000 AR 722012325		0	0	0	0.00		
24R01873 00301	ARK HWY DEPT 105 MAIN ST LITTLE ROCK	COLLEGE PARK BLK-004 LOT-001 COLLEGE PARK LTS 1 THRU 3, PT LTS 4,6 & 7 & ALL LTS 8 THRU 10 BLK 4 & PT LT 1 BLK 5 & PT OF SANDERS AV CLOSED & PT OF ALLEY IN BLK 4 CLSD E X E M P T	0	0	0	0.00		
NO	0.000 AR 722011521		0	0	0	0.00		
24R01873 09100	LITTLE ROCK QUARRY CO INC C/O PO BOX 672	COLLEGE PARK BLK-014 LOT-007	304	1520	54	90		
NO	0.000 AR 72015		0	1610	0	3.00		
24R01873 09200	RACKLEY JOANN P O BOX 4341 LITTLE ROCK,	COLLEGE PARK BLK-014 LOT-008	304	11740	954	1590		
NO	0.000 AR 722144341		2044	13330	0	53.00		
24R01873 09300	JOLLEY EXIA WHITE 4404E 34TH ST COLLEGE STATION	COLLEGE PARK BLK-014 LOT-009	304	13950	1008	1680		
NO	0.000 AR 720539999		2486	15630	0	56.00		
24R01873 09500	REBSAMEN INSURANCE INC C/O H MAURICE MITCHELL 320 W CAPITOL SUITE 1000 LITTLE ROCK,	COLLEGE PARK BLK-018 LOT-001 COLLEGE PK LTS 1 THRU 12 18	1572	7860	648	1080		
NO	0.000 AR 722013525		0	8940	0	36.00		
24R01873 09600	BROOKS FRANK & NANCY C/O NANCY JANE GLASPER 2607 JOHNSON ST LITTLE ROCK	COLLEGE PARK BLK-019 LOT-001	304	1520	270	450		
NO	0.000 AR 722045651		0	1970	0	15.00		

24R01873 09700	BROOKS NANCY C/O NANCY JANE GLASPER 2607 JOHNSON ST	COLLEGE PARK BLK-019 LOT-002	304 0 304	1520 1970	270 0	450 15.00
NO 0.000	AR 722045651 LITTLE ROCK,					
24R01873 09800	KELLEY JOE L & JULIA JOE KELLY	COLLEGE PARK BLK-019 LOT-003	304 5334 5638	28190 30950	1656 0	2760 92.00
NO 0.000	AR 722063757 LITTLE ROCK,					
24R01873 09900	KELLEY JOE L & JULIA C/O 4225 E 34TH JOE KELLY	COLLEGE PARK BLK-019 LOT-004	304 0 304	1520 1970	270 0	450 15.00
NO 0.000	AR 72206 LITTLE ROCK,					
24R01873 10000	CLARK CHAS W 3401 BANKHEAD	COLLEGE PARK BLK-019 LOT-005 COLLEGE PARK LOTS 5 & 6 EXC N 75' 19	300 0 300	1500 1950	270 0	450 15.00
NO 0.000	AR 722063735 LITTLE ROCK,					
24R01873 10100	CLARK CHAS W 3401 BANKHEAD DR	COLLEGE PARK BLK-019 LOT-005 COLLEGE PARK N 75' OF LTS 5 & 6 19	362 5134 5496	27480 29220	1044 0	1740 58.00
NO 0.000	AR 722063735 LITTLE ROCK,					
24R01873 10200	CARTER IKE PO BOX 548	COLLEGE PARK BLK-019 LOT-007	304 0 304	1520 1610	54 0	90 3.00
NO 0.000	AR 72105 BENTON,					
24R01873 10300	LITTLE ROCK QUARRY CO INC C/O PO BOX 672	COLLEGE PARK BLK-019 LOT-008	304 0 304	1520 1610	54 0	90 3.00
NO 0.000	AR 72015 BENTON,					
24R01873 10400	CARTER IKE PO BOX 548	COLLEGE PARK BLK-019 LOT-009	304 0 304	1520 1610	54 0	90 3.00
NO 0.000	AR 72105 BENTON,					
24R01873 10500	YOUNG / KYLE / MUSICK B & T C/O PATSY YOUNG 9516 WOODFORD DR	COLLEGE PARK BLK-019 LOT-010	304 0 304	1520 1970	270 0	450 15.00
NO 0.000	AR 722095920 LITTLE ROCK,					
24R01873 10600	KELLEY CAROL P 4411 E 35TH ST	COLLEGE PARK BLK-019 LOT-011	304 10038 10342	51710 56180	2682 0	4470 149.00
NO 0.000	AR 72206 LITTLE ROCK,					
24R01873 10700	BROOKS FRANK & WF C/O NANCY JANE GLASPER 2607 JOHNSON ST	COLLEGE PARK BLK-019 LOT-012	304 0 304	1520 1610	54 0	90 3.00
NO 0.000	AR 722045651 LITTLE ROCK					
24R01873 22300	KELLEY EARL J & WF PO BOX 614	COLLEGE PARK BLK-030 LOT-001 COLLEGE PARK N1/2 OF 1-2-3 30	362 0 362	1810 2260	270 0	450 15.00
NO 0.000	AR 72053 GENEVIA,					

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 44

Parcel ID	Owner	Address	Area	Value	Area	Value	Area	Value
24R01873 22400	KELLEY EARL	COLLEGE PARK BLK-030 LOT-001 COLLEGE PARK S1/2 OF 1-2-3 30	362	9350	846	1410	1508	10760
	PO BOX 614		1870		0	47.00		
NO	COLLEGE STATION,							
0.000	AR 72053							
24R01873 22401	KELLY CARLENE & EARL	COLLEGE PARK BLK-030 LOT-001 (IMPROVEMENTS ONLY) S1/2 OF LOTS 1-2-3 30	0	1960	630	1050	392	3010
	P O BOX 614		392		0	35.00		
NO	COLLEGE STATION,							
0.000	AR 72053							
24R01873 22500	HUTCHINSON CHAS	COLLEGE PARK BLK-030 LOT-004	304	13150	1008	1680	2326	14830
	4711 FRAZIER PI		2630		0	56.00		
NO	LITTLE ROCK,							
0.000	AR 72206							
24R01873 22600	LITTLE ROCK QUARRY CO INC	COLLEGE PARK BLK-030 LOT-005	304	1520	270	450	0	1970
	C/O PO BOX 548		304		0	15.00		
NO	BENTON,							
0.000	AR 72015							
24R01873 22700	LITTLE ROCK QUARRY CO INC	COLLEGE PARK BLK-030 LOT-006	304	1520	270	450	0	1970
	C/O PO BOX 548		304		0	15.00		
NO	BENTON,							
0.000	AR 72015							
24R01873 22800	GEORGE JOHNNY	COLLEGE PARK BLK-030 LOT-007 COLLEGE PRK LTS 7& 8 30	420	14660	1062	1770	2512	16430
	3509 BANKHEAD DR		2932		0	59.00		
NO	LITTLE ROCK							
0.000	AR 72206							
24R01873 22900	CARTER IKE	COLLEGE PARK BLK-030 LOT-009	304	1520	270	450	0	1970
	PO BOX 548		304		0	15.00		
NO	BENTON,							
0.000	AR 72105							
24R01873 23000	LITTLE ROCK QUARRY CO INC	COLLEGE PARK BLK-030 LOT-010	304	1520	270	450	0	1970
	C/O IKE CARTER		304		0	15.00		
	P O BOX 548							
NO	BENTON,							
0.000	AR 72015							
24R01873 23100	LITTLE ROCK CHAMBER FND	COLLEGE PARK BLK-030 LOT-011	304	1520	270	450	0	1970
	C/O #1 SPRING		304		0	15.00		
NO	LITTLE ROCK,							
0.000	AR 72201							
24R01873 23200	KELLEY EARL & CARLENE	COLLEGE PARK BLK-030 LOT-012	304	4020	630	1050	500	5070
	PO BOX 614		804		0	35.00		
NO	COLLEGE STATION,							
0.000	AR 72053							
24R01873 23300	SPANN C C & SIMMONS J R	COLLEGE PARK BLK-031 LOT-001	304	32410	1818	3030	6178	35440
	PO BOX 142		6482		0	101.00		
NO	COLLEGE STATION,							
0.000	AR 72053							
24R01873 23400	SPANN C C & SIMMONS J R	COLLEGE PARK BLK-031 LOT-002	304	1520	270	450	0	1970
	P O BOX 142		304		0	15.00		
NO	COLLEGE STATION,							
0.000	AR 72053							

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Address	Area	Value	Assessed Value	Other Value	Market Value
24R01873 23500	SIMMONS J R & SPANN C C	COLLEGE PARK BLK-031 LOT-003	304	1520	270	450	
		PO BOX 142	0	1970	0	15.00	
	NO	COLLEGE STATION, AR 72053	304				
24R01873 23600	CARTER IKE	COLLEGE PARK BLK-031 LOT-004	304	1520	270	450	
		PO BOX 548	0	1970	0	15.00	
	NO	BENTON, AR 72015	304				
24R01873 23700	SOUTHERN INV CO	COLLEGE PARK BLK-031 LOT-005	304	14030	1062	1770	
		PO BOX 22433	2502	15800	0	59.00	
	NO	LITTLE ROCK, AR 72221	2806				
24R01873 23800	DAVIS REGINA F	COLLEGE PARK BLK-031 LOT-006	304	26520	1602	2670	
		PO BOX 54	5000	29190	0	89.00	
	NO	COLLEGE STATION, AR 72053	5304				
24R01873 23900	CARTER IKE	COLLEGE PARK BLK-031 LOT-007 COLLEGE PARK S1/2 LT 7 31	246	1230	270	450	
		PO BOX 548	0	1680	0	15.00	
	NO	BENTON, AR 72015	246				
24R01873 24000	WRIGHT ROSETTA	COLLEGE PARK BLK-031 LOT-007 N1/2 7 & N1/2 OF W1/2 OF 8	276	9350	846	1410	
		919 ABIGAIL	1594	10760	0	47.00	
	NO	LITTLE ROCK, AR 72204	1870				
24R01873 24100	PETERSON LUTRICIA A	COLLEGE PARK BLK-031 LOT-008 COLLEGE PARK PT 8 & W1/2 9 BEG SW COR 8 N72 125'E25'N72 125'E50' S144 25'W75' TO BEG 31	334	12160	954	1590	
		4304E 36TH ST	2098	13750	0	53.00	
	NO	LITTLE ROCK, AR 72206	2432				
24R01873 24200	THOMAS OSCAR N	COLLEGE PARK BLK-031 LOT-009 COLLEGE PARK E1/2 OF 9 31	246	1230	270	450	
		C/O JOANN FULKERSON	0	1680	0	15.00	
	NO	2019 DIXON RD LITTLE ROCK, AR 72206	246				
24R01873 24300	THOMAS OSCAR N	COLLEGE PARK BLK-031 LOT-010	304	1520	270	450	
		C/O JOANN FULKERSON	0	1970	0	15.00	
	NO	2019 E DIXON RD LITTLE ROCK, AR 722064184	304				
24R01873 24400	MCDANIEL RALPH	COLLEGE PARK BLK-031 LOT-011 COLLEGE PARK LOTS 11 & 12 BLK 31	420	16890	1116	1860	
		5804 YOUNG RD	2958	18750	0	62.00	
	NO	LITTLE ROCK, AR 72209	3378				
24R01873 24600	KELLEY OBIE	COLLEGE PARK BLK-033 LOT-007 COLLEGE PRK N69 25' LT 7 33 NOT SERVED	0	0	0	0.00	
		3619 JONES	0	0	0	0.00	
	NO	LITTLE ROCK, AR 722063739	0				
24R01873 24700	BUTLER DOROTHY L	COLLEGE PARK BLK-033 LOT-007 COLLEGE PARK S75' OF LT 7 33 NOT SERVED	0	0	0	0.00	
		C/O 3619 JONES	0	0	0	0.00	
	NO	LITTLE ROCK, AR 72206	0				

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

46

Account Number	Property Name	Address	Block/Lot	Service Status	Rate	Surcharge	Other	Total
24R01873 24800	KELLEY OBIE	3619 JONES AV	COLLEGE PARK BLK-033 LOT-008	NOT SERVED	0	0	0	0.00
NO	LITTLE ROCK				0	0	0	0.00
0.000 AR	722063739							
24R01873 24900	KELLEY OBIE	3619 JONES	COLLEGE PARK BLK-033 LOT-009	NOT SERVED	0	0	0	0.00
NO	LITTLE ROCK,				0	0	0	0.00
0.000 AR	722063739							
24R01873 25000	FLOWERS THOMAS	3815 JONES ST	COLLEGE PARK BLK-033 LOT-010	NOT SERVED	0	0	0	0.00
NO	LITTLE ROCK,				0	0	0	0.00
0.000 AR	722063743							
24R01873 25100	FLOWERS HOWARD G & HELEN	3821 JONES ST	COLLEGE PARK BLK-033 LOT-011	NOT SERVED	0	0	0	0.00
NO	LITTLE ROCK,				0	0	0	0.00
0.000 AR	72207							
24R01873 25200	FLOWERS THOMAS SR	3820 JONES ST	COLLEGE PARK BLK-033 LOT-012	NOT SERVED	0	0	0	0.00
NO	LITTLE ROCK,				0	0	0	0.00
0.000 AR	722063744							
24R01873 25300	BRASFIELD ARTHUR & HILDA	4503 E 36TH	COLLEGE PARK BLK-034 LOT-001		304	19100	1278	2130
NO	LITTLE ROCK,				3516	21230	0	71.00
0.000 AR	722063788				3820			
24R01873 25400	ARTHUR BRASFIELD & HILDA	4503 E 36TH	COLLEGE PARK BLK-034 LOT-002		304	1520	270	450
NO	LITTLE ROCK,				0	1970	0	15.00
0.000 AR	722063788				304			
24R01873 25401	PARISH CALVIN H MRS	3610 JONES ST	COLLEGE PARK BLK-034 LOT-002	BLK-034 LOT 002	0	2200	630	1050
NO	LITTLE ROCK				440	3250	0	35.00
0.000 AR	722063740				440			
24R01873 25500	BRASFIELD ARTHUR & HILDA	4503 E 36TH	COLLEGE PARK BLK-034 LOT-003		304	1520	270	450
NO	LITTLE ROCK,				0	1970	0	15.00
0.000 AR	722063788				304			
24R01873 25600	BRASFIELD ARTHUR & HILDA	4503 E 36TH ST	COLLEGE PARK BLK-034 LOT-004		304	13550	1008	1680
NO	LITTLE ROCK				2406	15230	0	56.00
0.000 AR	722063788				2710			
24R01873 25700	BRASFIELD ARTHUR & HILDA	4503 E 36TH	COLLEGE PARK BLK-034 LOT-005		304	1520	270	450
NO	LITTLE ROCK,				0	1970	0	15.00
0.000 AR	722063788				304			
24R01873 25800	NASH ELIZABETH	C/O DOROTHY BUTLER	COLLEGE PARK BLK-034 LOT-006		304	1520	54	90
NO	LITTLE ROCK,				0	1610	0	3.00
0.000 AR	722063739				304			

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

47

24R01873	NASH ELIZABETH	COLLEGE PARK BLK-034 LOT-007	304	9520	846	1410	
25900	C/O WM NASH		1600	10930	0	47.00	
	5734 S LOOMIS BLVD		1904				
NO	CHICAGO,						
0.000	IL 60636						
24R01873	WALLS DIANNE	COLLEGE PARK BLK-034 LOT-008	304	17450	1170	1950	
26000			3186	19400	0	65.00	
	4416E 37TH ST		3490				
NO	LITTLE ROCK						
0.000	AR 722063781						
24R01873	KELLEY JOHNNY	COLLEGE PARK BLK-034 LOT-009	304	8650	792	1320	
26100			1426	9970	0	44.00	
	3619 JONES ST		1730				
NO	LITTLE ROCK						
0.000	AR 72206						
24R01873	WALLS MARSHALL L	COLLEGE PARK BLK-034 LOT-010	304	20060	1278	2130	
26200			3708	22190	0	71.00	
	PO BOX 511		4012				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01873	GREEN MICHAEL & SHEILA	COLLEGE PARK BLK-034 LOT-011	304	15250	1062	1770	
26300			2746	17020	0	59.00	
	4508E 37TH ST		3050				
NO	COLLEGE STATION						
0.000	AR 720539999						
24R01873	DOYNE VIRGIL D TRUSTEE	COLLEGE PARK BLK-034 LOT-012	304	46520	2466	4110	
26400			9000	50630	0	137.00	
	PO BOX 166		9304				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01873	KELLEY ANTONIO & BUTLER	COLLEGE PARK BLK-035 LOT-001	304	1520	54	90	
26500			0	1610	0	3.00	
	3619 JONES		304				
NO	LITTLE ROCK,						
0.000	AR 722063739						
24R01873	KELLEY ANTONIO & BUTLER	COLLEGE PARK BLK-035 LOT-002	304	1520	54	90	
26600			0	1610	0	3.00	
	3619 JONES		304				
NO	LITTLE ROCK,						
0.000	AR 722063739						
24R01873	TAYLOR EVA MAE	COLLEGE PARK BLK-035 LOT-003	304	7370	738	1230	
26700			1170	8600	0	41.00	
	5819 ZUEBER RD		1474				
NO	LITTLE ROCK						
0.000	AR 72206						
24R01873	LITTLE ROCK QUARRY CO INC	COLLEGE PARK BLK-035 LOT-004	304	1520	54	90	
26800			0	1610	0	3.00	
	PO BOX 672		304				
NO	BENTON,						
0.000	AR 72015						
24R01873	CARTER IKE	COLLEGE PARK BLK-035 LOT-005	304	1520	54	90	
26900			0	1610	0	3.00	
	PO BOX 548		304				
NO	BENTON,						
0.000	AR 72015						
24R01873	CARTER IKE	COLLEGE PARK BLK-035 LOT-006	304	1520	54	90	
27000			0	1610	0	3.00	
	PO BOX 548		304				
NO	BENTON,						
0.000	AR 72015						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Address	Area	Volume	Value	Area	Value
24R01873 27100	CARTER IKE	COLLEGE PARK BLK-035 LOT-007	304	1520	54	90	
	PO BOX 548		0	1610	0	3.00	
	BENTON, AR 72015		304				
24R01873 27200	CARTER IKE	COLLEGE PARK BLK-035 LOT-008	304	1520	54	90	
	PO BOX 548		0	1610	0	3.00	
	BENTON, AR 72015		304				
24R01873 27300	CARTER IKE	COLLEGE PARK BLK-035 LOT-009	304	1520	54	90	
	PO BOX 548		0	1610	0	3.00	
	BENTON, AR 72015		304				
24R01873 27400	WEBER MARY B	COLLEGE PARK BLK-035 LOT-010	304	1520	54	90	
	C/O 52 SHERRILL HGTS		0	1610	0	3.00	
	LITTLE ROCK, AR 72202		304				
24R01873 27500	FEIGENHOLTZ MRS H L TRUST	COLLEGE PARK BLK-035 LOT-011	304	1520	54	90	
	C/O FRED SELZ		0	1610	0	3.00	
	UNION NATIONAL BANK BLDG		304				
	LITTLE ROCK, AR 72201						
24R01873 27600	FEIGENHOLTZ MRS H L TRUST	COLLEGE PARK BLK-035 LOT-012	304	1520	54	90	
	C/O FRED SELZ		0	1610	0	3.00	
	UNION NATIONAL BANK BLDG		304				
	LITTLE ROCK, AR 72201						
24R01873 34600	JEFFERSON CLAUDINE	COLLEGE PARK BLK-042 LOT-009	302	11080	900	1500	
	P O BOX 403		1914	12580	0	50.00	
	COLLEGE STATION, AR 72053		2216				
24R01873 34700	MISSOURI MARION	COLLEGE PARK BLK-042 LOT-010	304	1520	270	450	
	P O BOX 340		0	1970	0	15.00	
	COLLEGE STATION, AR 72053		304				
24R01873 34800	MISSOURI MARION	COLLEGE PARK BLK-042 LOT-011	304	1520	270	450	
	P O BOX 340		0	1970	0	15.00	
	COLLEGE STATION, AR 72053		304				
24R01873 34900	MISSOURI MARION	COLLEGE PARK BLK-042 LOT-012	262	10740	900	1500	
	P O BOX 340		1886	12240	0	50.00	
	COLLEGE STATION, AR 72053		2148				
24R01873 35600	SQUARE DEAL INC	COLLEGE PARK BLK-043 LOT-007 COLLEGE PARK LOTS 7 & 8 43	364	1820	540	900	
	101 E WASHINGTON		0	2720	0	30.00	
	NO LITTLE ROCK, AR 721145637		364				
24R01873 35700	INTERNAL REVENUE SERVICE	COLLEGE PARK BLK-043 LOT-009 COLLEGE PARK N1/2 OF 9 & 10 43	262	1310	270	450	
	700 W CAPITOL AVE		0	1760	0	15.00	
	LITTLE ROCK, AR 72201		262				

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Account No	Owner Name	Address	Block/Lot	Area	Value	Value	Value	Value
24R01873 35800	SIMMONS JOHN R	1117 KAVANAUGH #2 LITTLE ROCK, AR 72205	COLLEGE PARK BLK-043 LOT-009 COLLEGE PARK S1/2 OF 9-10-11 &12 43	364 1646 2010	10050 11460	846 0	1410 47.00	
24R01873 35900	WOODS MILDRED H	C/O MILDRED H WOODS 1022 APPERSON LITTLE ROCK, AR 72202	COLLEGE PARK BLK-043 LOT-011 COLLEGE PARK N1/2 OF 11 & 12 43	262 0 262	1310 1760	270 0	450 15.00	
24R01873 36600	BOATNER JOE & GEORGIA	PO BOX 368 COLLEGE STATION, AR 720530368	COLLEGE PARK BLK-044 LOT-007	262 3694 3956	19780 21910	1278 0	2130 71.00	
24R01873 36700	MCCLENDON EDGAR	918 SELMA ST LITTLE ROCK, AR 722064473	COLLEGE PARK BLK-044 LOT-008	262 2070 2332	11660 13250	954 0	1590 53.00	
24R01873 36800	BOATNER JOE & GEORGIA	PO BOX 368 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-044 LOT-009	262 4400 4662	23310 25710	1440 0	2400 80.00	
24R01873 36900	BARESCH KARL A	14300 CHENAL PKY APT 7110 LITTLE ROCK, AR 722115812	COLLEGE PARK BLK-044 LOT-010	262 0 262	1310 1760	270 0	450 15.00	
24R01873 37000	BRAGG MAE ELLA	C/O PO BOX 158 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-044 LOT-011	262 0 262	1310 1760	270 0	450 15.00	
24R01873 37100	DOYNE ROGER D	GENERAL DELIVERY COLLEGE STATION, AR 72053	COLLEGE PARK BLK-044 LOT-012	304 5198 5502	27510 30180	1602 0	2670 89.00	
24R01873 37800	DOYNE MILDRED BRAGG	C/O MILDRED BRAGG & WALKER PO BOX 524 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-045 LOT-007	304 6000 6304	31520 34550	1818 0	3030 101.00	
24R01873 37900	BERRY CHARLIE	C/O VIRGIL LEE BERRY P O BOX 551 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-045 LOT-008	304 0 304	1520 1970	270 0	450 15.00	
24R01873 38000	BARESCH KARL A	14300 CHENAL PKWY #7110 LITTLE ROCK, AR 722115812	COLLEGE PARK BLK-045 LOT-009	304 0 304	1520 1970	270 0	450 15.00	
24R01873 38100	PEASTER PEARLIE MAE	C/O PO BOX 131 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-045 LOT-011 COLLEGE PARK LTS 10 & 11 45	420 0 420	2100 3000	540 0	900 30.00	

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Address	Area	Value	Area	Value	Area	Value
24R01873 38200	KING VERA M	COLLEGE PARK BLK-045 LOT-012	304	1520	270	450	0	1970
		3821 SOUTHERN ST	304					15.00
		LITTLE ROCK,						
	0.000 AR	722069137						
24R01873 38300	DOYNE ALBERT W REVOCABLE	COLLEGE PARK BLK-046 LOT-001	260	66300	3330	5550	13000	71850
		P O BOX 3	13260		0	185.00		
		COLLEGE STATION,						
	0.000 AR	72053						
24R01873 38400	DOYNE A W REVOCABLE TRUST	COLLEGE PARK BLK-046 LOT-002	262	1310	270	450	0	1760
		P O BOX 3	262		0	15.00		
		COLLEGE STATION,						
	0.000 AR	72053						
24R01873 38500	GIBBS ANN & ETAL	COLLEGE PARK BLK-046 LOT-003	262	1310	270	450	0	1760
		C/O VIRGINIA MICHAEL	262		0	15.00		
		341 HAYES AV						
		SHREVEPORT,						
	0.000 LA	71105						
24R01873 38600	BRUNSON HARRISON B SR	COLLEGE PARK BLK-046 LOT-004	262	1310	270	450	0	1760
		2306 S CEDAR ST	262		0	15.00		
		LITTLE ROCK,						
	0.000 AR	722045455						
24R01873 38700	KELLEY BRANDON/BUTLER	COLLEGE PARK BLK-046 LOT-005	262	31310	1818	3030	6000	34340
		3619 JONES ST	6262		0	101.00		
		LITTLE ROCK,						
	0.000 AR	722063739						
24R01873 38800	KELLEY BRANDON/BUTLER	COLLEGE PARK BLK-046 LOT-006	262	1310	270	450	0	1760
		3619 JONES ST	262		0	15.00		
		LITTLE ROCK,						
	0.000 AR	722063739						
24R01873 38900	KELLEY BRANDON/BUTLER	COLLEGE PARK BLK-046 LOT-007	360	26800	1602	2670	5000	29470
		3619 JONES	5360		0	89.00		
		LITTLE ROCK,						
	0.000 AR	722063739						
24R01873 39000	KELLEY BRANDON/BUTLER	COLLEGE PARK BLK-046 LOT-008	262	17310	1170	1950	3200	19260
		3619 JONES	3462		0	65.00		
		LITTLE ROCK,						
	0.000 AR	722063739						
24R01873 39100	KELLEY BRANDON/BUTLER	COLLEGE PARK BLK-046 LOT-009	262	1310	270	450	0	1760
		3619 JONES	262		0	15.00		
		LITTLE ROCK,						
	0.000 AR	722063739						
24R01873 39200	GILKEY FRONZO	COLLEGE PARK BLK-046 LOT-010	262	1310	270	450	0	1760
		4416E 38TH ST	262		0	15.00		
		LITTLE ROCK						
	0.000 AR	722063720						
24R01873 39300	GILKEY LAURENCE	COLLEGE PARK BLK-046 LOT-011	304	22440	1386	2310	4184	24750
		4416E 38TH ST	4488		0	77.00		
		LITTLE ROCK						
	0.000 AR	722063720						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Account No	Property Name	Block/Lot	Area	Value	Assessment	Other	Total
24R01873 39400	WILLIAMS MYRTLE M P O BOX 241 COLLEGE STATION AR 72053	COLLEGE PARK BLK-046 LOT-012	304	17520	1170	1950	
			3200	19470	0	65.00	
			3504				
24R01873 39500	WITHERS JEWELL JR 6808 CLOVERDALE RD LITTLE ROCK, AR 722094502	COLLEGE PARK BLK-047 LOT-001	304	4250	684	1140	
			546	5390	0	38.00	
			850				
24R01873 39600	WITHERS JEWELL JR 6808 CLOVERDALE RD LITTLE ROCK, AR 722094502	COLLEGE PARK BLK-047 LOT-002	262	1310	270	450	
			0	1760	0	15.00	
			262				
24R01873 39700	WELLS ETHEL B 4808 E 39TH ST LITTLE ROCK, AR 722063791	COLLEGE PARK BLK-047 LOT-003	262	1310	270	450	
			0	1760	0	15.00	
			262				
24R01873 39800	WHITE ALLENE 4417 E 37TH LITTLE ROCK, AR 722063782	COLLEGE PARK BLK-047 LOT-004 COLLEGE PARK LTS 4 & 5 47	364	9820	846	1410	
			1600	11230	0	47.00	
			1964				
24R01873 39900	WILLIAMS FLOSSIE MAE PO BOX 317 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-047 LOT-006	262	12890	1008	1680	
			2316	14570	0	56.00	
			2578				
24R01873 40000	NELSON GEO & MARY C/O PO BOX 269 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-047 LOT-007	304	1550	270	450	
			6	2000	0	15.00	
			310				
24R01873 40100	NELSON GEO C/O PO BOX 269 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-047 LOT-008	262	25970	1548	2580	
			4932	28550	0	86.00	
			5194				
24R01873 40200	NELSON GEO C/O PO BOX 269 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-047 LOT-009	304	1570	270	450	
			10	2020	0	15.00	
			314				
24R01873 40300	LEVY EUGENE & GERTRUDE C/O LEVY FAMILY REVOCABLE 5415 SHERWOOD RD LITTLE ROCK, AR 722075333	COLLEGE PARK BLK-047 LOT-010	262	29630	1710	2850	
			5664	32480	0	95.00	
			5926				
24R01873 40400	CROMWELL EDWIN B 1720 BEECHWOOD LITTLE ROCK, AR 722075432	COLLEGE PARK BLK-047 LOT-011	262	26060	1548	2580	
			4950	28640	0	86.00	
			5212				
24R01873 40500	CROMWELL EDWIN B 1720 BEECHWOOD LITTLE ROCK, AR 722075432	COLLEGE PARK BLK-047 LOT-012	262	25800	1548	2580	
			4898	28380	0	86.00	
			5160				

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Account No	Address	Block/Lot	Served	0	0	0	0.00
24R01873 40600	REASBY SAIDE SWINEY C/O RT 2 BOX 283-B	COLLEGE PARK BLK-048 LOT-001	NOT SERVED	0	0	0	0.00
				0	0	0	0.00
				0			
0.000	LITTLE ROCK, AR 72206						
24R01873 40700	HESER DAIN RT 2 BOX 283-B	COLLEGE PARK BLK-048 LOT-002	NOT SERVED	0	0	0	0.00
				0	0	0	0.00
				0			
0.000	LITTLE ROCK, AR 72206						
24R01873 40800	WILBURN CATHERINE C/O RT 2 BOX 283-B	COLLEGE PARK BLK-048 LOT-003	NOT SERVED	0	0	0	0.00
				0	0	0	0.00
				0			
0.000	LITTLE ROCK, AR 72206						
24R01873 40900	REED ALICE MAE SWINEY C/O RT 2 BOX 283-B	COLLEGE PARK BLK-048 LOT-004	NOT SERVED	0	0	0	0.00
				0	0	0	0.00
				0			
0.000	LITTLE ROCK, AR 72206						
24R01873 41000	KELLEY ANTONIO & BUTLER 3619 JONES ST	COLLEGE PARK BLK-048 LOT-005	NOT SERVED	0	0	0	0.00
				0	0	0	0.00
				0			
0.000	LITTLE ROCK, AR 722063739						
24R01873 41100	KELLEY ANTONIO & BUTLER 3619 JONES ST	COLLEGE PARK BLK-048 LOT-006	NOT SERVED	0	0	0	0.00
				0	0	0	0.00
				0			
0.000	LITTLE ROCK, AR 722063739						
24R01873 41200	NORMAN RUTH 3717 JONES ST	COLLEGE PARK BLK-048 LOT-007	NOT SERVED	0	0	0	0.00
				0	0	0	0.00
				0			
0.000	LITTLE ROCK, AR 722063741						
24R01873 41300	NORMAN RUTH 3719 JONES	COLLEGE PARK BLK-048 LOT-008	NOT SERVED	0	0	0	0.00
				0	0	0	0.00
				0			
0.000	LITTLE ROCK, AR 722063741						
24R01873 41400	NORMAN RUTH 3719 JONES	COLLEGE PARK BLK-048 LOT-009	NOT SERVED	0	0	0	0.00
				0	0	0	0.00
				0			
0.000	LITTLE ROCK, AR 722063741						
24R01873 41500	ROBINSON SARAH W 4417 E 37TH ST	COLLEGE PARK BLK-048 LOT-010	NOT SERVED	0	0	0	0.00
				0	0	0	0.00
				0			
0.000	LITTLE ROCK, AR 722063782						
24R01873 41600	ROBINSON SARAH W 4417 E 37TH ST	COLLEGE PARK BLK-048 LOT-011	NOT SERVED	0	0	0	0.00
				0	0	0	0.00
				0			
0.000	LITTLE ROCK, AR 722063782						
24R01873 41700	HESTER ANNIE MAE SWINEY C/O RT 2 BOX 283-B	COLLEGE PARK BLK-048 LOT-012	NOT SERVED	0	0	0	0.00
				0	0	0	0.00
				0			
0.000	LITTLE ROCK, AR 72206						

24R01873 41800	ZION WHEEL MISSIONARY COLLEGE PARK BLK-049 LOT-001 SERVED	NOT	0	0	0	0.00
	PO BOX 549		0	0	0	0.00
NO	COLLEGE STATION					
0.000	AR 72053					
24R01873 41900	ZION WHEEL MISSIONARY COLLEGE PARK BLK-049 LOT-002 SERVED	NOT	0	0	0	0.00
	PO BOX 549		0	0	0	0.00
NO	COLLEGE STATION					
0.000	AR 72053					
24R01873 42000	ZION WHEEL MISSIONARY COLLEGE PARK BLK-049 LOT-003 SERVED	NOT	0	0	0	0.00
	PO BOX 549		0	0	0	0.00
NO	COLLEGE STATION					
0.000	AR 72053					
24R01873 42100	JONES SYLVIA COLLEGE PARK BLK-049 LOT-004 SERVED	NOT	0	0	0	0.00
	417 PAULA DR		0	0	0	0.00
NO	NORTH LITTLE ROCK					
0.000	AR 72118					
24R01873 42200	JONES SYLVIA COLLEGE PARK BLK-049 LOT-005 SERVED	NOT	0	0	0	0.00
	417 PAULA DR		0	0	0	0.00
NO	NORTH LITTLE ROCK					
0.000	AR 72118					
24R01873 42300	DOZIER MARY LEE COLLEGE PARK BLK-049 LOT-006 SERVED	NOT	0	0	0	0.00
	C/O EDWARD MARY LEE		0	0	0	0.00
	3801 JONES		0	0	0	0.00
NO	LITTLE ROCK,					
0.000	AR 722063743					
24R01873 42400	FLOWERS THOS M JR COLLEGE PARK BLK-049 LOT-007 EXC N1/2 OF LT 7 NOT SERVED		0	0	0	0.00
	3815 JONES		0	0	0	0.00
NO	LITTLE ROCK,					
0.000	AR 722063743					
24R01873 42401	FLOWERS MARVLER V L & THOS COLLEGE PARK BLK-049 LOT-007 N1/2 OF LT 7 NOT SERVED		0	0	0	0.00
	3823 JONES ST		0	0	0	0.00
NO	LITTLE ROCK,					
0.000	AR 722063743					
24R01873 42500	FLOWERS THOS COLLEGE PARK BLK-049 LOT-008 SERVED	NOT	0	0	0	0.00
	C/O 3815 JONES		0	0	0	0.00
NO	LITTLE ROCK,					
0.000	AR 72206					
24R01873 42600	HOOD BENJAMIN A COLLEGE PARK BLK-049 LOT-009 SERVED	NOT	0	0	0	0.00
	C/O 3515 W 12TH		0	0	0	0.00
NO	LITTLE ROCK,					
0.000	AR 72204					
24R01873 42700	BOATNER MARY JEAN COLLEGE PARK BLK-049 LOT-010 SERVED	NOT	0	0	0	0.00
	PO BOX 9		0	0	0	0.00
NO	COLLEGE STATION,					
0.000	AR 72053					
24R01873 42900	MONTGOMERY LEROY & ROSIE COLLEGE PARK BLK-049 LOT-011 COLLEGE PARK LTS 11 & 12 49 NOT SERVED		0	0	0	0.00
	PO BOX 397		0	0	0	0.00
NO	COLLEGE STATION,					
0.000	AR 72053					

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

54

24R01873	LINDSEY LEE	COLLEGE PARK BLK-050 LOT-001	304	1520	54	90	
43000			0	1610	0	3.00	
	P O BOX 241		304				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01873	LINDSEY LEE	COLLEGE PARK BLK-050 LOT-002	304	1520	54	90	
43100			0	1610	0	3.00	
	P O BOX 241		304				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01873	LINDSEY LEE	COLLEGE PARK BLK-050 LOT-003	304	1520	54	90	
43200			0	1610	0	3.00	
	PO BOX 241		304				
NO	COLLEGE STATION						
0.000	AR 72053						
24R01873	COLLEGE STA LODGE #321	COLLEGE PARK BLK-050 LOT-004 COLLEGE	420	2100	108	180	
43300	C/O MR C HENSON	PARK LT 4 & 5 50	0	2280	0	6.00	
	PO BOX 567		420				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01873	CASEY ROBT LEE	COLLEGE PARK BLK-050 LOT-006	304	25190	1494	2490	
43400	C/O PO BOX 567		4734	27680	0	83.00	
			5038				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01873	KELLEY JUANITA	COLLEGE PARK BLK-050 LOT-007	304	56520	2898	4830	
43500			11000	61350	0	161.00	
	PO BOX 448		11304				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01873	HADLEY WILHELMENA	COLLEGE PARK BLK-050 LOT-008	304	14210	1062	1770	
43600			2538	15980	0	59.00	
	4306 E 39TH		2842				
NO	LITTLE ROCK,						
0.000	AR 722063722						
24R01873	BLACKMAN ANN	COLLEGE PARK BLK-050 LOT-009	304	9520	846	1410	
43700			1600	10930	0	47.00	
	4306E 39TH ST		1904				
NO	LITTLE ROCK						
0.000	AR 722063722						
24R01873	LYONS IDA & BATES PATSY A	COLLEGE PARK BLK-050 LOT-010	304	9520	846	1410	
43800			1600	10930	0	47.00	
	1812 E 22ND ST		1904				
NO	KANSAS CITY,						
0.000	MO 64127						
24R01873	GILL VICTORIA SIMPSON	COLLEGE PARK BLK-050 LOT-011	304	20210	1278	2130	
43900	C/O FRANCES BROWN		3738	22340	0	71.00	
	RT 2 BOX B-68		4042				
NO	LITTLE ROCK,						
0.000	AR 72206						
24R01873	FLOWERS EARL	COLLEGE PARK BLK-050 LOT-012	304	31590	1818	3030	
44000			6014	34620	0	101.00	
	3820 JONES ST		6318				
NO	LITTLE ROCK						
0.000	AR 722063744						
24R01873	ANTIOCH MISSIONARY BAP CH	COLLEGE PARK BLK-051 LOT-001 COLLEGE	878	4390	216	360	
44100		PARK LOTS 1-2-3-4	0	4750	0	12.00	
	PO BOX 411		878				
NO	COLLEGE STATION,						
0.000	AR 72053						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

55

Account Number	Property Name	Block/Lot	Area	Value	Area	Value	Area	Value
24R01873 44200	ANTIOCH MISSIONARY BAP CH	COLLEGE PARK BLK-051 LOT-005	304	1520	54	90		
	PO BOX 411		0	1610	0	3.00		
NO	COLLEGE STATION,		304					
0.000	AR 72053							
24R01873 44300	INTERNAL REVENUE SERVICE	COLLEGE PARK BLK-051 LOT-006	304	1520	54	90		
	700 W CAPITOL AVE		0	1610	0	3.00		
NO	LITTLE ROCK,		304					
0.000	AR 72201							
24R01873 44400	EALY WARREN G	COLLEGE PARK BLK-051 LOT-007 COLLEGE	420	27510	1602	2670		
	C/O PO BOX 592	PARK LOTS 7 & 8 51	5082	30180	0	89.00		
NO	COLLEGE STATION,		5502					
0.000	AR 72053							
24R01873 44500	ANTIOCH MISSIONARY BAP	COLLEGE PARK BLK-051 LOT-009 COLLEGE	420	2100	540	900		
	3800 ANTIOCH BLV	PARK LOTS 9 & 10 51	0	3000	0	30.00		
NO	COLLEGE STATION,		420					
0.000	AR 72053							
24R01873 44600	ANTIOCH MISSIONARY BAP CH	COLLEGE PARK BLK-051 LOT-011	304	1520	270	450		
	PO BOX 411		0	1970	0	15.00		
NO	COLLEGE STATION,		304					
0.000	AR 72053							
24R01873 44700	ANTIOCH MISSIONARY BAP CH	COLLEGE PARK BLK-051 LOT-012	304	576630	6300	10500		
	PO BOX 411		115022	587130	0	350.00		
NO	COLLEGE STATION,		115326					
0.000	AR 72053							
24R01873 44800	LITTLE ROCK QUARRY CO INC	COLLEGE PARK BLK-052 LOT-001	304	1520	54	90		
	C/O PO BOX 548		0	1610	0	3.00		
NO	BENTON,		304					
0.000	AR 72015							
24R01873 44900	LITTLE ROCK QUARRY CO INC	COLLEGE PARK BLK-052 LOT-002	304	1520	54	90		
	C/O PO BOX 548		0	1610	0	3.00		
NO	LITTLE ROCK QUARRY CO INC		304					
0.000	BENTON,							
24R01873 45000	PORTER PHILLIP J JR	COLLEGE PARK BLK-052 LOT-003	304	1520	270	450		
	C/O PO BOX 635		0	1970	0	15.00		
NO	COLLEGE STATION,		304					
0.000	AR 72053							
24R01873 45100	CALDWELL OTIS	COLLEGE PARK BLK-052 LOT-004	262	13060	1008	1680		
	C/O CALDWELL LORES		2350	14740	0	56.00		
NO	P O BOX 17538		2612					
0.000	NORTH LITTLE ROCK,							
24R01873 45200	BRAGG MAE ELLA	COLLEGE PARK BLK-052 LOT-005	304	11340	900	1500		
	C/O PO BOX 158		1964	12840	0	50.00		
NO	GENERAL DELIVERY		2268					
0.000	COLLEGE STATION,							
24R01873 45300	BRAGG MAE ELLA	COLLEGE PARK BLK-052 LOT-006	304	29940	1710	2850		
	PO BOX 158		5684	32790	0	95.00		
NO	COLLEGE STATION,		5988					
0.000	AR 72053							

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner	Address	Area	Value	Assessment	Other	Total
24R01873 45400	ANTIOCH MISS BAPT CHURCH	COLLEGE PARK BLK-052 LOT-007	304	1520	270	450	
		P O BOX 411	0	1970	0	15.00	
	NO	COLLEGE STATION,	304				
0.000	AR	72053					
24R01873 45500	ANTIOCH MISS BAPT CHURCH	COLLEGE PARK BLK-052 LOT-008	304	1520	270	450	
		P O BOX 411	0	1970	0	15.00	
	NO	COLLEGE STATION,	304				
0.000	AR	72053					
24R01873 45600	ANTIOCH MISS BAPT CHURCH	COLLEGE PARK BLK-052 LOT-009	304	1520	270	450	
		P O BOX 411	0	1970	0	15.00	
	NO	COLLEGE STATION,	304				
0.000	AR	72053					
24R01873 45700	ANTIOCH MISS BAPT CHURCH	COLLEGE PARK BLK-052 LOT-010	304	1520	270	450	
		P O BOX 411	0	1970	0	15.00	
	NO	COLLEGE STATION,	304				
0.000	AR	72053					
24R01873 45800	ANTIOCH MISS BAPT CHURCH	COLLEGE PARK BLK-052 LOT-011	304	1520	270	450	
		P O BOX 411	0	1970	0	15.00	
	NO	COLLEGE STATION,	304				
0.000	AR	72053					
24R01873 45901	ANTIOCH MISSIONARY BAPTIST	COLLEGE PARK BLK-052 LOT-012 TH PT LT 12 BEG SW COR S88°35'E AL SLN 9 66'	356	1780	270	450	
		N51°30'10"E31 85' N04°01'41"W123 87' TO A PT ON NLN LT 12 S88°35'W AL NLN 23.35' TO NW COR LT 12 S01°00'35"W143.75' TO POB	0	2230	0	15.00	
	NO	COLLEGE STATION,	356				
0.000	AR	72053					
24R01873 46000	BRAGG MAE ELLA	COLLEGE PARK BLK-053 LOT-001	304	1520	270	450	
		P O BOX 158	0	1970	0	15.00	
	NO	COLLEGE STATION,	304				
0.000	AR	72053					
24R01873 46100	DOYNE VIRGIL D TRUSTEE	COLLEGE PARK BLK-053 LOT-002	304	1520	270	450	
		PO BOX 166	0	1970	0	15.00	
	NO	COLLEGE STATION,	304				
0.000	AR	72053					
24R01873 46200	MCNEIL ANDERSON	COLLEGE PARK BLK-053 LOT-003	304	1520	270	450	
		C/O KENNETH MCNEIL	0	1970	0	15.00	
		708 FOLSOM	304				
	NO	LITTLE ROCK,					
0.000	AR	72202					
24R01873 46300	MCNEIL ANDERSON	COLLEGE PARK BLK-053 LOT-004	248	5520	684	1140	
		C/O KENNETH MCNEIL	856	6660	0	38.00	
		708 FOLSOM	1104				
	NO	LITTLE ROCK,					
0.000	AR	72202					
24R01873 46400	MCNEIL ANDERSON	COLLEGE PARK BLK-053 LOT-005	304	1520	270	450	
		C/O KENNETH MCNEIL	0	1970	0	15.00	
		708 FOLSOM	304				
		LITTLE ROCK,					
0.000	AR	72202					
24R01873 46500	MCNEIL ANDERSON	COLLEGE PARK BLK-053 LOT-006	304	1520	270	450	
		C/O KENNETH MCNEIL	0	1970	0	15.00	
		708 FOLSOM	304				
	NO	LITTLE ROCK,					
0.000	AR	72202					

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 57

24R01873 46600	JEAN'S NURSING HOME INC COLLEGE STATION, AR 72053	COLLEGE PARK BLK-053 LOT-007	304 0 304	1520 1610	54 0	90 3.00	
24R01873 46700	JEAN'S NURSING HOME INC COLLEGE STATION, AR 72053	COLLEGE PARK BLK-053 LOT-008	304 0 304	1520 1610	54 0	90 3.00	
24R01873 46800	JEAN'S NURSING HOME INC COLLEGE STATION, AR 72053	COLLEGE PARK BLK-053 LOT-009	304 0 304	1520 1610	54 0	90 3.00	
24R01873 46900	STUART PEARLEE P O BOX 228 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-053 LOT-010 COLLEGE PARK S 96 1/2' OF 10-11 & 12 53	420 2180 2600	13000 14590	954 0	1590 53.00	
24R01873 47000	MCDONALD AREADUS & IDA 5320 FRAZIER PIKE LITTLE ROCK, AR 722069651	COLLEGE PARK BLK-053 LOT-010 COLLEGE PARK N48 1/2' OF 10-11 & 12 53	304 0 304	1520 1610	54 0	90 3.00	
24R01873 47100	JEFFERSON ANNIE 1115 SCHILLER LITTLE ROCK, AR 72202	COLLEGE PARK BLK-054 LOT-001	304 0 304	1520 1970	270 0	450 15.00	
24R01873 47200	CAMPBELL THOS PO BOX 555 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-054 LOT-002	304 0 304	1520 1970	270 0	450 15.00	
24R01873 47300	CAMPBELL THOS C/O PO BOX 555 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-054 LOT-003	304 0 304	1520 1970	270 0	450 15.00	
24R01873 47400	JONESY OBIE KELLEY 3619 JONES ST LITTLE ROCK, AR 722063739	COLLEGE PARK BLK-054 LOT-004	304 3012 3316	16580 18530	1170 0	1950 65.00	
24R01873 47500	JONES OBIE KELLEY 3619 JONES ST LITTLE ROCK, AR 722063739	COLLEGE PARK BLK-054 LOT-005	304 0 304	1520 1970	270 0	450 15.00	
24R01873 47600	JONES OBIE KELLEY 3619 JONES ST LITTLE ROCK, AR 72206	COLLEGE PARK BLK-054 LOT-006	304 4544 4848	24240 26730	1494 0	2490 83.00	
24R01873 47700	PARKS DOYLE PO BOX 188 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-054 LOT-007 COLLEGE PARK LOT 7-8-9, EXC S 60' 54	390 2316 2706	13530 15210	1008 0	1680 56.00	

24R01873 47800	ACKLIN WILL 2408 DR M L KING DR LITTLE ROCK, AR 72206	COLLEGE PARK BLK-054 LOT-007 COLLEGE PARK S 60' OF LTS 7-8-9, 54	334 2770 3104	15520 17380	1116 0	1860 62.00	
24R01873 47900	JONES BEATRICE PO BOX 654 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-054 LOT-010	262 3010 3272	16360 18310	1170 0	1950 65.00	
24R01873 48000	JEAN'S NURSING HOME INC PO BOX 161 GENEVIA, AR 72053	COLLEGE PARK BLK-054 LOT-011	262 3714 3976	19880 22010	1278 0	2130 71.00	
24R01873 48100	JEAN'S NURSING HOME INC PO BOX 161 GENEVA, AR 72053	COLLEGE PARK BLK-054 LOT-012	304 0 304	1520 1970	270 0	450 15.00	
24R01873 48200	CURREN ELBERT P O BOX 226 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-055 LOT-001	262 2542 2804	14020 15790	1062 0	1770 59.00	
24R01873 48300	CURREN ELBERT PO BOX 226 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-055 LOT-002	304 0 304	1520 1970	270 0	450 15.00	
24R01873 48400	RANDOLPH MARY S/WINFREY 1401 BROWN ST LITTLE ROCK, AR 72204	COLLEGE PARK BLK-055 LOT-003	304 0 304	1520 1970	270 0	450 15.00	
24R01873 48500	RANDOLPH MARY S/WINFREY 1401 BROWN ST LITTLE ROCK, AR 72204	COLLEGE PARK BLK-055 LOT-004	304 0 304	1520 1970	270 0	450 15.00	
24R01873 48600	BRANNON RODNEY 18151 LAKE BEND DR HOUSTON, TX 77084	COLLEGE PARK BLK-055 LOT-005	304 0 304	1520 1970	270 0	450 15.00	
24R01873 48700	BRANNON RODNEY 18151 LAKE BEND DR HOUSTON, TX 77084	COLLEGE PARK BLK-055 LOT-006	304 0 304	1520 1970	270 0	450 15.00	
24R01873 48800	SMITH ROY & ESTHER P O BOX 536 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-055 LOT-007	262 4618 4880	24400 26890	1494 0	2490 83.00	
24R01873 48900	SMITH ROY & ESTHER RT 2 BOX 536 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-055 LOT-008	304 0 304	1520 1970	270 0	450 15.00	

Account Number	Owner Name	Address	Block/Lot	Area	Value	Value	Value	Value
24R01873 49000	CASEY O T		COLLEGE PARK BLK-055 LOT-009	248	11240	954	1590	
		7233 FARMDALE		2000	12830	0	53.00	
		SAN DIEGO,		2248				
NO 0.000	CA	92114						
24R01873 49100	REED CURTIS L		COLLEGE PARK BLK-055 LOT-010	262	11070	900	1500	
		C/O 415 W 31ST		1952	12570	0	50.00	
				2214				
NO 0.000	LITTLE ROCK,							
	AR	72206						
24R01873 49200	REED CURTIS L		COLLEGE PARK BLK-055 LOT-011	304	1520	270	450	
		C/O 415 W 31ST		0	1970	0	15.00	
				304				
NO 0.000	LITTLE ROCK,							
	AR	72206						
24R01873 49300	REED CURTIS L		COLLEGE PARK BLK-055 LOT-012	304	1520	270	450	
		C/O 415 W 31ST		0	1970	0	15.00	
				304				
NO 0.000	LITTLE ROCK,							
	AR	72206						
24R01873 49400	CARTER IKE		COLLEGE PARK BLK-056 LOT-001	304	1520	270	450	
		C/O PO BOX 548		0	1970	0	15.00	
				304				
NO 0.000	BENTON,							
	AR	72015						
24R01873 49500	PRINCE ROOSEVELT		COLLEGE PARK BLK-056 LOT-002	304	1520	270	450	
		C/O RT 2 BOX 573		0	1970	0	15.00	
				304				
NO 0.000	COLLEGE STATION,							
	AR	72053						
24R01873 49600	PRINCE ROOSEVELT		COLLEGE PARK BLK-056 LOT-003	304	1520	270	450	
		C/O RT 2 BOX 573		0	1970	0	15.00	
				304				
NO 0.000	COLLEGE STATION,							
	AR	72053						
24R01873 49700	PRINCE ROOSEVELT		COLLEGE PARK BLK-056 LOT-004	262	13460	1008	1680	
		C/O RT 2 BOX 573		2430	15140	0	56.00	
				2692				
NO 0.000	COLLEGE STATION,							
	AR	72053						
24R01873 49800	PRINCE ROOSEVELT		COLLEGE PARK BLK-056 LOT-005	276	1380	270	450	
		C/O RT 2 BOX 573		0	1830	0	15.00	
				276				
NO 0.000	COLLEGE STATION,							
	AR	72053						
24R01873 49900	PRINCE ROOSEVELT		COLLEGE PARK BLK-056 LOT-006	276	1380	270	450	
		C/O RT 2 BOX 573		0	1830	0	15.00	
				276				
NO 0.000	COLLEGE STATION,							
	AR	72053						
24R01873 50000	PRINCE ROOSEVELT		COLLEGE PARK BLK-056 LOT-007	302	1510	270	450	
		P O BOX 573		0	1960	0	15.00	
				302				
NO 0.000	COLLEGE STATION,							
	AR	72053						
24R01873 50100	HUTTON W G		COLLEGE PARK BLK-056 LOT-008	304	1520	270	450	
		C/O 3120 NEW YORK		0	1970	0	15.00	
				304				
NO 0.000	MIAMI,							
	FL	33133						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

60

Account Number	Property Owner	Address	Block/Lot	Area	Volume	Value	Area	Value
24R01873 50200	THOMPSON EMORY & CARLESE	C/O JACQUELYN SMITH 1304 W 28TH ST	COLLEGE PARK BLK-056 LOT-009	262	10740	900	1500	
				1886	12240	0	50.00	
NO 0.000	LITTLE ROCK, AR 72206			2148				
24R01873 50300	DOYNE VIRGIL D TRUSTEE	DOYNE VIRGIL D TRUSTEE PO BOX 166	COLLEGE PARK BLK-056 LOT-010	304	1520	270	450	
				0	1970	0	15.00	
NO 0.000	COLLEGE STATION, AR 72053			304				
24R01873 50400	DOYNE VIRGIL D TRUSTEE	DOYNE VIRGIL D TRUSTEE PO BOX 166	COLLEGE PARK BLK-057 LOT-001	304	71520	3384	5640	
				14000	77160	0	188.00	
NO 0.000	COLLEGE STATION, AR 72053			14304				
24R01873 50500	WINFREY FELICIA JOYCE	WINFREY FELICIA JOYCE 4111 FRAZIER PIKE	COLLEGE PARK BLK-057 LOT-002	304	16720	1170	1950	
				3040	18670	0	65.00	
NO 0.000	LITTLE ROCK, AR 72206			3344				
24R01873 50600	ORSINI JIM J	ORSINI JIM J C/O 4 RANCH VALLEY RD	COLLEGE PARK BLK-057 LOT-003	304	1520	270	450	
				0	1970	0	15.00	
NO 0.000	LITTLE ROCK, AR 72207			304				
24R01873 50700	CRAIN ALONZA	CRAIN ALONZA PO BOX 227	COLLEGE PARK BLK-057 LOT-004	262	10800	900	1500	
				1898	12300	0	50.00	
NO 0.000	COLLEGE STATION, AR 72053			2160				
24R01873 50800	WILLIAMS HERBERT/KEMP	WILLIAMS HERBERT/KEMP PO BOX 36	COLLEGE PARK BLK-057 LOT-005	276	1380	270	450	
				0	1830	0	15.00	
NO 0.000	SWEETHOME, AR 72164			276				
24R01873 50900	WILLIAMS HERBERT/KEMP	WILLIAMS HERBERT/KEMP PO BOX 36	COLLEGE PARK BLK-057 LOT-006	198	990	270	450	
				0	1440	0	15.00	
NO 0.000	SWEETHOME, AR 72164			198				
24R01873 51000	WILLIAMS HERBERT/KEMP	WILLIAMS HERBERT/KEMP PO BOX 36	COLLEGE PARK BLK-057 LOT-007	304	1520	270	450	
				0	1970	0	15.00	
NO 0.000	SWEETHOME, AR 72164			304				
24R01873 51100	RANSOM MABLE/PATRICK	RANSOM MABLE/PATRICK PO BOX 563	COLLEGE PARK BLK-057 LOT-008	304	14080	1062	1770	
				2512	15850	0	59.00	
NO 0.000	COLLEGE STATION, AR 72053			2816				
24R01873 51200	WINFREY ARI	WINFREY ARI 4111 FRAZIER PI	COLLEGE PARK BLK-057 LOT-009	304	17360	1170	1950	
				3168	19310	0	65.00	
NO 0.000	LITTLE ROCK, AR 72206			3472				
24R01873 51300	PHILLIPS JESSIE	PHILLIPS JESSIE P O BOX 961	COLLEGE PARK BLK-057 LOT-010	304	36520	2034	3390	
				7000	39910	0	113.00	
NO 0.000	MABELVALE, AR 72103			7304				

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 61

Account No	Property Owner	Address	Area	Assessed Value	Market Value	Special Assessments	Other Assessments
24R01873 51400	RICHARDSON ELMER L JR	COLLEGE PARK BLK-058 LOT-001 COLLEGE PARK 1 & 2 58	AR	420 13000 13420	67100 72650	3330 0	5550 185.00
		P O BOX 164673 LITTLE ROCK, AR 72216					
24R01873 51500	GRAHAM TEMPLE CH OF GOD IN	COLLEGE PARK BLK-058 LOT-003 LTS 3,4,9 & 10	AR	650 2024 2674	13370 14960	954 0	1590 53.00
		2714 SPRING ST LITTLE ROCK, AR 72206					
24R01873 51700	REMBERT LUCY	COLLEGE PARK BLK-058 LOT-005	CA	304 12 316	1580 2030	270 0	450 15.00
		7233 FARMDALE ST SAN DIEGO, CA 92114					
24R01873 51800	EACKLES LELIA	COLLEGE PARK BLK-058 LOT-006 LOT 6 EXC A PT DESC AS BEG AT NW COR THEREOF TH E39' S56' W39' TH N 56' TO BEG	AR	270 5200 5470	27350 30020	1602 0	2670 89.00
		PO BOX 396 COLLEGE STATION AR 72053					
24R01873 51900	SMITH ROY	COLLEGE PARK BLK-058 LOT-006 PT LOT 6 BEG AT NW COR THEREOF TH E39' S56' W39' TH N56' TO BEG	AR	224 6000 6224	31120 34150	1818 0	3030 101.00
		P O BOX 536 COLLEGE STATION, AR 72053					
24R01873 52000	EACKLES VICTOR\FLOWERS	COLLEGE PARK BLK-058 LOT-007	AR	360 5000 5360	26800 29470	1602 0	2670 89.00
		P O BOX 186 COLLEGE STATION AR 72053					
24R01873 52100	EACKLES VICTOR\FLOWERS	COLLEGE PARK BLK-058 LOT-008	AR	304 0 304	1520 1970	270 0	450 15.00
		P O BOX 186 COLLEGE STATION AR 72053					
24R01873 52400	CHURCH OF GOD IN CHRIST	COLLEGE PARK BLK-058 LOT-011	AR	304 20910 21214	106070 111620	3330 0	5550 185.00
		C/O 2714 SPRING LITTLE ROCK, AR 72201					
24R01873 52500	ARMSTRONG CHAS H	COLLEGE PARK BLK-058 LOT-012	AR	304 8000 8304	41520 45270	2250 0	3750 125.00
		3816 FRAZIER PI LITTLE ROCK, AR 72206					
24R01873 52600	PORTER PHILLIP J JR	COLLEGE PARK BLK-059 LOT-001	AR	304 0 304	1520 1970	270 0	450 15.00
		C/O PO BOX 635 COLLEGE STATION, AR 72053					
24R01873 52700	PORTER PHILLIP J JR	COLLEGE PARK BLK-059 LOT-002	AR	304 7000 7304	36520 39910	2034 0	3390 113.00
		C/O PO BOX 635 COLLEGE STATION, AR 72053					
24R01873 52800	BROWN MINNIE FLOWERS	COLLEGE PARK BLK-059 LOT-003	IL	304 0 304	1520 1970	270 0	450 15.00
		11229 SOUTH EDBROOKE AV CHICAGO, IL 60628					

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Account Number	Property Name	Address	Area	Value	Value	Value	Value
24R01873 52900	BROWN MINNIE FLOWERS	COLLEGE PARK BLK-059 LOT-004	304	1520	270	450	
			0	1970	0	15.00	
	11229 SOUTH EDBROOKE AVE		304				
NO	CHICAGO,						
0.000	IL 60628						
24R01873 53000	KELLEY OBIE	COLLEGE PARK BLK-059 LOT-005	360	21800	1386	2310	
			4000	24110	0	77.00	
	3619 JONES		4360				
NO	LITTLE ROCK,						
0.000	AR 722063739						
24R01873 53100	LEWIS DAVID C & ETAL	COLLEGE PARK BLK-059 LOT-006	304	1520	270	450	
			0	1970	0	15.00	
	9310 VANDERBILT DR		304				
NO	LITTLE ROCK						
0.000	AR 722044394						
24R01873 53200	LEWIS DAVID C & ETAL	COLLEGE PARK BLK-059 LOT-007	304	126520	4680	7800	
			25000	134320	0	260.00	
	9310 VANDERBILT DR		25304				
NO	LITTLE ROCK						
0.000	AR 722044394						
24R01873 53300	WASHINGTON ROBERT	COLLEGE PARK BLK-059 LOT-008	304	1520	270	450	
			0	1970	0	15.00	
	3619 E 19TH ST		304				
NO	LITTLE ROCK,						
0.000	AR 72206						
24R01873 53400	REED EUNICE	COLLEGE PARK BLK-059 LOT-009	304	1520	270	450	
	C/O 415 W 31ST		0	1970	0	15.00	
			304				
NO	LITTLE ROCK,						
0.000	AR 72206						
24R01873 53500	REED EUNICE	COLLEGE PARK BLK-059 LOT-010	304	1520	270	450	
	C/O 415 W 31ST		0	1970	0	15.00	
			304				
NO	LITTLE ROCK,						
0.000	AR 72206						
24R01873 53600	PORTER AUSTIN SR	COLLEGE PARK BLK-059 LOT-011	304	101520	3384	5640	
			20000	107160	0	188.00	
	PO BOX 243		20304				
NO	COLLEGE STATION						
0.000	AR 72053						
24R01873 53700	PORTER PHILLIP J JR	COLLEGE PARK BLK-059 LOT-012	304	1520	270	450	
	C/O PO BOX 635		0	1970	0	15.00	
			304				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01873 53800	GREGORY DOROTHY & ETAL	COLLEGE PARK BLK-060 LOT-001 COLLEGE	422	2110	54	90	
	C/O MARY LEE KNOEDL	PARK S97' OF LTS 1-2 & 3 60	0	2200	0	3.00	
	PO BOX 75		422				
NO	SCOTT,						
0.000	AR 72142						
24R01873 53900	CARTER IKE	COLLEGE PARK BLK-060 LOT-001 COLLEGE	292	1460	54	90	
	C/O PO BOX 548	PARK N 43 28' OF LTS 1-2 & 3 60	0	1550	0	3.00	
			292				
NO	BENTON,						
0.000	AR 72015						
24R01873 54000	JEAN NURSING HOME INC	COLLEGE PARK BLK-060 LOT-004 COLLEGE	534	2670	162	270	
		PARK LOTS 4-5 & 6 60	0	2940	0	9.00	
	PO BOX 161		534				
NO	GENEVIA,						
0.000	AR 72053						

Account No.	Property Name	Address	Area	Value	Assessed Value	Exemption	Net Value
24R01873 54100	JEAN'S NURSING HOME INC	COLLEGE PARK BLK-060 LOT-007	304	18170	1224	2040	
	PO BOX 720		3330	20210	0	68.00	
	COLLEGE STATION,		3634				
NO	0.000 AR 72053						
24R01873 54200	JEAN'S NURSING HOME INC	COLLEGE PARK BLK-060 LOT-008	304	1520	270	450	
	PO BOX 720		0	1970	0	15.00	
	COLLEGE STATION,		304				
NO	0.000 AR 72053						
24R01873 54300	NELSON JOHN W	COLLEGE PARK BLK-060 LOT-009	304	12780	1008	1680	
	C/O NELSON ANTHONY		2252	14460	0	56.00	
	P O BOX 554		2556				
NO	0.000 AR 72053						
24R01873 54400	WINFREY MILTON	COLLEGE PARK BLK-060 LOT-010 COLLEGE PARK LOTS 10 & 11 60	334	13900	1008	1680	
	PO BOX 601		2446	15580	0	56.00	
	COLLEGE STATION,		2780				
NO	0.000 AR 720530601						
24R01873 54500	WHITE ALLIE	COLLEGE PARK BLK-060 LOT-012	304	22300	1386	2310	
	C/O LEARRIE WHITE		4156	24610	0	77.00	
	2914 LENNOX DR		4460				
NO	0.000 AR 722044229						
24R01873 54600	GORDON EDITH MAE	COLLEGE PARK BLK-061 LOT-001	304	1520	54	90	
	PO BOX 208		0	1610	0	3.00	
	COLLEGE STATION,		304				
NO	0.000 AR 72053						
24R01873 54700	GEE ROSE KELLEY	COLLEGE PARK BLK-061 LOT-002	304	1520	54	90	
	4519 FRAZIER PIKE		0	1610	0	3.00	
	LITTLE ROCK,		304				
NO	0.000 AR 722069642						
24R01873 54800	SIMMONS JOHN R	COLLEGE PARK BLK-061 LOT-003	304	1520	270	450	
	1117 KAVANAUGH		0	1970	0	15.00	
	LITTLE ROCK,		304				
NO	0.000 AR 72205						
24R01873 54900	CASEY SLORINE	COLLEGE PARK BLK-061 LOT-004	304	17790	1224	2040	
	C/O PO BOX 573		3254	19830	0	68.00	
	COLLEGE STATION,		3558				
NO	0.000 AR 72053						
24R01873 55000	KELLY RUBY	COLLEGE PARK BLK-061 LOT-005	304	1520	270	450	
	PO BOX 442		0	1970	0	15.00	
	COLLEGE STATION,		304				
NO	0.000 AR 72053						
24R01873 55100	KELLY RUBY	COLLEGE PARK BLK-061 LOT-006	304	17240	1170	1950	
	PO BOX 442		3144	19190	0	65.00	
	COLLEGE STATION,		3448				
NO	0.000 AR 72053						
24R01873 55200	SIMMONS KATHERINE	COLLEGE PARK BLK-061 LOT-007	360	2090	270	450	
	518 SKYLINE DR		58	2540	0	15.00	
	NO LITTLE ROCK,		418				
NO	0.000 AR 721169230						

Parcel ID	Owner Name	Address	Block/Lot	Area (sq ft)	Area (sq ft)	Area (sq ft)	Area (sq ft)
24R01873 55300	SIMMONS KATHERINE	518 SKYLINE DR NO LITTLE ROCK, AR 721169230	COLLEGE PARK BLK-061 LOT-008	262 2590 2852	14260 16030	1062 0	1770 59.00
24R01873 55400	JACKSON MARY	6270 CO RD #108 FULTON, MO 65251	COLLEGE PARK BLK-061 LOT-009	304 590 894	4470 5610	684 0	1140 38.00
24R01873 55500	BLANTON	16611 LEISURE ST DETROIT, MI 48235	COLLEGE PARK BLK-061 LOT-010	304 0 304	1520 1970	270 0	450 15.00
24R01873 55600	GEE ROSE KELLEY	4519 FRAZIER PI LITTLE ROCK AR 72206	COLLEGE PARK BLK-061 LOT-011	304 6516 6820	34100 37310	1926 0	3210 107.00
24R01873 55700	PULASKI COUNTY	201 S BROADWAY ST LITTLE ROCK AR 72201	COLLEGE PARK BLK-061 LOT-012 PT LT 12 MPDA COM NW COR OF LT 12 S88*35'E AL NLN 38 14' TO A PT TO POB TH S88*35'E AL NLN 11 86' TO NE COR OF LT 12 S0*47'53" W AL ELN 143.75' TO SE COR OF LT 12 N88*35'W AL SLN 50' TO SW COR LT 12 N0*47'53" E AL WLN 9.37' N58*4'45"E47.60' TO A PT N0*12'50"W108.26' TO POB (AKA TR 1) & PT LT 12 MPDA COM NW COR OF LT 11 TH S88*35'E AL NLN OF LT 11 50' TO NW COR OF LT 12 FOR THE POB S88*35'E AL NLN LT 12 38.14' TO A PT TH S0*12'50"E108.26' TO A PT S58*4'45"W47.60' TO A PT ON WLN OF LT 12 N0*47'53"E AL WLN LT 12 134.38 FT TO POB (AKA TR 1-R)	0 0 0	0 0	0 0	0.00 0.00
24R01873 55800	PORTER PHILLIP J JR C/O PO BOX 635	COLLEGE STATION, AR 72053	COLLEGE PARK BLK-062 LOT-001 COLLEGE PARK LOTS 1 & 2 62	420 4000 4420	22100 24410	1386 0	2310 77.00
24R01873 55900	PORTER PHILLIP J JR C/O PO BOX 635	COLLEGE STATION, AR 72053	COLLEGE PARK BLK-062 LOT-003	304 0 304	1520 1610	54 0	90 3.00
24R01873 56000	PORTER PHILLIP J JR C/O PO BOX 635	COLLEGE STATION, AR 72053	COLLEGE PARK BLK-062 LOT-004 COLLEGE PARK LOTS 4,5,6,7,8,9 62	880 3592 4472	22360 24490	1278 0	2130 71.00
24R01873 56100	PORTER PHILIP J JR PO BOX 635	COLLEGE STATION, AR 72053	COLLEGE PARK BLK-062 LOT-010	304 0 304	1520 1970	270 0	450 15.00
24R01873 56200	PORTER PHILLIP J JR C/O PO BOX 635	COLLEGE STATION, AR 72053	COLLEGE PARK BLK-062 LOT-011 COLLEGE PARK LOTS 11 & 12 62	420 0 420	2100 3000	540 0	900 30.00
24R01873 56300	PORTER PHILLIP J JR C/O PO BOX 635	COLLEGE STATION, AR 72053	COLLEGE PARK BLK-062 LOT-012 COLLEGE PARK LOTS 13 & 14 62	420 0 420	2100 3000	540 0	900 30.00

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

65

Parcel ID	Owner Name	Address	Area (sq ft)	Volume (cu ft)	Length (ft)	Width (ft)	Depth (ft)
24R01873 56300	SWIFT NAOMI	COLLEGE PARK BLK-063 LOT-001 N 36 FEET OF LOTS 1 & 2	246	4050	684	1140	
	4306E 39TH LITTLE ROCK		564	5190	0	38.00	
NO	0.000 AR 722063722		810				
24R01873 56400	CALDWELL OTIS	COLLEGE PARK BLK-063 LOT-001 COLLEGE PARK S 36 FEET OF N 72 FEET OF LOTS 1 & 2	246	11670	954	1590	
	3902 JONES ST COLLEGE STATION	63	2088	13260	0	53.00	
NO	0.000 AR 72053		2334				
24R01873 56500	CALDWELL OTIS	COLLEGE PARK BLK-063 LOT-001 COLLEGE PARK N36 1/4' OF S72 1/4' OF LTS 1 & 2	246	11760	954	1590	
	C/O CALDWELL LORES P O BOX 17538	63	2106	13350	0	53.00	
NO	0.000 AR 72117		2352				
24R01873 56600	MENAFEE ALFREDA	COLLEGE PARK BLK-063 LOT-001 COLLEGE PARK S36' OF LOTS 1& 2	246	3490	630	1050	
	PO BOX 165474 LITTLE ROCK,	63	452	4540	0	35.00	
NO	0.000 AR 72216		698				
24R01873 56700	JOHNSON ARTHUR L & EVELYNN	COLLEGE PARK BLK-063 LOT-003	304	9520	846	1410	
	8259 S PEORIA ST CHICAGO,		1600	10930	0	47.00	
NO	0.000 IL 60620		1904				
24R01873 56800	JOHNSON ARTHUR L & EVELYNN	COLLEGE PARK BLK-063 LOT-004	304	15400	1116	1860	
	8259 S PEORIA ST CHICAGO,		2776	17260	0	62.00	
NO	0.000 IL 60620		3080				
24R01873 56900	HENDERSON WILLIE JEWEL	COLLEGE PARK BLK-063 LOT-005	304	14340	1062	1770	
	6960 E GIRARD AVE #106 DENVER,		2564	16110	0	59.00	
NO	0.000 CO 802242913		2868				
24R01873 57000	LUSTER EARNEST N	COLLEGE PARK BLK-063 LOT-006	304	18800	1224	2040	
	PO BOX 2293 NEWPORT NEWS,		3456	20840	0	68.00	
NO	0.000 VA 23602		3760				
24R01873 57100	BLACKMON ANN	COLLEGE PARK BLK-063 LOT-007 ALL LT 7 & PT R/W W & ADJ TO LT 7 FORM KNOWN AS GAINES ST	396	41980	2250	3750	
	4306 E 39TH ST LITTLE ROCK,		8000	45730	0	125.00	
NO	0.000 AR 722063722		8396				
24R01873 57200	DUNCAN W J SR	COLLEGE PARK BLK-063 LOT-008	360	4460	684	1140	
	C/O 17201 LAWSON RD LITTLE ROCK,		532	5600	0	38.00	
NO	0.000 AR 72210		892				
24R01873 57300	HUTCHINSON CHAS	COLLEGE PARK BLK-063 LOT-009	360	8000	738	1230	
	C/O RT 2 BOX 400 LITTLE ROCK,		1240	9230	0	41.00	
NO	0.000 AR 72206		1600				
24R01873 57400	HUTCHINSON CHAS	COLLEGE PARK BLK-063 LOT-010	304	1520	270	450	
	4711 FRAZIER PI LITTLE ROCK,		0	1970	0	15.00	
NO	0.000 AR 72206		304				

Account No.	Customer Name	Address	Block/Lot	Assessment	Value	Area	Rate	Amount
24R01873 57500	JOSHUA ERNEST P	3117 PEYTON LITTLE ROCK, LR 72204	COLLEGE PARK BLK-063 LOT-011	304	162270	3384		5640
				32150	167910	0		188.00
				32454				
24R01873 57600	JOSHUA ERNEST P	3117 PEYTON LITTLE ROCK, AR 72204	COLLEGE PARK BLK-063 LOT-012	304	1520	270		450
				0	1970	0		15.00
				304				
24R01873 57700	THOMPSON JOE L	4405 E 39TH LITTLE ROCK AR 722063723	COLLEGE PARK BLK-064 LOT-001 NOT SERVED	0	0	0		0.00
				0	0	0		0.00
				0				
24R01873 57800	ANDERSON YANETTA	4405 E 39TH LITTLE ROCK, AR 722063723	COLLEGE PARK BLK-064 LOT-002 NOT SERVED	0	0	0		0.00
				0	0	0		0.00
				0				
24R01873 57900	ANDERSON YANETTA	4405 E 39TH LITTLE ROCK, AR 72206	COLLEGE PARK BLK-064 LOT-003 NOT SERVED	0	0	0		0.00
				0	0	0		0.00
				0				
24R01873 58000	PHILLIPS WM	3915 JONES LITTLE ROCK, AR 72206	COLLEGE PARK BLK-064 LOT-004 NOT SERVED	0	0	0		0.00
				0	0	0		0.00
				0				
24R01873 58100	CALDWELL OTIS C	C/O CALDWELL LORES P O BOX 17538 NORTH LITTLE ROCK, AR 72117	COLLEGE PARK BLK-064 LOT-005 NOT SERVED	0	0	0		0.00
				0	0	0		0.00
				0				
24R01873 58200	CALDWELL OTIS C	C/O CALDWELL LORES P O BOX 17538 NORTH LITTLE ROCK, AR 72117	COLLEGE PARK BLK-064 LOT-006 NOT SERVED	0	0	0		0.00
				0	0	0		0.00
				0				
24R01873 58300	WHITLEY ORETHIA	1717 S MONROE ST LITTLE ROCK, AR 72204	COLLEGE PARK BLK-064 LOT-007 NOT SERVED	0	0	0		0.00
				0	0	0		0.00
				0				
24R01873 58400	WHITLEY ORETHIA	1717 S MONROE ST LITTLE ROCK, AR 72204	COLLEGE PARK BLK-064 LOT-008 NOT SERVED	0	0	0		0.00
				0	0	0		0.00
				0				
24R01873 58500	FRANCES NORMAN	C/O GEN DEL COLLEGE STATION, AR 72053	COLLEGE PARK BLK-064 LOT-009 NOT SERVED	0	0	0		0.00
				0	0	0		0.00
				0				
24R01873 58600	PITTMAN IRMA	PO BOX 539 COLLEGE STATION, AR 72053	COLLEGE PARK BLK-064 LOT-010 NOT SERVED	0	0	0		0.00
				0	0	0		0.00
				0				

Parcel ID	Owner	Description	Area 1	Area 2	Area 3	Area 4
24R01873 58700	PITTMAN IRMA	COLLEGE PARK BLK-064 LOT-011 NOT SERVED	0	0	0	0
NO	PO BOX 539 COLLEGE STATION, AR 72053		0	0	0	0
24R01873 58800	DOYNE D & A FAMILY LTD	COLLEGE PARK BLK-064 LOT-012 NOT SERVED	0	0	0	0
NO	PO BOX 166 COLLEGE STATION, AR 72053		0	0	0	0
24R01900 00300	OLD FELLOW CEMETERY	W 47 52FT OF S 924 66FT OF E 331 65FT OF NE NE, E X E M P T 19 1N 11W	50	250	0	0.0
NO	201 S BROADWAY SUITE 310 LITTLE ROCK, AR 72201		0	250	0	0.0
24R01900 00600	CEMETERY	E 284 13FT OF S 924 66FT OF NE NE E X E M P T, 19 1N 11W	120	600	0	0.0
NO	201 S BROADWAY SUITE 310 LITTLE ROCK, AR 72201		0	600	0	0.0
24R01900 00700	ASSESSOR BUSINESS RECORD	W 15 16AC OF NE NE SEE J L SANDERS SUB 19 1N 11W	0	0	0	0.0
NO	201S BROADWAY ST 310 LITTLE ROCK AR 722011524		0	0	0	0.0
24R01901 00100	MACKINTRUSH WALTER &	SANDERS J L SUB BLK-000 LOT-001 W50' OF E107' OF LOT 1 OF NE NE SEC 19-1N-11W	342	12670	954	1590
NO	1519 S HARRISON LITTLE ROCK, AR 72204		2192	14260	0	53.00
24R01901 00200	SOUTHERN INV CO	SANDERS J L SUB BLK-000 LOT-001 J L SANDERS PT TR 1 BEG SE COR N40' W57' S40' E57'	226	1130	270	450
NO	PO BOX 22433 LITTLE ROCK, AR 72221		0	1580	0	15.00
24R01901 00300	MACKINTRUSH WALTER	SANDERS J L SUB BLK-000 LOT-001 J L SANDERS SUB OF W15 16 AC OF NE NE BEG 107'W OF NE COR OF TR 1 TH W ALONG S LI OF FRAZIER PIKE 113' TO NW COR OF LT 1 TH S140' ALONG TH E LI OF GREY ST TH E113' TH N140' TO BEG	442	23660	1440	2400
NO	1519 SO HARRISON LITTLE ROCK, AR 72204		4290	26060	0	80.00
24R01901 00400	SOUTHERN INV CO	SANDERS J L SUB BLK-000 LOT-001 J L SANDERS TR 1 BEG NE COR W59' S150' E57' N150' TO BEG 1	328	10600	900	1500
NO	PO BOX 22433 LITTLE ROCK, AR 72221		1792	12100	0	50.00
24R01901 00500	CARTER IKE	SANDERS J L SUB BLK-000 LOT-001 J L SANDERS PT TR 1 BEG SW COR N50' E113' S50' W113' TO BEG	280	1400	270	450
NO	C/O PO BOX 548 BENTON, AR 72015		0	1850	0	15.00
24R01901 00600	COLLEGE STATION HSG DEV	SANDERS J L SUB BLK-000 LOT-002 J L SANDERS SUB U S POST OFFICE 70 PERCENT OF E1/2 OF LTS 2 & 3	1525	60905	2790	4650
NO	P O BOX 540 COLLEGE STATION, AR 72053		10656	65555	0	155.00
24R01901 00700	ASSESSOR BUSINESS RECORD		12181			

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

68

Parcel ID	Owner	Address	Area	Value	Assessed Value	Special Assessment	Other
24R01901 00700	COLLEGE STATION HSG DEV	SANDERS J L SUB BLK-000 LOT-002 J L	653	26095	1494	2490	
		SANDERS 30 PERCENT OF E1/2 OF LTS 2 & 3	4566	28585	0	83.00	
		PO BOX 540	5219				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01901 00800	ALGEE LULA M	SANDERS J L SUB BLK-000 LOT-002 J L	630	3150	270	450	
		SANDERS SUB W115' OF S50' LT 2 & W115' OF LT 3 19 1N 11W	0	3600	0	15.00	
		322 KLEINSHORE #28	630				
NO	HOT SPRINGS,						
0.000	AR 71913						
24R01901 00900	KEOWN J SR & J WINTON	SANDERS J L SUB BLK-000 LOT-002 J L	580	2900	270	450	
		SANDERS W115' OF N140' OF LT 2 19 1N 11W	0	3350	0	15.00	
		1602 S TYLER	580				
NO	LITTLE ROCK,						
0.000	AR 722042762						
24R01901 01000	MASON WM L	SANDERS J L SUB BLK-000 LOT-004	894	4470	270	450	
		C/O 8510 S JUSTINE	0	4920	0	15.00	
			894				
NO	CHICAGO,						
0.000	IL 60620						
24R01901 01100	JORDAN JEANESTER & FREDDIE	SANDERS J L SUB BLK-000 LOT-005 LT 5	338	1690	270	450	
		EXCEPT 130 X 150' IN SW CORNER & EXCEPT 100' E & W BY 150'N & S IN SE CORNER	0	2140	0	15.00	
		4800 W 28TH ST	338				
NO	LITTLE ROCK,						
0.000	AR 72204						
24R01901 01200	BELL JAMES	SANDERS J L SUB BLK-000 LOT-005 130 X 150'	506	22700	1386	2310	
		IN SW COR OF LT 5	4034	25010	0	77.00	
		PO BOX 150	4540				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01901 01300	MCBRIDE LUTHER	SANDERS J L SUB BLK-000 LOT-005 J L	372	8690	792	1320	
		SANDERS SUB PT LOT 5 BEG SE COR N150' W100' S150' E100' TOB	1366	10010	0	44.00	
		PO BOX 239	1738				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01901 01400	WARD BILLY J & MARY A	SANDERS J L SUB BLK-000 LOT-006 J L	520	2600	270	450	
		SANDERS SUB N90' OF LT 6	0	3050	0	15.00	
		3801 NORTH LANCASTER	520				
NO	MUNCY,						
0.000	IN 47304						
24R01901 01500	WARD BILLY J & MARY A	SANDERS J L SUB BLK-000 LOT-006 J L	374	1870	270	450	
		SANDERS N50' OF S100' OF LT 6	0	2320	0	15.00	
		3801 NORTH LANCASTER	374				
NO	MUNCY,						
0.000	IN 47304						
24R01901 01600	THOMAS LIZZIE B	SANDERS J L SUB BLK-000 LOT-006 J L	374	1870	270	450	
		SANDERS SUB DIV S50' OF LT 6	0	2320	0	15.00	
		2313 SO VALMAR	374				
NO	LITTLE ROCK,						
0.000	AR 72204						
24R01901 01700	ELLER PAUL	SANDERS J L SUB BLK-000 LOT-007 S100' OF LOT 7 19-1N-11W	558	2790	270	450	
			0	3240	0	15.00	
		1503 S TAYLOR	558				
NO	LITTLE ROCK,						
0.000	AR 722042662						
24R01901 01800	WILLIAMS LEON	SANDERS J L SUB BLK-000 LOT-007 N60' OF LT 7	410	2050	270	450	
			0	2500	0	15.00	
		PO BOX 286	410				
NO	COLLEGE STATION,						
0.000	AR 72053						

Parcel ID	Owner	Description	Area	Value	Area	Value	Area	Value
24R01901 01900	SCHUMAN F-R KAYE CO	SANDERS J L SUB BLK-000 LOT-007 SANDERS J L S30' OF N90' OF LT 7	300 0 300	1500 1950	270 0	450 15.00		
NO	PO BOX 814 LITTLE ROCK, 0.000 AR 72203							
24R01901 02000	MEDLOCK FRANK	SANDERS J L SUB BLK-000 LOT-008 J L SANDERS SUB LT 8 EXC 100' E & W 140' N & S IN NE COR	664 0 664	3320 3770	270 0	450 15.00		
NO	6270 COUNTY RD 108 FULTON, 0.000 MO 65251							
24R01901 02100	MCBRIDE CLARENCE & BESSIE	SANDERS J L SUB BLK-000 LOT-008 SANDERS J L BEG NE COR S140' W50' N140' E50' TO BEG	260 7254 7514	37570 41050	2088 0	3480 116.00		
NO	PO BOX 239 COLLEGE STATION, 0.000 AR 72053							
24R01901 02200	BELL JOSIE	SANDERS J L SUB BLK-000 LOT-008 SANDERS J L BEG 50'W OF NE COR S140' W50' N140' E50' TO BEG	302 0 302	1510 1960	270 0	450 15.00		
NO	PO BOX 150 COLLEGE STATION, 0.000 AR 72053							
24R01901 02300	LEE WILLIE MAE	SANDERS J L SUB BLK-000 LOT-009	894 0 894	4470 4920	270 0	450 15.00		
NO	132 ELECTRIC ST LOUIS, 0.000 MO 63122							
24R01901 02400	CAMPBELL CLARA	SANDERS J L SUB BLK-000 LOT-010 SANDERS J L W 1/2 LT10 EXC N 40'	466 2046 2512	12560 14150	954 0	1590 53.00		
NO	P O BOX 404 COLLEGE STATION 0.000 AR 72053							
24R01901 02500	CAMPBELL PAMELA JOYCE	SANDERS J L SUB BLK-000 LOT-010 SANDERS J L E 1/2 LT 10 EXC N40'	404 2746 3150	15750 17520	1062 0	1770 59.00		
NO	P O BOX 404 COLLEGE STATION 0.000 AR 72053							
24R01901 02600	CAMPBELL THOS	SANDERS J L SUB BLK-000 LOT-010 SANDERS J L N 40' OF LT 10	336 0 336	1680 2130	270 0	450 15.00		
NO	RT 2 BOX 555 COLLEGE STATION 0.000 AR 720539999							
24R01901 02700	SUMMONS JOHN L SR & LEARA J	SANDERS J L SUB BLK-000 LOT-011 S126 2/3' OF LOT 11	656 8964 9620	48100 52120	2412 0	4020 134.00		
NO	PO BOX 6 COLLEGE STATION, 0.000 AR 72053							
24R01901 02800	CAMPBELL-MCFADDEN	SANDERS J L SUB BLK-000 LOT-011 N63 1/3FT OF LT 11	420 2700 3120	15600 17370	1062 0	1770 59.00		
NO	COLLEGE STATION, 0.000 AR 72053							
24R01901 02801	MCFADDEN MAUDESTA	SANDERS J L SUB BLK-000 LOT-011 IMPROVEMENTS ONLY N63 1/3' OF LT 11	0 746 746	3730 4780	630 0	1050 35.00		
NO	P O BOX 334 COLLEGE STATION, 0.000 AR 72053							
24R01901 03000	MT ZION CEMETERY	SANDERS J L SUB BLK-000 LOT-012 SANDERS J L EXEMPT LTS 12 & 13	1600 0 1600	8000 8000	0 0	0.00 0.00		
NO	C/O PO BOX 209 COLLEGE STATION, 0.000 AR 72053							

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 70

Parcel ID	Owner	Address	Subdivision	Area	Value	Area	Value	Area	Value
24R01901 03100	COLE RICHARD E	1705 WAGON WHEEL DR LITTLE ROCK, AR 722114173	SANDERS J L SUB BLK-000 LOT-014 SANDERS J L S 50 FT OF LOT 14	374 0 374	1870 2320	270 0	450 15.00		
24R01901 J3200	SUMMONS JOHN	PO BOX 6 COLLEGE STATION, AR 72053	SANDERS J L SUB BLK-000 LOT-014 N100' OF LT 14 OF W PT OF NE NE 19-1N-11W	558 0 558	2790 3240	270 0	450 15.00		
24R01901 03300	FITCH LETHA	C/O 808 N CEDAR N LITTLE ROCK, AR 72114	SANDERS J L SUB BLK-000 LOT-014 SANDERS J L N37' OF S87' OF LT 14	326 0 326	1630 2080	270 0	450 15.00		
24R01907 00100	JEANS NURSING HOME INC	PO BOX 720 COLLEGE STATION, AR 72053	MOTLEY HEIGHTS BLK-001 LOT-001 MOTLEY HGTS LTS 1 TO 14 1	3512 127888 131400	657000 671250	8550 0	14250 475.00		
24R01907 00200	DOYNE VIRGIL D TRUSTEE	PO BOX 166 COLLEGE STATION, AR 72053	MOTLEY HEIGHTS BLK-002 LOT-001	176 1464 1640	8200 9520	792 0	1320 44.00		
24R01907 00300	DOYNE VIRGIL D TRUSTEE	PO BOX 166 COLLEGE STATION, AR 72053	MOTLEY HEIGHTS BLK-002 LOT-002	246 0 246	1230 1680	270 0	450 15.00		
24R01907 00400	DOYNE VIRGIL D TRUSTEE	PO BOX 166 COLLEGE STATION, AR 72053	MOTLEY HEIGHTS BLK-002 LOT-003	246 0 246	1230 1680	270 0	450 15.00		
24R01907 00500	DOYNE VIRGIL D	PO BOX 166 COLLEGE STATION, AR 72053	MOTLEY HEIGHTS BLK-002 LOT-004	246 0 246	1230 1680	270 0	450 15.00		
24R01907 00600	PROCTOR-MARSHALL-JORDAN	C/O 3437 W 82ND PLACE INGLEWOOD, CA 90305	MOTLEY HEIGHTS BLK-002 LOT-005, CR 55995	176 0 176	880 1330	270 0	450 15.00		
24R01907 00700	PROCTOR-MARSHALL-JORDAN	C/O 3437 W 82ND PLACE INGLEWOOD, CA 90305	MOTLEY HEIGHTS BLK-002 LOT-006	176 0 176	880 1330	270 0	450 15.00		
24R01907 00800	CARTER IKE	C/O PO BOX 548 BENTON, AR 72015	MOTLEY HEIGHTS BLK-002 LOT-007	246 0 246	1230 1680	270 0	450 15.00		
24R01907 00900	THOMPSON MATTIE	3522 E 41ST ST COLLEGE STATION, AR 72035	MOTLEY HEIGHTS BLK-002 LOT-008	246 0 246	1230 1680	270 0	450 15.00		

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

72

Account No	Owner Name	Address	Assessed Value	Market Value	Special Assessments	Other Assessments
24R01907 02200	KELLEY OBIE	MOTLEY HEIGHTS BLK-002 LOT-023	228	1140	270	450
			0	1590	0	15.00
	3619 JONES		228			
NO	LITTLE ROCK,					
0.000	AR 722063739					
24R01907 02300	KELLEY OBIE	MOTLEY HEIGHTS BLK-002 LOT-024	224	1120	270	450
			0	1570	0	15.00
	3619 JONES		224			
NO	LITTLE ROCK,					
0.000	AR 722063739					
24R01907 02400	AKINS IRA & ALICE	MOTLEY HEIGHTS BLK-002 LOT-025	302	61510	3114	5190
			12000	66700	0	173.00
	3608 SULLIVAN ST		12302			
NO	LITTLE ROCK,					
0.000	AR 72206					
24R01907 02500	AKINS ALICE	MOTLEY HEIGHTS BLK-002 LOT-026	302	1510	270	450
	C/O RT 2 BOX 610		0	1960	0	15.00
			302			
NO	LITTLE ROCK,					
0.000	AR 72206					
24R01907 02600	MACKINRUSH WALTER	MOTLEY HEIGHTS BLK-002 LOT-027	302	16410	1116	1860
			2980	18270	0	62.00
	1519 S HARRISON ST		3282			
NO	LITTLE ROCK,					
0.000	AR 72204					
24R01907 02700	KING VERA MAE	MOTLEY HEIGHTS BLK-002 LOT-028	302	1510	270	450
			0	1960	0	15.00
	3821 SOUTHERN ST		302			
NO	LITTLE ROCK,					
0.000	AR 722069137					
24R01907 02800	KING VERA MAE	MOTLEY HEIGHTS BLK-002 LOT-029	246	1230	270	450
			0	1680	0	15.00
	3821 SOUTHERN ST		246			
NO	LITTLE ROCK					
0.000	AR 722069137					
24R01907 02801	KING BARBARA R	MOTLEY HEIGHTS BLK-002 LOT-029	0	3380	630	1050
		IMPROVEMENTS ONLY MOTLEY HEIGHTS LT 29	676	4430	0	35.00
	PO BOX 242	BLK 2	676			
NO	COLLEGE STATION,					
0.000	AR 72053					
24R01907 02900	KING BARBARA	MOTLEY HEIGHTS BLK-003 LOT-001	302	1510	270	450
			0	1960	0	15.00
	3821 SOUTHERN ST		302			
NO	LITTLE ROCK,					
0.000	AR 72206					
24R01907 03000	KING BARBARA	MOTLEY HEIGHTS BLK-003 LOT-002	302	1510	270	450
			0	1960	0	15.00
	3821 SOUTHERN CT		302			
NO	LITTLE ROCK,					
0.000	AR 72206					
24R01907 03100	BOOKER ODELL	MOTLEY HEIGHTS BLK-003 LOT-003	302	1510	270	450
			0	1960	0	15.00
	PO BOX 277		302			
NO	COLLEGE STATION,					
0.000	AR 72053					
24R01907 03200	ROBINSON WILLIE	MOTLEY HEIGHTS BLK-003 LOT-004	302	31510	1818	3030
			6000	34540	0	101.00
	3801 SOUTHERN ST		6302			
NO	LITTLE ROCK					
0.000	AR 722069137					

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

73

Parcel ID	Owner Name	Address	City	State	Zip	Area	Area	Area	Area
24R01907 03300	ROBINSON TRESSIE		MOTLEY HEIGHTS BLK-003 LOT-005			252	2940	630	1050
		3801 SOUTHERN ST				336	3990	0	35.00
		LITTLE ROCK				588			
	NO								
	0.000	AR	722069137						
24R01907 03400	HARRIS ALBERT & LILLIE M		MOTLEY HEIGHTS BLK-003 LOT-006			264	1320	270	450
		C/O DEXTER PRINCE				0	1770	0	15.00
		2614 55TH ST				264			
	NO								
	0.000	CA	92105						
24R01907 03500	HARRIS ALBERT & LILLIE M		MOTLEY HEIGHTS BLK-003 LOT-007			302	15760	1116	1860
		C/O DEXTER PRINCE				2850	17620	0	62.00
		2614 556H ST				3152			
	NO								
	0.000	CA	72105						
24R01907 03600	JONES SYLVIA		MOTLEY HEIGHTS BLK-003 LOT-008			302	1510	270	450
		417 PAULA DR				0	1960	0	15.00
	NO					302			
	0.000	AR	72118						
24R01907 03700	JONES SYLVIA		MOTLEY HEIGHTS BLK-003 LOT-009			302	1510	270	450
		417 PAULA DR				0	1960	0	15.00
	NO					302			
	0.000	AR	72118						
24R01907 03800	WARD WILLIE LOYCE		MOTLEY HEIGHTS BLK-004 LOT-001			302	13170	1008	1680
		240 STOCKDALE ST				2332	14850	0	56.00
	NO					2634			
	0.000	MI	48503						
24R01907 03900	WARD WILLIE LOYCE		MOTLEY HEIGHTS BLK-004 LOT-002			302	10670	900	1500
		240 STOCKDALE ST				1832	12170	0	50.00
	NO					2134			
	0.000	MI	48505						
24R01907 04000	SPARKS ROGER		MOTLEY HEIGHTS BLK-004 LOT-003			302	1510	270	450
		9940 S WINSTON				0	1960	0	15.00
	NO					302			
	0.000	IL	60643						
24R01907 04100	SPARKS ROGER		MOTLEY HEIGHTS BLK-004 LOT-004			302	1510	270	450
		C/O 9940 SO WINSTON				0	1960	0	15.00
	NO					302			
	0.000	IL	60637						
24R01907 04200	AKINS LUCILLE		MOTLEY HEIGHTS BLK-004 LOT-005 MOTLEY HGTS E40' OF 5 4			278	1390	270	450
		3419 WINONA				0	1840	0	15.00
	NO					278			
	0.000	MI	48504						
24R01907 04300	WILLIAMS K & WALKER V		MOTLEY HEIGHTS BLK-004 LOT-006 MOTLEY HGTS LT 6 & W10' OF 5 4			324	9690	846	1410
		PO BOX 134				1614	11100	0	47.00
	NO					1938			
	0.000	AR	72053						
24R01907 04400	FOSTER WAYNE R		MOTLEY HEIGHTS BLK-004 LOT-007			302	1510	270	450
		221 'A' EAST				0	1960	0	15.00
	NO					302			
	0.000	AR	72116						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 74

Parcel ID	Owner Name	Address	Area	Value	Area	Value	Area	Value
24R01907 04500	FOSTER WAYNE R	MOTLEY HEIGHTS BLK-004 LOT-008	302	1510	270	450	0	1960
	221 'A' EAST		302		0	15.00		
NO 0.000	NO LITTLE ROCK, AR 72116							
24R01907 04600	AKINS ESTELLA	MOTLEY HEIGHTS BLK-004 LOT-009	302	11260	900	1500	1950	12760
	C/O JONES JANETTA PO BOX 634		2252		0	50.00		
NO 0.000	COLLEGE STATION, AR 72053							
24R01907 04700	WILLIAMS EDDIE & MARYLAND	MOTLEY HEIGHTS BLK-004 LOT-010	302	26340	1548	2580	4966	28920
	P O BOX 157		5268		0	86.00		
NO 0.000	COLLEGE STATION, AR 72053							
24R01907 04800	TURBBY ANNIE MAE	MOTLEY HEIGHTS BLK-004 LOT-011	302	1510	270	450	0	1960
	#8 ALICE CT		302		0	15.00		
NO 0.000	LITTLE ROCK, AR 72204							
24R01907 04900	TURBBY ANNIE MAE	MOTLEY HEIGHTS BLK-004 LOT-012	302	3600	630	1050	418	4650
	#8 ALICE CT		720		0	35.00		
NO 0.000	LITTLE ROCK, AR 72204							
24R01907 05000	HINES WALTER & BEVERLY	MOTLEY HEIGHTS BLK-005 LOT-001 MOTLEY HGTS N98' OF 1 & 2 5	346	11130	900	1500	1880	12630
	2600 M L KING JR DR		2226		0	50.00		
NO 0.000	LITTLE ROCK, AR 72206							
24R01907 05100	HINES WALTER & BEVERLY	MOTLEY HEIGHTS BLK-005 LOT-001 MOTLEY HGTS S42' OF LTS 1 & 2 5	256	1280	270	450	0	1730
	2600 M L KING JR DR		256		0	15.00		
NO 0.000	LITTLE ROCK, AR 72206							
24R01907 05200	PORTER AUSTIN JR	MOTLEY HEIGHTS BLK-005 LOT-003	302	1510	270	450	0	1960
	6 WOODWIND		302		0	15.00		
NO 0.000	LITTLE ROCK, AR 722043483							
24R01907 05300	PORTER AUSTIN JR	MOTLEY HEIGHTS BLK-005 LOT-004	302	1510	270	450	0	1960
	6 WOODWIND		302		0	15.00		
NO 0.000	LITTLE ROCK, AR 722043483							
24R01907 05400	KENDALL O T	MOTLEY HEIGHTS BLK-005 LOT-005	302	1510	270	450	0	1960
	8725 S GRAMERCY PLACE		302		0	15.00		
NO 0.000	LOS ANGELES, CA 90047							
24R01907 05500	KENDALL O T	MOTLEY HEIGHTS BLK-005 LOT-006	302	1510	270	450	0	1960
	8725 S GRAMERCY PLACE		302		0	15.00		
NO 0.000	LOS ANGELES, CA 90047							
24R01907 05600	KENDALL O T	MOTLEY HEIGHTS BLK-005 LOT-007	302	1510	270	450	0	1960
	8725 S GRAMERCY PLACE		302		0	15.00		
NO 0.000	LOS ANGELES, CA 90047							

Account No.	Property Name	Address	Block/Lot	Area	Year	Value	Area	Value
24R01907 05700	KENDALL O T	8725 S GRAMERCY PLACE	MOTLEY HEIGHTS BLK-005 LOT-008	302	1510	270	450	
	NO	LOS ANGELES, CA 90047		0	1960	0	15.00	
	0.000			302				
24R01907 J5800	FORD ANITA	4519 FRAZIER PK	MOTLEY HEIGHTS BLK-005 LOT-009	302	1510	270	450	
	NO	LITTLE ROCK		0	1960	0	15.00	
	0.000	AR 722069642		302				
24R01907 05900	MOSBY HERMAN & GERTHA L	C/O MOSBY KATRINA PO BOX 207	MOTLEY HEIGHTS BLK-005 LOT-010	302	1510	270	450	
	NO	COLLEGE STATION		0	1960	0	15.00	
	0.000	AR 72053		302				
24R01907 06000	HINES WALTER & BEVERLY	2600 M L KING JR DR	MOTLEY HEIGHTS BLK-005 LOT-011	302	11750	954	1590	
	NO	LITTLE ROCK,		2048	13340	0	53.00	
	0.000	AR 72206		2350				
24R01907 06100	HINES WALTER & BEVERLY	2600 M L KING JR DR	MOTLEY HEIGHTS BLK-005 LOT-012 MOTLEY HGTS S1/2 OF LT 12 5	246	3040	630	1050	
	NO	LITTLE ROCK,		362	4090	0	35.00	
	0.000	AR 72206		608				
24R01907 06200	HINES WALTER & BEVERLY	2600 M L KING JR DR	MOTLEY HEIGHTS BLK-005 LOT-012 MOTLEY HGTS N1/2 OF LT 12 5	246	15380	1116	1860	
	NO	LITTLE ROCK,		2830	17240	0	62.00	
	0.000	AR 72206		3076				
24R01907 06300	RYANS DEBORAH R	12 BANFIELD LN	MOTLEY HEIGHTS BLK-006 LOT-001	302	27820	1656	2760	
	NO	LITTLE ROCK,		5262	30580	0	92.00	
	0.000	AR 722122638		5564				
24R01907 06400	REED EUNICE & CURTIS	413 W 31ST	MOTLEY HEIGHTS BLK-006 LOT-002	302	18510	1224	2040	
	NO	LITTLE ROCK,		3400	20550	0	68.00	
	0.000	AR 722063178		3702				
24R01907 06500	REED EUNICE & CURTIS	413 W 31ST	MOTLEY HEIGHTS BLK-006 LOT-003	302	26510	1602	2670	
	NO	LITTLE ROCK,		5000	29180	0	89.00	
	0.000	AR 722063178		5302				
24R01907 06600	REED EUNICE	415 W 31ST	MOTLEY HEIGHTS BLK-006 LOT-004	302	1510	270	450	
	NO	LITTLE ROCK,		0	1960	0	15.00	
	0.000	AR 722063178		302				
24R01907 06700	COLEMAN TRAVIS	PO BOX 425	MOTLEY HEIGHTS BLK-006 LOT-005	302	1510	270	450	
	NO	COLLEGE STATION		0	1960	0	15.00	
	0.000	AR 72053		302				
24R01907 06800	COLEMAN TRAVIS	PO BOX 425	MOTLEY HEIGHTS BLK-006 LOT-006	302	1510	270	450	
	NO	COLLEGE STATION		0	1960	0	15.00	
	0.000	AR 72053		302				

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 76

Parcel ID	Owner Name	Address	Block/Lot	Area	Value	Assessment	Other	Notes
24R01907 06900	COLEMAN TRAVIS W	PO BOX 425 COLLEGE STATION AR 72053	MOTLEY HEIGHTS BLK-006 LOT-007	302	7740	738	1230	
				1246	8970	0	41.00	
				1548				
24R01907 J7000	COLEMAN BERNICE	PO BOX 425 COLLEGE STATION, AR 72053	MOTLEY HEIGHTS BLK-006 LOT-008	302	21200	1332	2220	
				3938	23420	0	74.00	
				4240				
24R01907 07100	COLEMAN HENRY O	1801 E 6TH ST LITTLE ROCK AR 72202	MOTLEY HEIGHTS BLK-006 LOT-009 MOTLEY HGTS E1/2 OF 9 6	246	7270	738	1230	
				1208	8500	0	41.00	
				1454				
24R01907 07200	COLEMAN BERNICE	PO BOX 425 COLLEGE STATION, AR 72053	MOTLEY HEIGHTS BLK-006 LOT-009 MOTLEY HGTS W1/2 OF 9 6	246	1230	270	450	
				0	1680	0	15.00	
				246				
24R01907 07300	COLEMAN H O	1801 E 6TH ST LITTLE ROCK, AR 72202	MOTLEY HEIGHTS BLK-006 LOT-010	302	1510	270	450	
				0	1960	0	15.00	
				302				
24R01907 07400	REED EUNICE & CURTIS	413 W 31ST LITTLE ROCK, AR 722063178	MOTLEY HEIGHTS BLK-006 LOT-011 MOTLEY HGTS LTS 11 & 12 6	414	27620	1602	2670	
				5110	30290	0	89.00	
				5524				
24R01907 J7500	WILLIAMS LEON & BESSIE	C/O PO BOX 286 COLLEGE STATION, AR 72053	MOTLEY HEIGHTS BLK-007 LOT-001	302	22350	1386	2310	
				4168	24660	0	77.00	
				4470				
24R01907 07600	MACK THEODORE	PO BOX 8504 LITTLE ROCK AR 72215	MOTLEY HEIGHTS BLK-007 LOT-002	302	1510	270	450	
				0	1960	0	15.00	
				302				
24R01907 07700	MACK THEODORE	PO BOX 8504 LITTLE ROCK AR 72215	MOTLEY HEIGHTS BLK-007 LOT-003	302	1510	270	450	
				0	1960	0	15.00	
				302				
24R01907 07800	MACK THEODORE	PO BOX 8504 LITTLE ROCK AR 72215	MOTLEY HEIGHTS BLK-007 LOT-004	302	1510	270	450	
				0	1960	0	15.00	
				302				
24R01907 07900	HEMPHILL LOIS B	PO BOX 488 LONOKE, AR 72086	MOTLEY HEIGHTS BLK-007 LOT-005 MOTLEY HGTS S70' OF LTS 5-6 7	302	10710	900	1500	
				1840	12210	0	50.00	
				2142				
24R01907 08000	HEMPHILL LOIS BOONE	PO BOX 448 LONOKE, AR 72086	MOTLEY HEIGHTS BLK-007 LOT-005 MOTLEY HGTS N70' OF LTS 5-6 7	302	14310	1062	1770	
				2560	16080	0	59.00	
				2862				

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 77

Parcel ID	Owner Name	Address	Lot	Area	Value	Area	Value	Area	Value
24R01907 08100	GOODEN FRANK & SUSIE	MOTLEY HEIGHTS BLK-007 LOT-007		302	16510	1170	1950		
	PO BOX 513			3000	18460	0	65.00		
	NO	COLLEGE STATION,		3302					
	0.000 AR	72053							
24R01907 08200	SHELTON SHELTON	MOTLEY HEIGHTS BLK-007 LOT-008		302	1510	270	450		
	C/O LEM WILLIAMS SR			0	1960	0	15.00		
	NO	P O BOX 435		302					
	NO	COLLEGE STATION,							
	0.000 AR	72053							
24R01907 08300	SHELTON MARGERY	MOTLEY HEIGHTS BLK-007 LOT-009		302	1510	270	450		
	C/O LEM WILLIAMS SR			0	1960	0	15.00		
	NO	PO BOX 435		302					
	NO	COLLEGE STATION,							
	0.000 AR	72053							
24R01907 08400	JENKENS MAE LILLIE	MOTLEY HEIGHTS BLK-007 LOT-010		302	62290	3114	5190		
	PO BOX 361			12156	67480	0	173.00		
	NO	HAMBURG,		12458					
	0.000 AR	71646							
24R01907 08500	JENKINS MAE LILLIE	MOTLEY HEIGHTS BLK-007 LOT-011		302	1510	270	450		
	PO BOX 361			0	1960	0	15.00		
	NO	HAMBURG,		302					
	0.000 AR	71646							
24R01907 08600	COLCAUGHT ARTHUR	MOTLEY HEIGHTS BLK-007 LOT-012		302	1510	270	450		
	PO BOX 1768			0	1960	0	15.00		
	NO	LITTLE ROCK,		302					
	0.000 AR	72203							
24R01907 08700	PHILLIPS BOBBIE	MOTLEY HEIGHTS BLK-008 LOT-001		302	17920	1170	1950		
	PO BOX 627			3282	19870	0	65.00		
	NO	COLLEGE STATION,		3584					
	0.000 AR	72053							
24R01907 08800	JACKSON CHARLIE & ETAL	MOTLEY HEIGHTS BLK-008 LOT-002		302	1510	270	450		
	PO BOX 138			0	1960	0	15.00		
	NO	COLLEGE STATION,		302					
	0.000 AR	72053							
24R01907 08900	JACKSON CHARLIE	MOTLEY HEIGHTS BLK-008 LOT-003		302	21440	1332	2220		
	C/O BOX 138			3986	23660	0	74.00		
	NO	COLLEGE STATION,		4288					
	0.000 AR	72053							
24R01907 09000	WINFREY MORRIS JR	MOTLEY HEIGHTS BLK-008 LOT-004		302	12140	954	1590		
	2122 COMMERCE			2126	13730	0	53.00		
	NO	LITTLE ROCK,		2428					
	0.000 AR	722062322							
24R01907 09100	PAPPAS GARY	MOTLEY HEIGHTS BLK-008 LOT-005		302	1510	270	450		
	299 SANGLER RD			0	1960	0	15.00		
	NO	W MONROE,		302					
	0.000 LA	71291							
24R01907 09200	CASTER LEOLA	MOTLEY HEIGHTS BLK-008 LOT-006		302	6510	738	1230		
	10014 WILDERNESS RD			1000	7740	0	41.00		
	NO	LITTLE ROCK,		1302					
	0.000 AR	72209							

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

78

Parcel ID	Owner Name	Address	Area	Volume	Value	Area	Value
24R01907 09300	MCFADDEN MAUDESTA	MOTLEY HEIGHTS BLK-008 LOT-007	302	1510	270	450	
	PO BOX 334		0	1960	0	15.00	
NO 0.000	COLLEGE STATION, AR 72053		302				
24R01907 09400	JENKINS RACHEL C	MOTLEY HEIGHTS BLK-008 LOT-008	302	1510	270	450	
	5533 CAIRO AVE		0	1960	0	15.00	
NO 0.000	BIRMINGHAM, AL 35020		302				
24R01907 09500	MCCLENDON THELMA	MOTLEY HEIGHTS BLK-008 LOT-009	302	1510	270	450	
	PO BOX 294		0	1960	0	15.00	
NO 0.000	COLLEGE STATION AR 72053		302				
24R01907 09600	MCCLENDON CHAS	MOTLEY HEIGHTS BLK-008 LOT-010	302	1510	270	450	
	PO BOX 178		0	1960	0	15.00	
NO 0.000	COLLEGE STATION, AR 72053		302				
24R01907 09700	CAMPBELL CLARA	MOTLEY HEIGHTS BLK-008 LOT-011	302	1510	270	450	
	P O BOX 404		0	1960	0	15.00	
NO 0.000	COLLEGE STATION AR 72053		302				
24R01907 09800	BLACKMAN ANN	MOTLEY HEIGHTS BLK-008 LOT-012	302	6510	738	1230	
	4306 E 39TH ST		1000	7740	0	41.00	
NO 0.000	LITTLE ROCK, AR 72206		1302				
24R01907 09900	BARNES EDMOND RAY	MOTLEY HEIGHTS BLK-009 LOT-001	302	1610	270	450	
	2600 HIGH		20	2060	0	15.00	
NO 0.000	LITTLE ROCK, AR 72206		322				
24R01907 10000	WADE LEOLA	MOTLEY HEIGHTS BLK-009 LOT-002	302	1510	270	450	
	C/O MRS ALICE R FRENCH		0	1960	0	15.00	
NO 0.000	3811 W WASHINGTON #501 CHICAGO, IL 60624		302				
24R01907 10100	WHITE ARCCENELL & ROY L	MOTLEY HEIGHTS BLK-009 LOT-003	302	13810	1008	1680	
	P O BOX 533		2460	15490	0	56.00	
NO 0.000	COLLEGE STATION, AR 72053		2762				
24R01907 10200	MCCLENDON JOHN H	MOTLEY HEIGHTS BLK-009 LOT-004 MOTLEY HGTS S85' OF 4-5 & 6 9	394	15470	1062	1770	
	P O BOX 294		2700	17240	0	59.00	
NO 0.000	COLLEGE STATION, AR 72503		3094				
24R01907 10300	HINTON DORA MAE	MOTLEY HEIGHTS BLK-009 LOT-004 MOTLEY HGTS N55' OF 4-5 & 6 9	322	22250	1386	2310	
	PO BOX 362		4128	24560	0	77.00	
NO 0.000	COLLEGE STATION, AR 72053		4450				
24R01907 10301	HINTON DORA MAE	MOTLEY HEIGHTS BLK-009 LOT-004 IMPROVEMENTS ONLY N55' OF 4-5 & 6	0	32470	1872	3120	
	P O BOX 362		6494	35590	0	104.00	
NO 0.000	COLLEGE STATION, AR 72053		6494				

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

79

24R01907 10400	CUNNINGHAM ENZALEE C/O PO BOX 132	MOTLEY HEIGHTS BLK-009 LOT-007	302 3932 4234	21170 23390	1332 0	2220 74.00	
NO 0.000	COLLEGE STATION, AR 72053						
24R01907 10401	CUNNINGHAM ENZALEE PO BOX 132	MOTLEY HEIGHTS BLK-009 LOT-007 MOTLEY HEIGHTS LOT 7 BLK 9 IMPROVEMENTS ONLY	0 1200 1200	6000 7230	738 0	1230 41.00	
NO 0.000	COLLEGE STATION, AR 72053						
24R01907 10500	CUNNINGHAM ENZALEE PO BOX 132	MOTLEY HEIGHTS BLK-009 LOT-008	302 0 302	1510 1960	270 0	450 15.00	
NO 0.000	COLLEGE STATION, AR 72053						
24R01907 10600	CUNNINGHAM ENZALEE PO BOX 132	MOTLEY HEIGHTS BLK-009 LOT-009	302 390 692	3460 4510	630 0	1050 35.00	
NO 0.000	COLLEGE STATION, AR 72053						
24R01907 10700	WARD ELNORA C/O PO BOX 152	MOTLEY HEIGHTS BLK-009 LOT-010	302 0 302	1510 1960	270 0	450 15.00	
NO 0.000	COLLEGE STATION, AR 72053						
24R01907 10800	WATSON DANITA & ANTHONY L PO BOX 482	MOTLEY HEIGHTS BLK-009 LOT-011	302 4094 4396	21980 24290	1386 0	2310 77.00	
NO 0.000	COLLEGE STATION, AR 72053						
24R01907 10900	COMIC ROBERT RT 2 BOX 124	MOTLEY HEIGHTS BLK-009 LOT-012	302 3600 3902	19510 21640	1278 0	2130 71.00	
NO 0.000	COLLEGE STATION, AR 72053						
24R01907 11000	BARNES MARYLYNNE J 3105 IZARD	MOTLEY HEIGHTS BLK-010 LOT-001	302 1724 2026	10130 11540	846 0	1410 47.00	
NO 0.000	LITTLE ROCK, AR 72206						
24R01907 11100	DOYNE VIRGIL DEXTER PO BOX 166	MOTLEY HEIGHTS BLK-010 LOT-002	302 2514 2816	14080 15850	1062 0	1770 59.00	
NO 0.000	COLLEGE STATION, AR 72053						
24R01907 11200	BARNES GERTRUDE BOX 392	MOTLEY HEIGHTS BLK-010 LOT-003	302 2360 2662	13310 14990	1008 0	1680 56.00	
NO 0.000	COLLEGE STATION, AR 72053						
24R01907 11201	BARNES JANIUCE 9716 SO WOODLAWN	MOTLEY HEIGHTS BLK-010 LOT-004	302 0 302	1510 1960	270 0	450 15.00	
NO 0.000	CHICAGO, IL 60628						
24R01907 11202	BARNES ARTHUR JR 526 MUSKEGON	MOTLEY HEIGHTS BLK-010 LOT-005	302 0 302	1510 1960	270 0	450 15.00	
NO 0.000	CALUMET CITY, IL 60409						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Account No	Owner Name	Address	Lot	Area	Value	Assess	Exempt	Other
24R01907 11203	PHILLIPS BRUCE D	MOTLEY HEIGHTS BLK-010 LOT-005 IMPROVEMENTS		0 6236	31180 34210	1818 0		3030 101.00
NO 0.000	P O BOX 348 COLLEGE STATION, AR 72053			6236				
24R01907 11300	WILLIAMS EDDIE & MARYLAND C	MOTLEY HEIGHTS BLK-010 LOT-006		302 6696	34990 38200	1926 0		3210 107.00
NO 0.000	PO BOX 157 COLLEGE STATION, AR 72053			6998				
24R01907 11400	BEASLEY CAROLYN ANN	MOTLEY HEIGHTS BLK-010 LOT-007		302 6612	34570 37780	1926 0		3210 107.00
NO 0.000	C/O BOX 516 COLLEGE STATION, AR 72053			6914				
24R01907 11500	SMITH BARBARA L	MOTLEY HEIGHTS BLK-010 LOT-008		302 2838	15700 17560	1116 0		1860 62.00
NO 0.000	P O BOX 582 COLLEGE STATION, AR 72053			3140				
24R01907 11600	CASTER LEOLA	MOTLEY HEIGHTS BLK-010 LOT-009		302 0	1510 1960	270 0		450 15.00
NO 0.000	10014 WILDERNESS RD LITTLE ROCK, AR 72209			302				
24R01907 11700	ROACH	MOTLEY HEIGHTS BLK-010 LOT-010		302 0	1510 1960	270 0		450 15.00
NO 0.000	C/O ELIZABETH MCKENZIE 5953 PAGE BLVD ST LOUIS, MO 63112			302				
24R01907 11800	SIMMONS LEORA	MOTLEY HEIGHTS BLK-010 LOT-011		302 0	1510 1960	270 0		450 15.00
NO 0.000	4428 WAYNE KANSAS CITY, MO 64110			302				
24R01907 11900	SIMMONS LEORA	MOTLEY HEIGHTS BLK-010 LOT-012		302 0	1510 1960	270 0		450 15.00
NO 0.000	4428 WAYNE KANSAS CITY, MO 64110			302				
24R01907 12000	WRIGHT CHARLOTTE	MOTLEY HEIGHTS BLK-011 LOT-001		302 2980	16410 18270	1116 0		1860 62.00
NO 0.000	C/O 723 APPERSON LITTLE ROCK, AR 72202			3282				
24R01907 12100	WRIGHT CHARLOTTE	MOTLEY HEIGHTS BLK-011 LOT-002		302 0	1510 1960	270 0		450 15.00
NO 0.000	C/O 723 APPERSON LITTLE ROCK, AR 72202			302				
24R01907 12200	WHITE ROSAA LEE	MOTLEY HEIGHTS BLK-011 LOT-003		302 2518	14100 15870	1062 0		1770 59.00
NO 0.000	C/O PO BOX 623 COLLEGE STATION, AR 72053			2820				
24R01907 12300	WHITE LEARRIE	MOTLEY HEIGHTS BLK-011 LOT-004		302 0	1510 1960	270 0		450 15.00
NO 0.000	C/O 2914 LENNOX DR LITTLE ROCK, AR 72204			302				

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

81

Parcel ID	Owner Name	Address	Area	Year	Area	Year	Area	Year
24R01907 12400	SQUARE DEAL INC	MOTLEY HEIGHTS BLK-011 LOT-005	302	1510	270	450		
			0	1960	0	15.00		
	101 E WASHINGTON		302					
NO	NO LITTLE ROCK,							
0.000	AR 72114							
24R01907 12500	JACKSON RONNIE	MOTLEY HEIGHTS BLK-011 LOT-006	302	1510	270	450		
			0	1960	0	15.00		
	812 MAXWELL		302					
NO	LITTLE ROCK,							
0.000	AR 72202							
24R01907 12600	GRAHAM MARTHA	MOTLEY HEIGHTS BLK-011 LOT-007	302	1510	270	450		
			0	1960	0	15.00		
	2310 S HARRISON		302					
NO	PRATTSVILLE,							
0.000	AR 72204							
24R01907 12700	BROWN BRUCE E & PATRICIA A	MOTLEY HEIGHTS BLK-011 LOT-008	302	1510	270	450		
			0	1960	0	15.00		
	5108 LOETSCHER LN		302					
NO	LITTLE ROCK,							
0.000	AR 72209							
24R01907 12800	BROWN BRUCE E & PATRICIA A	MOTLEY HEIGHTS BLK-011 LOT-009	302	1510	270	450		
			0	1960	0	15.00		
	5108 LOETSCHER LN		302					
NO	LITTLE ROCK,							
0.000	AR 72209							
24R01907 12900	GRAHAM MARTHA	MOTLEY HEIGHTS BLK-011 LOT-010	302	1510	270	450		
			0	1960	0	15.00		
	2310 S HARRISON		302					
NO	PRATTSVILLE,							
0.000	AR 72204							
24R01907 13000	BROWN BRUCE E & PATRICIA A	MOTLEY HEIGHTS BLK-011 LOT-011	302	1510	270	450		
			0	1960	0	15.00		
	5108 LOETSCHER LN		302					
NO	LITTLE ROCK,							
0.000	AR 722096511							
24R01907 13100	BROWN BRUCE E & PATRICIA A	MOTLEY HEIGHTS BLK-011 LOT-012	302	1510	270	450		
			0	1960	0	15.00		
	5108 LOETSCHER LN		302					
NO	LITTLE ROCK,							
0.000	AR 722096511							
24R01907 13200	JACKSON DEE	MOTLEY HEIGHTS BLK-012 LOT-001	302	11170	900	1500		
	C/O BOX 553		1932	12670	0	50.00		
			2234					
NO	COLLEGE STATION,							
0.000	AR 72053							
24R01907 13300	CRAIG BILLY JOE	MOTLEY HEIGHTS BLK-012 LOT-002	304	1520	270	450		
	C/O 4532 ASKEW		0	1970	0	15.00		
			304					
NO	KANSAS CITY,							
0.000	MO 64130							
24R01907 13400	CRAIG BILLY JOE	MOTLEY HEIGHTS BLK-012 LOT-003	304	1520	270	450		
	C/O 4532 ASKEW		0	1970	0	15.00		
			304					
NO	KANSAS CITY,							
0.000	MO 64130							
24R01907 13500	WILLIAMS HERMAN & ERMA L	MOTLEY HEIGHTS BLK-012 LOT-004 S47' OF LTS 4, 5 & 6	286	18590	1224	2040		
			3432	20630	0	68.00		
	P O BOX 249		3718					
NO	COLLEGE STATION,							
0.000	AR 72053							

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Address	Area	Value	Area	Value	Area	Value
24R01907 13600	WILLIAMS LAURA & LEON	MOTLEY HEIGHTS BLK-012 LOT-004 MOTLEY HGTS N46 1/2' OF LTS 4-5 & 6	292 3062 3354	16770 18720	1170 0	1950 65.00		
NO 0.000	PO BOX 204 COLLEGE STATION, AR 72053							
24R01907 13700	JEFFERSON BEATRICE	MOTLEY HEIGHTS BLK-012 LOT-004 S46 1/2' OF N93' OF LTS 4-5 & 6	288 2532 2820	14100 15870	1062 0	1770 59.00		
NO 0.000	PO BOX 508 COLLEGE STATION, AR 72053							
24R01907 13900	WRIGHT CHARLOTTE	MOTLEY HEIGHTS BLK-013 LOT-001	302 0 302	1510 1960	270 0	450 15.00		
NO 0.000	723 APPERSON LITTLE ROCK, AR 72202							
24R01907 14000	WRIGHT CHARLOTTE	MOTLEY HEIGHTS BLK-013 LOT-002	302 0 302	1510 1960	270 0	450 15.00		
NO 0.000	723 APPERSON LITTLE ROCK, AR 72202							
24R01907 14100	WRIGHT CHAROLETTE	MOTLEY HEIGHTS BLK-013 LOT-003	242 0 242	1210 1660	270 0	450 15.00		
NO 0.000	723 APPERSON LITTLE ROCK, AR 72202							
24R01907 14200	AKINS IRA SR	MOTLEY HEIGHTS BLK-013 LOT-004	258 0 258	1290 1740	270 0	450 15.00		
NO 0.000	C/O RT 2 BOX 610 LITTLE ROCK, AR 72206							
24R01907 14300	AKINS IRA SR	MOTLEY HEIGHTS BLK-013 LOT-005	302 0 302	1510 1960	270 0	450 15.00		
NO 0.000	C/O RT 2 BOX 610 LITTLE ROCK, AR 72206							
24R01907 14400	AKINS IRA SR	MOTLEY HEIGHTS BLK-013 LOT-006	302 0 302	1510 1960	270 0	450 15.00		
NO 0.000	C/O RT 2 BOX 610 LITTLE ROCK, AR 72206							
24R01907 14500	MAYON LONNIE	MOTLEY HEIGHTS BLK-014 LOT-001	302 3000 3302	16510 18460	1170 0	1950 65.00		
NO 0.000	P O BOX 152 COLLEGE SATION, AR 72053							
24R01907 14600	MAYON LONNIE B	MOTLEY HEIGHTS BLK-014 LOT-002	302 0 302	1510 1960	270 0	450 15.00		
NO 0.000	P O BOX 152 COLLEGE STATION, AR 72053							
24R01907 14700	SCHUMAN F-R KAYE CO	MOTLEY HEIGHTS BLK-014 LOT-003	302 0 302	1510 1960	270 0	450 15.00		
NO 0.000	PO BOX 814 LITTLE ROCK, AR 72203							
24R01907 14800	WALKER WILMA	MOTLEY HEIGHTS BLK-014 LOT-004	302 6038 6340	31700 34730	1818 0	3030 101.00		
NO 0.000	PO BOX 205 COLLEGE STATION AR 72053							

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Address	City	State	Zip	Lot	Area 1	Area 2	Area 3	Area 4
24R01907 14900	TACKER GUS	3545 115TH ST INGLEWOOD, CA 90303				MOTLEY HEIGHTS BLK-014 LOT-005	302 0 302	1510 1960	270 0	450 15.00
R01907 15000	TACKER GUS	3545 115TH ST INGLEWOOD, CA 90303				MOTLEY HEIGHTS BLK-014 LOT-006	302 0 302	1510 1960	270 0	450 15.00
24R01907 15100	AKINS CARL & BERYL	RT 2 BOX 610 LITTLE ROCK, AR 72206				MOTLEY HEIGHTS BLK-014 LOT-007	302 16000 16302	81510 87150	3384 0	5640 188.00
24R01907 15200	AKINS IRA	C/O RT 2 BOX 610 LITTLE ROCK, AR 72206				MOTLEY HEIGHTS BLK-014 LOT-008	260 5134 5394	26970 29640	1602 0	2670 89.00
24R01907 15300	AKINS IRA	C/O RT 2 BOX 610 LITTLE ROCK, AR 72206				MOTLEY HEIGHTS BLK-014 LOT-009	260 0 260	1300 1750	270 0	450 15.00
24R01907 15400	CHERRY WAYNE	19572 EL RIVINO RD RIVERSIDE, CA 92509				MOTLEY HEIGHTS BLK-014 LOT-010	260 0 260	1300 1750	270 0	450 15.00
24R01907 15500	PAGE JIM	C/O ROSE THOMPSON RT 2 BOX 566 LITTLE ROCK, AR 72206				MOTLEY HEIGHTS BLK-014 LOT-011	260 0 260	1300 1750	270 0	450 15.00
24R01907 15600	PAGE MRS FANNIE	C/O RT 2 BOX 566 LITTLE ROCK, AR 72206				MOTLEY HEIGHTS BLK-014 LOT-012	260 0 260	1300 1750	270 0	450 15.00
24R01907 15700	DOZIER WILLIE L & CLARIA	4017 COMPANY ST LITTLE ROCK, AR 72206				MOTLEY HEIGHTS BLK-015 LOT-001	302 4832 5134	25670 28250	1548 0	2580 86.00
24R01907 15800	BARNES JACQUELYNNE	PO BOX 229 COLLEGE STATION, AR 72053				MOTLEY HEIGHTS BLK-015 LOT-002	302 4400 4702	23510 25910	1440 0	2400 80.00
24R01907 15900	MANNING EMMA L	PO BOX 523 EL DORADO, AR 71731				MOTLEY HEIGHTS BLK-015 LOT-003	302 4400 4702	23510 25910	1440 0	2400 80.00
24R01907 16000	MANNING ERMA LEE	PO BOX 523 EL DORADO, AR 71731				MOTLEY HEIGHTS BLK-015 LOT-004	302 0 302	1510 1960	270 0	450 15.00

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 84

Parcel ID	Owner	Address	Lot	Area	Value	Area	Value
24R01907 16100	L R QUARRY CO INC	MOTLEY HEIGHTS BLK-015 LOT-005	302	1510	270	450	
	PO BOX 548		0	1960	0	15.00	
NO	BENTON,		302				
0.000	AR 72015						
24R01907 16200	DIXON ADA	MOTLEY HEIGHTS BLK-015 LOT-006	302	1510	270	450	
	206 CASEY ST		0	1960	0	15.00	
NO	ELIZ CITY,		302				
0.000	NC 27909						
24R01907 16300	LR QUARRY CO INC	MOTLEY HEIGHTS BLK-015 LOT-007	302	1510	270	450	
	PO BOX 672		0	1960	0	15.00	
NO	BENTON,		302				
0.000	AR 72015						
24R01907 16400	CARTER IKE	MOTLEY HEIGHTS BLK-015 LOT-008	302	1510	270	450	
	C/O IKE CARTER		0	1960	0	15.00	
NO	PO BOX 548		302				
0.000	BENTON,						
0.000	AR 72015						
24R01907 16500	DILL ROY	MOTLEY HEIGHTS BLK-015 LOT-009	302	10370	900	1500	
	PO BOX 72		1772	11870	0	50.00	
NO	COLLEGE STATION,		2074				
0.000	AR 72053						
24R01907 16600	WATKINS TOMIE	MOTLEY HEIGHTS BLK-015 LOT-010	302	1510	270	450	
	C/O PO BOX 186		0	1960	0	15.00	
NO			302				
0.000	COLLEGE STATION,						
0.000	AR 72053						
24R01907 16700	BOLDEN ROBT W III	MOTLEY HEIGHTS BLK-015 LOT-011	302	1510	270	450	
	3812 SAM PECK RD		0	1960	0	15.00	
NO	LITTLE ROCK,		302				
0.000	AR 722122104						
24R01907 16800	BOLDEN ROBT W III	MOTLEY HEIGHTS BLK-015 LOT-012	302	1510	270	450	
	3812 SAM PECK RD		0	1960	0	15.00	
NO	LITTLE ROCK,		302				
0.000	AR 72212						
24R01907 16900	TACKER COSIE	MOTLEY HEIGHTS BLK-016 LOT-001 MOTLEY HGHTS LTS 1 & 2 16	414	12230	954	1590	
	RT 2 BOX 573		2032	13820	0	53.00	
NO	LITTLE ROCK		2446				
0.000	AR 72206						
24R01907 17000	MCDONALD FLORENE	MOTLEY HEIGHTS BLK-016 LOT-003	302	1510	270	450	
	C/O HINTON PEGGY		0	1960	0	15.00	
NO	P O BOX 301		302				
0.000	COLLEGE STATION,						
0.000	AR 72053						
24R01907 17100	MCDONALD FLORENE	MOTLEY HEIGHTS BLK-016 LOT-004	302	19510	1278	2130	
	C/O HINTON PEGGY		3600	21640	0	71.00	
NO	P O BOX 301		3902				
0.000	COLLEGE STATION,						
0.000	AR 72053						
24R01907 17200	KING VERA MAE	MOTLEY HEIGHTS BLK-016 LOT-005	302	3510	630	1050	
	3821 SOUTHERN ST		400	4560	0	35.00	
NO	LITTLE ROCK,		702				
0.000	AR 722069137						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

NO	OWNER	ADDRESS	DISTRICT	SEWER	WATER	STORM	TOTAL
24R01907 17201	KING VERA MAE	MOTLEY HEIGHTS BLK-016 LOT-006	302	2920	630	1050	
			282	3970	0	35.00	
			584				
NO	3821 SOUTHERN ST LITTLE ROCK, AR 722069137						
24R01907 17202	DOZIER CLORIA	MOTLEY HEIGHTS BLK-016 LOT-006 IMPROVEMENTS ONLY	0	3540	630	1050	
			708	4590	0	35.00	
			708				
NO	4017 COMPANY ST COLLEGE STATION AR 72053						
24R01907 17300	GRIFFIN LOVITA	MOTLEY HEIGHTS BLK-016 LOT-007	302	2510	630	1050	
			200	3560	0	35.00	
			502				
NO	127 ALMOND CV SHERWOOD, AR 72116						
24R01907 17400	BEASLEY CAROLYN	MOTLEY HEIGHTS BLK-016 LOT-008	302	1510	270	450	
			0	1960	0	15.00	
			302				
NO	PO BOX 516 COLLEGE STATION, AR 72053						
24R01907 17500	MACK DOCK	MOTLEY HEIGHTS BLK-016 LOT-009	302	1510	270	450	
			0	1960	0	15.00	
			302				
NO	C/O BEASLEY CAROLYN PO BOX 516 COLLEGE STATION, AR 72053						
24R01907 17600	MACK DOCK	MOTLEY HEIGHTS BLK-016 LOT-010	302	1510	270	450	
			0	1960	0	15.00	
			302				
NO	P O BOX 516 COLLEGE STATION, AR 72053						
24R01907 17700	JONES SYLVIA D	MOTLEY HEIGHTS BLK-016 LOT-011	302	1510	270	450	
			0	1960	0	15.00	
			302				
NO	417 PAULA DR NO LITTLE ROCK, AR 72118						
24R01907 17800	JONES SYLVIA D	MOTLEY HEIGHTS BLK-016 LOT-012	302	23390	1440	2400	
			4376	25790	0	80.00	
			4678				
NO	417 PAULA DR NO LITTLE ROCK, AR 72118						
24R01907 17900	JOHNSON SYLVESTER &	MOTLEY HEIGHTS BLK-017 LOT-001	302	81510	3384	5640	
			16000	87150	0	188.00	
			16302				
NO	4300 SANDERS ST COLLEGE STATION, AR 72053						
24R01907 18000	JOHNSON SYLBESTER &	MOTLEY HEIGHTS BLK-017 LOT-002	302	1510	270	450	
			0	1960	0	15.00	
			302				
NO	4300 SANDERS ST COLLEGE STATION, AR 72053						
24R01907 18100	COLEMAN TRAVIS	MOTLEY HEIGHTS BLK-017 LOT-003	302	1510	270	450	
			0	1960	0	15.00	
			302				
NO	4109 FRANKLIN ST COLLEGE STATION, AR 72053						
24R01907 18200	BOOKER ODELL	MOTLEY HEIGHTS BLK-017 LOT-004	302	1510	270	450	
			0	1960	0	15.00	
			302				
NO	PO BOX 277 COLLEGE STATION AR 72053						

24R01907	BOOKER ODELL	MOTLEY HEIGHTS BLK-017 LOT-005	302	10790	900	1500	
18300			1856	12290	0	50.00	
	BOX 277		2158				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01907	COMIC ROBT	MOTLEY HEIGHTS BLK-017 LOT-006	302	13630	1008	1680	
18400	C/O RT 2 BOX 124		2424	15310	0	56.00	
			2726				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01907	GRAVES HOWARD & WF	MOTLEY HEIGHTS BLK-017 LOT-007 MOTLEY	526	20450	1278	2130	
18500		HGTS LTS 7-8-9 17	3564	22580	0	71.00	
	P O BOX 564		4090				
NO	COLLEGE STATION,						
0.000	AR 72053						
24R01907	LR QUARRY INC CO	MOTLEY HEIGHTS BLK-017 LOT-010	302	1510	270	450	
18600	C/O PO BOX 672		0	1960	0	15.00	
			302				
NO	BENTON,						
0.000	AR 72015						
24R01907	BLACKMAN DELLA	MOTLEY HEIGHTS BLK-017 LOT-011	302	1510	270	450	
18700			0	1960	0	15.00	
	4306 E 39TH		302				
NO	LITTLE ROCK,						
0.000	AR 722063722						
24R01907	BRIGGS ALENE	MOTLEY HEIGHTS BLK-017 LOT-012	302	1510	270	450	
18800	C/O SAMMY BOGAN		0	1960	0	15.00	
	RT 1 BOX 60-AA		302				
NO	ELSBERRY,						
0.000	MO 63343						
24R01925	BROADWAY QUINT T	FLETCHERS SUB BLK 3 LOT 1	2530	12650	270	450	
01500			0	13100	0	15.00	
	PO BOX 206		2530				
NO	COLLEGE STATION						
0.000	AR 72053						
24R01925	BROADWAY QUINT T	FLETCHERS SUB BLK 003 LOT 002	770	29580	1602	2670	
01600			5146	32250	0	89.00	
	PO BOX 206		5916				
NO	COLLEGE STATION						
0.000	AR 72053						
24R01925	DELFLORIAN BETTY	FLETCHERS SUB BLK 003 LOT 003	770	3850	270	450	
01700			0	4300	0	15.00	
	22 ALICIA DR		770				
NO	SHERWOOD						
0.000	AR 72120						
24R01925	TICE GUSTA M	FLETCHERS SUB E 1/2 OF LOT 001 BLK 004	396	1980	180	300	
02100			0	2280	0	10.00	
	3212 PARNELL RD		396				
NO	EL DORADO						
0.000	AR 71730						
24R01925	DOYNE D & A FAMILY LTD PT	FLETCHERS SUB W 1/2 OF LOT 001 BLK 004	466	2330	180	300	
02200			0	2630	0	10.00	
	PO BOX 166		466				
NO	COLLEGE STATION						
0.000	AR 72053						
24R01925	ROBINSON WILLIE & TRESSIE	FLETCHERS SUB S75' OF LOT 2 & N133.7' OF	770	58570	2844	4740	
02300		LOT 3	10944	63310	0	158.00	
	3801 SOUTHERN ST		11714				
NO	LITTLE ROCK						
0.000	AR 72206						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 87

Parcel ID	Owner Name	Address	Area (sq ft)	Area (sq ft)	Area (sq ft)	Area (sq ft)	Area (sq ft)
24R01925 02400	KINCHEN PETER L	FLETCHERS SUB N 133.7' OF LOT 002	472	2360	270	450	
			0	2810	0	15.00	
			472				
	5012 FRAZIER PIKE						
	COLLEGE STATION						
	0.000 AR 72206						
24R01925 02600	WINFREY LILLIAN	FLETCHERS SUB S 104.35' OF W 108.7' OF LOT 001 BLK 005	288	1440	270	450	
			0	1890	0	15.00	
			288				
	36043 M ROAD						
	LITTLE ROCK						
	0.000 AR 72206						
24R01925 02700	WINFREY MILTON	FLETCHERS SUB E100' OF LOT 001 BLK 005	524	36790	1980	3300	
			6834	40090	0	110.00	
			7358				
	PO BOX 601						
	COLLEGE STATION						
	0.000 AR 72053						
24R01925 02800	WINFREY DURLEY	FLETCHERS SUB N104.35' OF W 108.7' OF LOT 001 BLK 005	320	13600	1008	1680	
			2400	15280	0	56.00	
			2720				
	PO BOX 22						
	COLLEGE STATION						
	0.000 AR 72053						
24R01925 02900	DAVIS BILLY RAY	FLETCHERS SUB E50' OF BLK 005 LOT 002	356	19780	1278	2130	
			3600	21910	0	71.00	
			3956				
	PO BOX 62						
	COLLEGE STATION						
	0.000 AR 72053						
24R01925 03100	BEASLEY DORIS	FLETCHERS SUB BLK 005 LOT 003 FLETCHERS W50' OF E100' OF LOT 3	308	1540	270	450	
			0	1990	0	15.00	
			308				
	2527 EUCLID # 318-C						
	KANSAS CITY						
	0.000 MO 64127						
24R01925 03200	D&A DOYNE FAMILY LTD PT	FLETCHERS SUB E50' OF LOT 003 BLK 005	308	1540	270	450	
			0	1990	0	15.00	
			308				
	PO BOX 166						
	COLLEGE STATION						
	0.000 AR 72053						
24R01925 03300	MCBRIDE ALICE W	FLETCHERS SUBS79' OF W40' OF LOT 003 BLK 005 FMD 82117	206	18890	1332	2220	
			3572	21110	0	74.00	
			3778				
	PO BOX 146						
	COLLEGE STATION						
	0.000 AR 72053						
24R01925 03301	LEA LUCILLE	FLETCHER'S SUB BLK 005 LOT 003 N130' OF W40' OF LOT 3 FMD 82118	234	1170	270	450	
			0	1620	0	15.00	
			234				
	20709 WAMPOO RD						
	ENGLAND						
	0.000 AR 72046						
24R01925 03400	WALKER W J	FLETCHERS SUB E68.7' OF W108.7' OF LOT 003 BLK 005	362	1810	270	450	
			0	2260	0	15.00	
			362				
	PO BOX 591						
	LITTLE ROCK						
	0.000 AR 72203						
24R01925 03500	ANDERSON EZELL	FLETCHERS SUB W1/2 OF LOT 004 BLK 005	466	2330	180	300	
			0	2630	0	10.00	
			466				
	1024 LINCOLY PARK DR						
	DECATUR						
	0.000 IL 62522						
24R01925 03600	ANDERSON EZELL	FLETCHERS SUB E1/2 OF LOT 004 BLK 005	466	2330	180	300	
			0	2630	0	10.00	
			466				
	1024 LINCOLN PARK DR						
	DECATUR						
	0.000 IL 62522						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Address	Area	Acres	Value	Assessed Value	Special Assessment	Other
24R01925 03700	MCCLAIN ANNETTE	FLETCHERS SUB LOT 001 & PT 2 BEG SE COR LOT 002 W 68.7' N50' W40' N158.7' E108.7' S208.7' TO BEG	786 9000 9786	48930 53040	2466 0	4110 137.00		
		3715 3-M RD LITTLE ROCK 0.000 AR 72206						
24R01925 03800	HINES BEVERLY J	FLETCHERS SUB PT 3 BEG 100'N OF SW COR E150' N50' W150' S50' TO BEG	268 1562 1830	9150 10560	846 0	1410 47.00		
		2600 HIGH ST LITTLE ROCK 0.000 AR 72201						
24R01925 03900	MONTGOMERY JAMES	FLETCHERS SUB N158.7' OF E50' OF W100' OF LOT 002 BLK 006	316 1600 1916	9580 10990	846 0	1410 47.00		
		4106 W 26TH LITTLE ROCK 0.000 AR 72204						
24R01925 04100	SMITH PHYLLIS D & SHERMAN	FLETCHERS SUB PT LOT 002 BEG SW COR N50' E150' S50' W150' TO BEG BLK 006	310 4784 5094	25470 28050	1548 0	2580 86.00		
		PO BOX 287 COLLEGE STATION 0.000 AR 72053						
24R01925 04200	MONTGOMERY JAMES	FLETCHERS SUB N158.7' OF W50' OF LOT 002 BLK 006	316 3074 3390	16950 18900	1170 0	1950 65.00		
		4106 W 26TH LITTLE ROCK 0.000 AR 72204						
24R01925 04300	MCCLAIN ZACK JR	FLETCHERS SUB N58' OF LOT 003 BLK 006	332 1578 1910	9550 10960	846 0	1410 47.00		
		13580 WISCONSIN DETROIT 0.000 MI 48238						
24R01925 04400	MARKS SARAH JANE	FLETCHERS SUB PT LOT 003 BEG 75' N OF SE COR W58' N75' E58' S75' TO BEG BLK 006	258 2450 2708	13540 15220	1008 0	1680 56.00		
		1809 BOOKER LITTLE ROCK 0.000 AR 72204						
24R01925 04500	FOSTER JESSIE	FLETCHERS SUB PT LOT 3 BLK 6 BEG 50' N OF SW COR TH E150' N50' W150' S50' TO BEG	268 0 268	1340 1790	270 0	450 15.00		
		C/O 800 N CEDAR N LITTLE ROCK 0.000 AR 72114						
24R01925 04600	FITCH LETHA	FLETCHERS SUB PT LOT 3 BLK 006 BEG AT SW COR E150' N50' W150' S50' TO BEG	268 0 268	1340 1790	270 0	450 15.00		
		C/O MARY KING PO BOX 233 COLLEGE STATION 0.000 AR 72053						
24R01925 04700	PORTER FRANKLIN A	FLETCHERS SUB PT LOT 3 BEG SE COR W58' N75' E58' N75' TO BEG	222 4400 4622	23110 25510	1440 0	2400 80.00		
		3700 BEASLEY ST LITTLE ROCK 0.000 AR 72206						
24R01925 04800	KENDALL ARTHUR M & JONIA	FLETCHERS SUB S 1/2 LOT 4 EXC W50' BLK 006	392 2982 3374	16870 18730	1116 0	1860 62.00		
		PO BOX 14 COLLEGE STATION 0.000 AR 72053						
24R01925 04900	THOMPSON LAWRENCE	FLETCHERS SUB N 1/2 LOT 4 BLK 006	366 2000 2366	11830 13420	954 0	1590 53.00		
		8 CHICAGO ST LITTLE ROCK 0.000 AR 72206						

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Parcel ID	Owner Name	Address	Area	Value	Area	Value	Value	Value
24R01925 05000	PORTER FRANKLIN A	FLETCHERS SUB W 50' OF S 1/2 LOT 4 BLK 006	234	14350	1062	1770		
			2636	16120	0	59.00		
			2870					
	3700 BEASLEY ST LITTLE ROCK AR 72206							
24R01931 00100	CARTER IKE	SAM CARTER SUB S50' OF LOT 001 BLK 000	272	1360	270	450		
			0	1810	0	15.00		
			272					
	PO BOX 548 BENTON AR 72105							
24R01931 00200	THOMPSON MATTIE	SAM CARTER SUB PT TR 1 BEG 12' S OF NE COR W104' S100' E104' N100' TO BEG BLK 000	356	21780	1386	2310		
			4000	24090	0	77.00		
			4356					
	3522 E 41ST COLLEGE STATION AR 72035							
24R01931 00201	TEASLEY FLOYD	SAM CARTER SUB N 12' OF LOT 1 BLK 000	210	1050	270	450		
			0	1500	0	15.00		
			210					
	PO BOX 92 COLLEGE STATION AR 72053							
24R01931 00300	CARADINE HARVEY & DOROTHY	SAM CARTER SUB 50' N&S BY 104' E&W BEG 316' S OF NE COR OF LOT 1 BLK 000	260	1300	270	450		
			0	1750	0	15.00		
			260					
	427 W 101ST PL CHICAGO IL 60628							
24R01931 00400	TEASLEY FLOYD	PT LOT 1 BEG 212' S OF NE COR S50' W104' N50' E104' TO BEG BLK 000	234	1170	270	450		
			0	1620	0	15.00		
			234					
	PO BOX 92 COLLEGE STATION AR 72053							
24R01931 00500	KENDALL ALVIN	SAM CARTER SUB PT LOT 1 BEG 112' S OF NE COR TH W104' S50' E104' N50' TO BEG BLK 000	272	1360	270	450		
			0	1810	0	15.00		
			272					
	RT 2 BOX 571 LITTLE ROCK AR 72206							
24R01931 00600	WALKER WILMA G	SAM CARTER SUB S50' OF N212' OF LOT 001 BLK 000	234	18200	1224	2040		
			3406	20240	0	68.00		
			3640					
	PO BOX 205 COLLEGE STATION AR 72053							
24R01931 00700	TEASLEY FLOYD	SAM CARTER SUB S50' OF N212' OF LOT 1 BLK 000	234	14950	1116	1860		
			2756	16810	0	62.00		
			2990					
	PO BOX 92 COLLEGE STATION AR 72053							
24R01931 00800	THOMPSON ANTHONY &	SAM CARTER SUB BEG NW COR LOT 2 THEN E60' S110' W60' N110' TO BEG BLK 000	680	19430	1170	1950		
			3206	21380	0	65.00		
			3886					
	7500 SANDRA DR LITTLE ROCK AR 72209							
24R01931 00801	THOMPSON WALTER JR	PT LOT 2 MPDA BEG NW COR LOT 2 THEN E60' S110' W60' N110' TO BEG	202	1010	270	450		
			0	1460	0	15.00		
			202					
	1600 W ROOSEVELT RD LITTLE ROCK AR 72206							
24R01931 00900	HUTCHINSON CHAS	SAM CARTER SUB S152.6' OF N1/2 LOT3	316	14280	1062	1770		
			2540	16050	0	59.00		
			2856					
	4711 FRAZIER PIKE LITTLE ROCK AR 72206							

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page 90

Account No	Property Name	Address	Block	Area	Volume	Value	Area	Value
24R01931 01000	RUFFIN ROSE	6401 E 49TH N LITTLE ROCK	SAM CARTER SUB E 1/2 LOT 003 BLK 000	536 1924 2460	12300 13800	900 0	1500 50.00	
24R01931 01100	RUFFIN ROSE	418 E 49TH N LITTLE ROCK	SAM CARTER SUB N263.4' OF W1/2 LOT 3 BLK000	408 2000 2408	12040 13630	954 0	1590 53.00	
24R01931 01200	RUFFIN ROSE	6401 E 49TH N LITTLE ROCK	CARTERS SUB LOT 4 BLK 000	768 1804 2572	12860 14360	900 0	1500 50.00	
24R01931 01300	WINFREY LAURY	3501 3-M RD LITTLE ROCK	CARTERS SUB N1/2 LOT 005 BLK 000	536 6508 7044	35220 38430	1926 0	3210 107.00	
24R01931 01400	FISCHER HAROLD A	6209 KENWOOD LITTLE ROCK	CARTERS SUB N1/2 OF S1/2 OF LOT005 BLK 000	314 0 314	1570 1870	180 0	300 10.00	
24R01931 01500	WILLIAMS LEM JR	RT2 GENEVA	CARTERS SUB S1/2 S1/2 S1/2 OF LOT 005 BLK 000	234 4000 4234	21170 23480	1386 0	2310 77.00	
24R01931 01600	WILLIAMS LAURA	PO BOX 435 COLLEGE STATION	CARTERS SUB N1/2 S1/2 S1/2 LOT 005 BLK 000	234 0 234	1170 1470	180 0	300 10.00	
24R01931 01700	BOSTIAN U H	C/O NANCY YOUNG 1503 MAIN ST N LITTLE ROCK	CARTERS SUB W1/2 OF LOT 6 BLK 000	362 0 362	1810 1900	54 0	90 3.00	
24R01931 01800	TERRY LESSIE MAE	PO BOX 176 COLLEGE STATION	CARTERS SUB E 1/2 OF LOT 6 BLK 000	362 0 362	1810 1900	54 0	90 3.00	
24R01931 01900	MONTGOMERY SANDRA E &	9711 WOODFORD DR LITTLE ROCK	CARTERS SUB W 1/2 LOT 7 BLK 000	536 0 536	2680 2770	54 0	90 3.00	
24R01931 0200	JOHNSON DORIS	2309 WILLOW N LITTLE ROCK	CARTERS SUB E 1/2 OF LOT 7 SUBJ TO ANY RW OF EASEMAEN BLK 000	536 0 536	2680 2770	54 0	90 3.00	
24R01931 02100	WHITE ULYSSES	PO BOX 175 COLLEGE STATION	CARTERS SUB PT LOT 8 BEG 50' E OF NW COR S146' E62.5' N146' W60.4' TO BEG BLK 000	330 0 330	1650 1740	54 0	90 3.00	

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

Page

91

Parcel ID	Owner	Address	Legal Description	Area	Volume	Area	Volume	Area	Volume
24R01931 02200	WHITE ULYSSES	PO BOX 175 COLLEGE STATION AR 72053	CARTERS SUB PT LOT 8 BEG NW COR E50' S146' W50' N146' TO BEG BLK 000	306 2484 2790	13950 15630	1008 0	1680 56.00		
24R01931 02300	KING VERA M	3821 SOUTHERN ST LITTLE ROCK AR 72206	CARTERS SUB S62' OF LOT 8 BLK 000	264 0 264	1320 1770	270 0	450 15.00		
24R01931 02400	TALLEY CHAS & ROSE	PO BOX 183 COLLEGE STATION AR 72053	CARTERS SUB TR 104' E&W BY 146' N&S IN THE NE COR LOT 008 BLK 000	432 464 896	4480 5530	630 0	1050 35.00		
24R01931 02500	MASON WILLIE	2 IVES WALK LITTLE ROCK AR 72206	CARTERS SUB PT LOT 9 BEG NE COR W48' S95' E48' N95' TO BEG BLK 000	262 0 262	1310 1760	270 0	450 15.00		
24R01931 02600	GRISSOM LONNIE	PO BOX 56 ENGLAND AR 72046	CARTERS SUB S 109' OF LOT 9 & N 12' OF LOT 10 BLK 000	1044 2366 3410	17050 18730	1008 0	1680 56.00		
24R01931 02700	MASON WILLIE	2 IVES WALK LITTLE ROCK AR 72206	CARTERS SUB PT N1/2 OF LOT 9 BEG 60' E OF NW COR SEC 19 E48' S95' W49' N95' TO BEG BLK 000	262 0 262	1310 1760	270 0	450 15.00		
24R01931 02800	MASON WILLIE	2 IVES WALK LITTLE ROCK AR 72206	CARTERS SUB PT N1/2 OF LOT 9 BEG NW COR NW NW SEC 19 E60' S95' W60' N95' TO BEG AND BEG 108'E OF NW COR E52' S93' W52' N95' TO BEG	358 3862 4220	21100 23320	1332 0	2220 74.00		
24R01931 02900	MONTGOMERY JOHNNY	4009 RANGEL RD LITTLE ROCK AR 72206	CARTERS SUB S52' OF LOT 10 BLK 000	362 3374 3736	18680 20720	1224 0	2040 68.00		
24R01931 03000	SQUARE DEAL INC	101 E WASHINGTON AVE N LITTLE ROCK AR 72114	CARTERS SUB S40' N 1/2 LOT 10 BEG 220' S NW COR NW NW E208' S40' W208' N40' TO BEG EXC 20' RD BLK 000	278 2654 2932	14660 16430	1062 0	1770 59.00		
24R01931 03100	GRISSOM LONNIE	PO BOX 524 GENEVA AR 72053	CARTERS SUB BLK 000 LOT 11	536 0 536	2680 3130	270 0	450 15.00		
24R01931 03200	WILLIAMS LEM	C/O PO BOX 435 GENEVA AR 72053	CARTERS SUB W70' OF S1/2 OF LOT 12	206 0 206	1030 1330	180 0	300 10.00		
24R01931 03300	WILLIAMS LAURA	PO BOX 435 COLLEGE STATION AR 72053	CARTERS SUB E34' OF S 1/2 OF LOT 12	182 0 182	910 1210	180 0	300 10.00		

COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT NO. 243 OF PULASKI COUNTY

24R01931	WILLIAMS MYRA	CARTERS SUB PT LOT 12	244	1220	180	300
03400			0	1520	0	10.00
	PO BOX 435		244			
NO	COLLEGE STATION					
0.000	AR 72053					
4R18610	THOMPSON RICHARD E & MYRA	FRISBY SUB N70' OF LOT 11 & 12 BLK 005	414	18350	1224	2040
1500			3256	20390	0	68.00
	8900 HWY 365		3670			
NO	LITTLE ROCK					
0.000	AR 72206					

1086 Total Parcels

LAND	IMPROVEMENTS	TOTAL	ASSESSED BENEFITS	ANNUAL CHARGE
297,342	1,684,616	1,981,958	1,044,240	34,808.00 All Parcels

BLAYLOCK, THREET, PHILLIPS & ASSOCIATES, INC.

Consulting Engineers - Land Surveyors

1501 MARKET DRIVE
LITTLE ROCK, ARKANSAS 72211
(501) 224-3922 (501) 224-3926 FAX
email: BTPA@SWBELL.NET

LETTER OF TRANSMITTAL

TO Don Hamilton, Attorney
c/o Little Rock Wastewater Utility
221 East Capitol
Little Rock, AR 72202

DATE February 6, 1998 JOB NO. 97-069-4

ATTENTION _____

RE: College Station Wastewater Facilities

WE ARE SENDING YOU Attached Under separate cover via _____ the following items:
 Shop drawings Prints Copy of letter Plans Samples Specifications
 Estimate Change Order See Below

COPIES (SETS)	DESCRIPTION
6	Blue Lines Boundary District No. 243
1	District Legal Description

THESE ARE TRANSMITTED as checked below:

HAND DELIVERED

- For approval Approved as submitted Resubmit _____ copies for approval
- For your use Approved as noted Submit _____ copies for distribution
- As requested Returned for corrections Return _____ corrected prints
- For review and comment _____

FOR BIDS DUE _____, 19____ PRINTS RETURNED AFTER LOAN TO US

REMARKS

COPY TO _____ SIGNED JAMES L. PHILLIPS, P.E., R.L.S.

If enclosures are not as noted, kindly notify us at once.

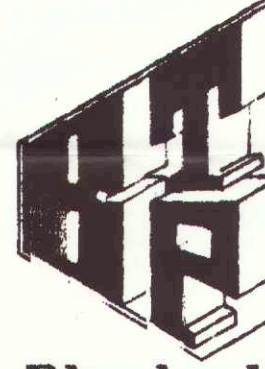
EXHIBIT "2"

Map of the boundary of SID 243
and legal description, consisting
of map and pages 1-5

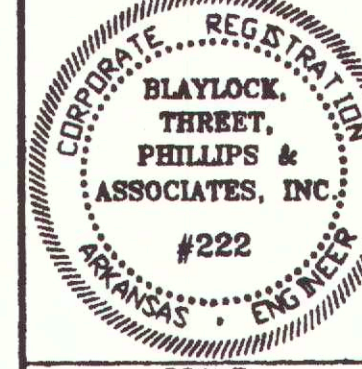
DATE	REVISIONS

SURVEY BY:
 CHECKED BY:
 DRAWN BY:
 DESIGN BY:

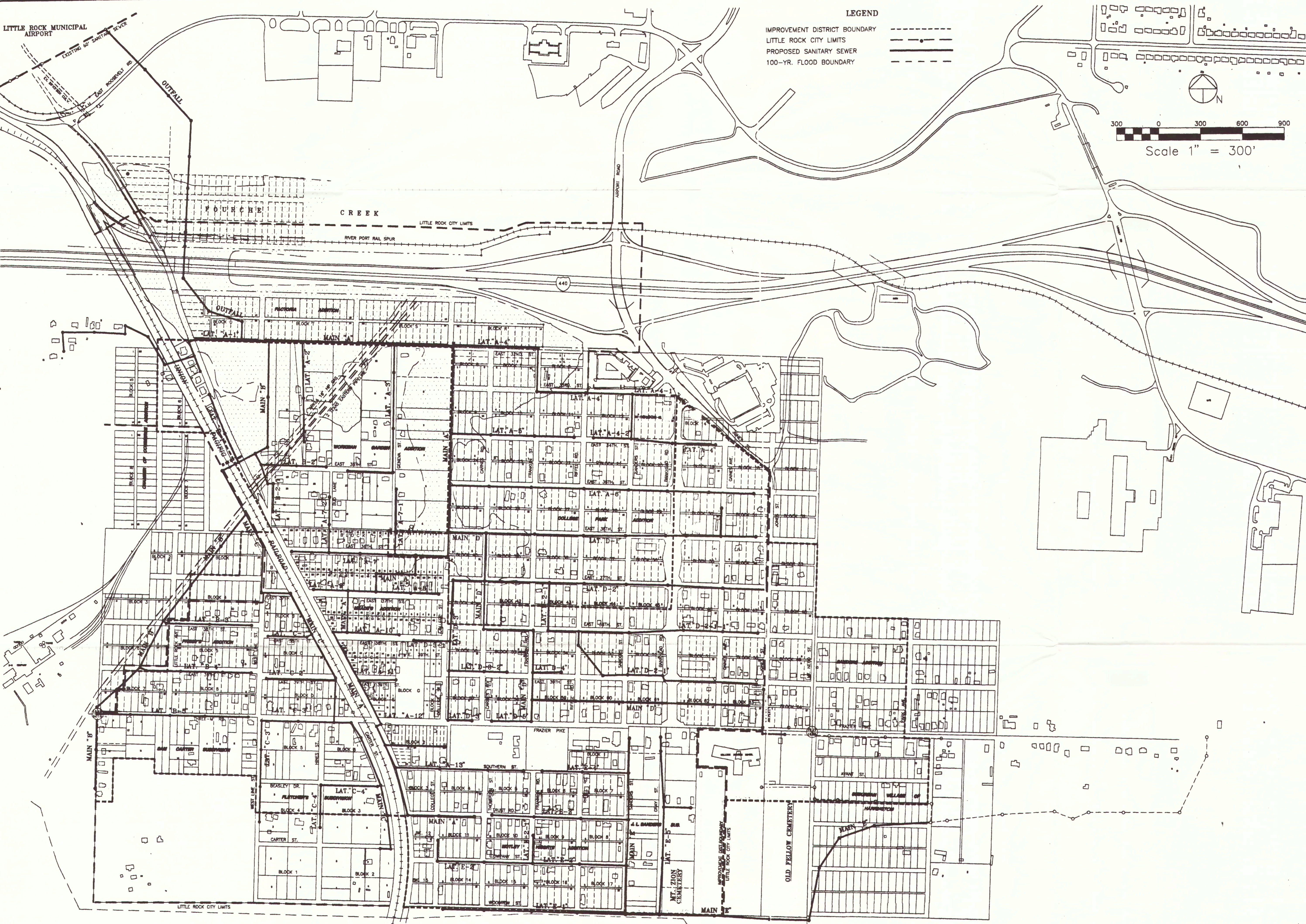
COLLEGE STATION WASTEWATER IMPROVEMENTS
 COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT #243
 GENERAL LAYOUT
 PULASKI COUNTY
 ARKANSAS



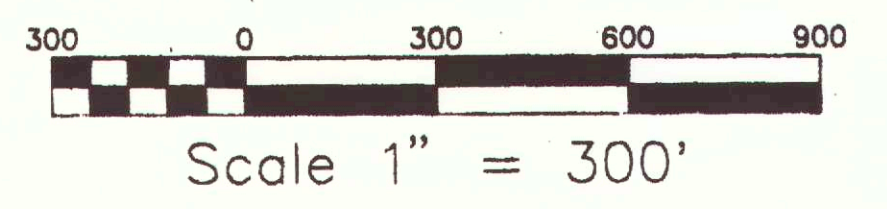
Blaylock Threeth Phillips and Associates Inc.
 consulting engineers
 MECHANICAL-ELECTRICAL-CIVIL-SURVEYING
 1501 MARKET DRIVE
 LITTLE ROCK, ARKANSAS 72211



SCALE:
 1" = 300'-0"
 DATE: PROJECT NO.
 JAN. 1998 81-095-4



LEGEND
 IMPROVEMENT DISTRICT BOUNDARY (---)
 LITTLE ROCK CITY LIMITS (—)
 PROPOSED SANITARY SEWER (—)
 100-YR. FLOOD BOUNDARY (---)



LEGAL DESCRIPTION

COLLEGE STATION SUBURBAN

SEWER IMPROVEMENT DISTRICT #243

(REVISED SEPTEMBER 23, 1997)

PART OF SECTIONS 17, 18, 19, AND 20, T-1-N, R-11-W OF THE FIFTH PRINCIPAL MERIDIAN, PULASKI COUNTY, ARKANSAS; MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SECTION 18, T-1-N, R-11-W; THENCE EAST ALONG THE SOUTH LINE OF SAID SECTION 18 TO ITS POINT OF INTERSECTION WITH THE WEST LINE OF LOT 12, BLOCK 7, FRISBY'S ADDITION, EXTENDED SOUTH; THENCE NORTH ALONG SAID WEST LINE OF LOT 12 TO THE SOUTHWEST CORNER OF LOT 7, BLOCK 7, FRISBY'S ADDITION; THENCE EAST ALONG THE SOUTH LINE OF SAID LOT 7 TO THE SOUTHEAST CORNER OF SAID LOT 7; THENCE NORTH ALONG THE EAST LINE OF SAID LOT 7 TO THE NORTHWEST CORNER OF LOT 6, BLOCK 7, FRISBY'S ADDITION; THENCE EAST ALONG THE NORTH LINE OF BLOCK 7, FRISBY'S ADDITION TO THE NORTHEAST CORNER THEREOF; THENCE NORTH ALONG THE EAST LINE OF BLOCK 6, FRISBY'S ADDITION TO THE SOUTHEAST CORNER OF BLOCK 3, FRISBY'S ADDITION; THENCE EAST ALONG THE SOUTH LINE OF BLOCK 4, FRISBY'S ADDITION TO THE SOUTHWEST CORNER OF LOT 15, BLOCK 4; THENCE NORTH ALONG THE WEST LINE OF LOTS 10 AND 15, BLOCK 4 TO A POINT ON THE SOUTH LINE OF BLOCK 1, FRISBY'S ADDITION; THENCE EAST ALONG SAID SOUTH LINE OF BLOCK 1 TO THE SOUTHWEST CORNER OF LOT 21, BLOCK 1, FRISBY'S ADDITION; THENCE NORTH ALONG THE WEST LINE OF LOTS 2 AND 21, BLOCK 1, TO A POINT ON THE SOUTH LINE OF THE CHAMBER

OF COMMERCE ADDITION; THENCE EAST ALONG SAID SOUTH ADDITION LINE EXTENDED TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE OF THE UNION PACIFIC RAILROAD; THENCE NORTHWESTERLY ALONG SAID EASTERLY RIGHT-OF-WAY LINE TO ITS POINT OF INTERSECTION WITH THE NORTH LINE OF BLOCK 7, CHAMBER OF COMMERCE ADDITION EXTENDED; THENCE WEST ALONG SAID NORTH LINE TO THE NORTHEAST CORNER OF BLOCK 8, CHAMBER OF COMMERCE ADDITION; THENCE NORTH ALONG THE EAST LINE OF BLOCK 5, CHAMBER OF COMMERCE ADDITION TO A POINT ON THE NORTH LINE OF THE SW 1/4, SECTION 18, T-1-N, R-11-W; THENCE EAST ALONG SAID NORTH LINE OF SAID SW 1/4 TO THE NORTHWEST CORNER OF SE 1/4, SECTION 18, T-1-N, R-11-W; THENCE SOUTH ALONG THE WEST LINE OF SAID SE 1/4 TO THE NORTHEAST CORNER OF MEADE'S ADDITION; THENCE WEST ALONG THE NORTH LINE OF MEADE'S ADDITION TO THE NORTHWEST CORNER OF LOT 10, BLOCK "K", MEADE'S ADDITION; THENCE SOUTH ALONG THE WEST LINE OF LOT 10 TO A POINT ON THE NORTH LINE OF BLOCK "J" OF MEADE'S ADDITION; THENCE EAST ALONG SAID NORTH LINE OF BLOCK "J" TO A POINT ON THE WEST LINE OF BLOCK 40, COLLEGE PARK ADDITION; THENCE SOUTH ALONG THE WEST LINE OF BLOCKS 40 AND 41, COLLEGE PARK ADDITION TO THE SOUTHWEST CORNER OF BLOCK 41; THENCE EAST ALONG THE SOUTH LINES OF BLOCKS 41 AND 42, COLLEGE PARK ADDITION TO THE SOUTHWEST CORNER OF LOT 9, BLOCK 42, SAID ADDITION; THENCE NORTH ALONG THE WEST LINE OF LOT 9, BLOCK 42 TO THE NORTHWEST CORNER OF SAID LOT 9; THENCE EAST ALONG SOUTH ALLEY LINE OF BLOCKS 42, 43, 44 AND 45 TO THE NORTHEAST CORNER OF LOT 12, BLOCK 45, COLLEGE PARK ADDITION; THENCE NORTH ALONG THE EAST LINES OF BLOCKS 45, 36, 29, 20 AND 13, COLLEGE PARK ADDITION TO A POINT ON THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF

JONES/BANKHEAD ROAD; THENCE SOUTHEASTERLY ALONG THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF JONES/BANKHEAD ROAD TO A POINT ON THE EAST LINE OF BLOCK 18, COLLEGE PARK ADDITION; THENCE SOUTH ALONG THE EAST LINE OF BLOCKS 18 AND 31, COLLEGE PARK ADDITION TO THE NORTHEAST CORNER OF BLOCK 34, COLLEGE PARK ADDITION; THENCE EAST ALONG THE NORTH LINE OF BLOCK 33, SAID ADDITION TO A POINT ON THE EAST LINE OF SECTION 18, T-1-N, R-11-W; THENCE SOUTH ALONG SAID EAST LINE OF SECTION 18 TO ITS POINT OF INTERSECTION WITH THE NORTH LINE OF SANDERS ADDITION; THENCE EAST ALONG SAID NORTH ADDITION LINE TO THE NORTHEAST CORNER OF BLOCK 2, SANDERS ADDITION; THENCE SOUTH ALONG THE EAST LINES OF BLOCKS 2, 3, AND 6 TO A POINT ON THE NORTH LINE OF BLOCK 1, SUBURBAN VILLAGE OF HARRINGTON ADDITION; THENCE EAST ALONG SAID NORTH LINE OF BLOCK 1 TO THE NORTHEAST CORNER OF BLOCK 1, SAID ADDITION; THENCE SOUTH ALONG THE EAST LINES OF BLOCKS 1 AND 2, SUBURBAN VILLAGE OF HARRINGTON ADDITION TO THE NORTHEAST CORNER OF LOT 32, BLOCK 2, SAID ADDITION; THENCE WEST ALONG THE NORTH LINE OF LOTS 17 THROUGH 32 EXTENDED TO A POINT 708.6 FEET EAST OF THE WEST LINE OF THE NE 1/4 NE 1/4, SECTION 19, T-1-N, R-11-W; THENCE SOUTH AND PARALLEL TO SAID WEST LINE NE 1/4 NE 1/4 TO A POINT ON THE SOUTH LINE OF SAID NE 1/4 NE 1/4, SECTION 19, T-1-N, R-11-W; THENCE WEST ALONG THE NE 1/4 NE 1/4 AND NW 1/4 NE 1/4 AND NE 1/4 NE 1/4, SECTION 19, T-1-N, R-11-W TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE OF THE UNION PACIFIC RAILROAD; THENCE NORTHERLY ALONG SAID EASTERLY RIGHT-OF-WAY LINE TO ITS POINT OF INTERSECTION WITH THE SOUTH LINE OF LOTS 1, 2 AND 3, BLOCK 3, FLETCHER'S SUBDIVISION; THENCE WEST ALONG SAID SOUTH LINE EXTENSION

THROUGH BLOCKS 3 AND 4, FLETCHER'S SUBDIVISION TO A POINT ON THE WEST LINE OF FLETCHER'S SUBDIVISION; THENCE NORTH ALONG SAID WEST SUBDIVISION LINE TO THE SOUTHEAST CORNER OF LOT 1, SAM CARTER'S SUBDIVISION; THENCE WEST ALONG THE SOUTH ADDITION LINE OF SAM CARTER'S SUBDIVISION TO THE SOUTHWEST CORNER OF LOT 7; THENCE NORTH ALONG THE WEST LINE OF LOT 7, TO THE SOUTHEAST CORNER OF LOT 11; THENCE WEST ALONG THE SOUTH LINES OF LOTS 10 AND 11 TO A POINT 120 FEET EAST OF THE WEST LINE OF SECTION 19, T-1-N, R-11-W; THENCE SOUTH 313 FEET AND PARALLEL TO THE WEST LINE OF SECTION 19 TO A POINT; THENCE WEST 120 FEET TO A POINT ON SAID WEST SECTION 19; THENCE NORTH 625 FEET ALONG SAID WEST SECTION LINE TO THE POINT OF BEGINNING.

§ 403.1

40 CFR Ch. I (7-1-96)

- 403.10 Development and submission of NPDES State pretreatment programs.
- 403.11 Approval procedures for POTW pretreatment programs and POTW granting of removal credits.
- 403.12 Reporting requirements for POTW's and industrial users.
- 403.13 Variances from categorical pretreatment standards for fundamentally different factors.
- 403.14 Confidentiality.
- 403.15 Net/Gross calculation.
- 403.16 Upset provision.
- 403.17 Bypass.
- 403.18 Modification of POTW Pretreatment Programs.

APPENDIX A TO PART 403—PROGRAM GUIDANCE MEMORANDUM

APPENDIX B TO PART 403—[RESERVED]

APPENDIX C TO PART 403—[RESERVED]

APPENDIX D TO PART 403—SELECTED INDUSTRIAL SUBCATEGORIES CONSIDERED DILUTE FOR PURPOSES OF THE COMBINED WASTEWATER FORMULA

APPENDIX E TO PART 403—SAMPLING PROCEDURES

APPENDIX F [RESERVED]

APPENDIX G TO PART 403—Pollutants Eligible for a Removal Credit

AUTHORITY: Sec. 5(c)(2) of the Clean Water Act of 1977, (Pub. L. 95-217) sections 204(b)(1)(C), 208(b)(2)(C)(iii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(b)(2)(C), 301(h)(5), 301(i)(2), 304(e), 304(g), 307, 308, 309, 402(b), 405 and 501(a) of the Federal Water Pollution Control Act (Pub. L. 92-500) as amended by the Clean Water Act of 1977 and the Water Quality Act of 1987 (Pub. L. 100-4).

SOURCE: 46 FR 3439, Jan. 23, 1981, unless otherwise noted.

§ 403.1 Purpose and applicability.

(a) This part implements sections 204(b)(1)(C), 208(b)(2)(C)(iii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(b)(2)(C), 301(h)(5), 301(i)(2), 304(e) and (g), 307, 308, 309, 402(b), 405, and 501(a) of the Federal Water Pollution Control Act as amended by the Clean Water Act of 1977 (Pub. L. 95-217) or "The Act". It establishes responsibilities of Federal, State, and local government, industry and the public to implement National Pretreatment Standards to control pollutants which pass through or interfere with treatment processes in Publicly Owned Treatment Works (POTW) or which may contaminate sewage sludge.

(b) This regulation applies:

(1) To pollutants from non-domestic sources covered by Pretreatment Standards which are indirectly discharged into or transported by truck or

rail or otherwise introduced into POTW's as defined below in § 403.3;

(2) To POTW's which receive wastewater from sources subject to National Pretreatment Standards;

(3) To States which have or are applying for National Pollutant Discharge Elimination System (NPDES) programs approved in accordance with section 402 of the Act; and

(4) To any new or existing source subject to Pretreatment Standards. National Pretreatment Standards do not apply to sources which Discharge to a sewer which is not connected to a POTW Treatment Plant.

(46 FR 9439, Jan. 23, 1981, as amended at 48 FR 2776, Jan. 21, 1983; 60 FR 23332, June 23, 1995)

§ 403.2 Objectives of general pretreatment regulations.

By establishing the responsibilities of government and industry to implement National Pretreatment Standards this regulation fulfills three objectives:

(a) To prevent the introduction of pollutants into POTW's which will interfere with the operation of a POTW, including interference with its use or disposal of municipal sludge;

(b) To prevent the introduction of pollutants into POTW's which will pass through the treatment works or otherwise be incompatible with such works; and

(c) To improve opportunities to recycle and reclaim municipal and industrial wastewaters and sludges.

§ 403.3 Definitions.

For the purposes of this part:

(a) Except as discussed below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR part 401 shall apply to this regulation.

(b) The term Act means Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq.

(c) The term Approval Authority means the Director in an NPDES State with an approved State pretreatment program and the appropriate Regional Administrator in a non-NPDES State or NPDES State without an approved State pretreatment program.

EXHIBIT "3"

Copy of definitions contained in 40 C.F.R. Sec. 403.3, as amended consisting of 4 pages

(d) The term *Approved POTW Pretreatment Program* or *Program* or *POTW Pretreatment Program* means a program administered by a POTW that meets the criteria established in this regulation (§§ 403.8 and 403.9) and which has been approved by a Regional Administrator or State Director in accordance with § 403.11 of this regulation.

(e) The term *Director* means the chief administrative officer of a State or Interstate water pollution control agency with an NPDES permit program approved pursuant to section 402(b) of the Act and an approved State pretreatment program.

(f) The term *Water Management Division Director* means one of the Directors of the Water Management Divisions within the Regional offices of the Environmental Protection Agency or this person's delegated representative.

(g) The term *Indirect Discharge* or *Discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under section 307(b), (c) or (d) of the Act.

(h) The term *Industrial User* or *User* means a source of Indirect Discharge.

(i) The term *Interference* means a Discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

(1) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(2) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

(j) The term *National Pretreatment Standard*, *Pretreatment Standard*, or *Standard* means any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307 (b) and (c) of the Act, which applies to Industrial Users. This term includes prohibitive discharge limits established pursuant to § 403.5.

(k)(1) The term *New Source* means any building, structure, facility or installation from which there is or may be a Discharge of pollutants, the construction of which commenced after the publication of proposed Pretreatment Standards under section 307(c) of the Act which will be applicable to such source if such Standards are thereafter promulgated in accordance with that section, *provided that*:

(i) The building, structure, facility or installation is constructed at a site at which no other source is located; or

(ii) The building, structure, facility or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

(iii) The production or wastewater generating processes of the building, structure, facility or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source should be considered.

(2) Construction on a site at which an existing source is located results in a modification rather than a new source if the construction does not create a new building, structure, facility or installation meeting the criteria of paragraphs (k)(1)(ii), or (k)(1)(iii) of this section but otherwise alters, replaces, or adds to existing process or production equipment.

(3) Construction of a new source as defined under this paragraph has commenced if the owner or operator has:

(i) Begun, or caused to begin as part of a continuous onsite construction program:

(A) Any placement, assembly, or installation of facilities or equipment; or

(B) Significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or

(ii) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.

(l) The terms *NPDES Permit* or *Permit* means a permit issued to a POTW pursuant to section 402 of the Act.

(m) The term *NPDES State* means a State (as defined in 40 CFR 122.2) or Interstate water pollution control agency with an NPDES permit program approved pursuant to section 402(b) of the Act.

(n) The term *Pass Through* means a discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

(o) The term *Publicly Owned Treatment Works* or *POTW* means a treatment works as defined by section 212 of the Act, which is owned by a State or municipality (as defined by section 502(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in section 502(4) of the Act, which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works.

(p) The term *POTW Treatment Plant* means that portion of the POTW which is designed to provide treatment (in-

cluding recycling and reclamation) of municipal sewage and industrial waste.

(q) The term *Pretreatment* means the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. The reduction or alteration may be obtained by physical, chemical or biological processes, process changes or by other means, except as prohibited by § 403.6(d). Appropriate pretreatment technology includes control equipment, such as equalization tanks or facilities, for protection against surges or slug loadings that might interfere with or otherwise be incompatible with the POTW. However, where wastewater from a regulated process is mixed in an equalization facility with unregulated wastewater or with wastewater from another regulated process, the effluent from the equalization facility must meet an adjusted pretreatment limit calculated in accordance with § 403.6(e).

(r) The term *Pretreatment requirements* means any substantive or procedural requirement related to Pretreatment, other than a National Pretreatment Standard, imposed on an Industrial User.

(s) The term *Regional Administrator* means the appropriate EPA Regional Administrator.

(t) *Significant Industrial User*. (1) Except as provided in paragraph (t)(2) of this section, the term *Significant Industrial User* means:

(i) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N; and

(ii) Any other industrial user that discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, non-contact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority as defined in 40 CFR 403.12(a) on the

Environmental Protection Agency

§403.5

basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(O)(6)).

(2) Upon a finding that an industrial user meeting the criteria in paragraph (1)(ii) of this section has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority (as defined in 40 CFR 403.12(a)) may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(O)(6), determine that such industrial user is not a significant industrial user.

(u) The term *Submission* means:

(1) A request by a POTW for approval of a Pretreatment Program to the EPA or a Director;

(2) A request by a POTW to the EPA or a Director for authority to revise the discharge limits in categorical Pretreatment Standards to reflect POTW pollutant removals; or

(3) A request to the EPA by an NPDES State for approval of its State pretreatment program.

146 FR 9439, Jan. 23, 1981, as amended at 49 FR 5132, Feb. 10, 1984; 49 FR 23059, July 10, 1984; 51 FR 20430, June 4, 1986; 51 FR 23760, July 1, 1986; 52 FR 1600, Jan. 14, 1987; 53 FR 40510, Oct. 17, 1988; 55 FR 90129, July 24, 1990]

§403.4 State or local law.

Nothing in this regulation is intended to affect any Pretreatment Requirements, including any standards or prohibitions, established by State or local law as long as the State or local requirements are not less stringent than any set forth in National Pretreatment Standards, or any other requirements or prohibitions established under the Act or this regulation. States with an NPDES permit program approved in accordance with section 402 (b) and (c) of the Act, or States requesting NPDES programs, are responsible for developing a State pretreatment program in accordance with §403.10 of this regulation.

§403.5 National pretreatment standards: Prohibited discharges.

(a)(1) *General prohibitions.* A User may not introduce into a POTW any pollutant(s) which cause Pass Through or Interference. These general prohibitions and the specific prohibitions in paragraph (b) of this section apply to each User introducing pollutants into a POTW whether or not the User is subject to other National Pretreatment Standards or any national, State, or local Pretreatment Requirements.

(2) *Affirmative Defenses.* A User shall have an affirmative defense in any action brought against it alleging a violation of the general prohibitions established in paragraph (a)(1) of this section and the specific prohibitions in paragraphs (b)(3), (b)(4), (b)(5), (b)(6), and (b)(7) of this section where the User can demonstrate that:

(i) It did not know or have reason to know that its Discharge, alone or in conjunction with a discharge or discharges from other sources, would cause Pass Through or Interference; and

(ii)(A) A local limit designed to prevent Pass Through and/or Interference, as the case may be, was developed in accordance with paragraph (c) of this section for each pollutant in the User's Discharge that caused Pass Through or Interference, and the User was in compliance with each such local limit directly prior to and during the Pass Through or Interference; or

(B) If a local limit designed to prevent Pass Through and/or Interference, as the case may be, has not been developed in accordance with paragraph (c) of this section for the pollutant(s) that caused the Pass Through or Interference, the User's Discharge directly prior to and during the Pass Through or Interference did not change substantially in nature or constituents from the User's prior discharge activity when the POTW was regularly in compliance with the POTW's NPDES permit requirements and, in the case of Interference, applicable requirements for sewage sludge use or disposal.

(b) *Specific prohibitions.* In addition, the following pollutants shall not be introduced into a POTW:

***Capacity Calculation of New Collector Serving the Portion of
College Station that Lies in Pulaski County***

Problem: Determine capacity of proposed 15" collector

Given: Pipe material = PVC
Pipe diameter = 15"
Slope = 0.15 %
Design Capacity = 70% Full pipe

Solution:

Capacity of 15" when 100% full

$$Q = (1.49/n) * A * R^{0.667} * s^{0.5} \quad (\text{based on Manning formula})$$

Where Q = Flow in cfs
 n = Roughness Coefficient (0.010 for PVC Pipe)
 A = Cross-sectional area of pipe
 R = Hydraulic Radius
 s = Slope of pipe

$$Q (100\% \text{ full}) = (1.49/0.010) * 3.1416 * 0.625^2 * (1.25/4)^{0.667} * 0.0015^{0.5}$$

$$Q (100\% \text{ full}) = 3.26 \text{ cfs}$$

Capacity at 70% full

Use attached chart for ***Hydraulic Properties of Circular Sewers***

Ratio of design depth to diameter = 0.7

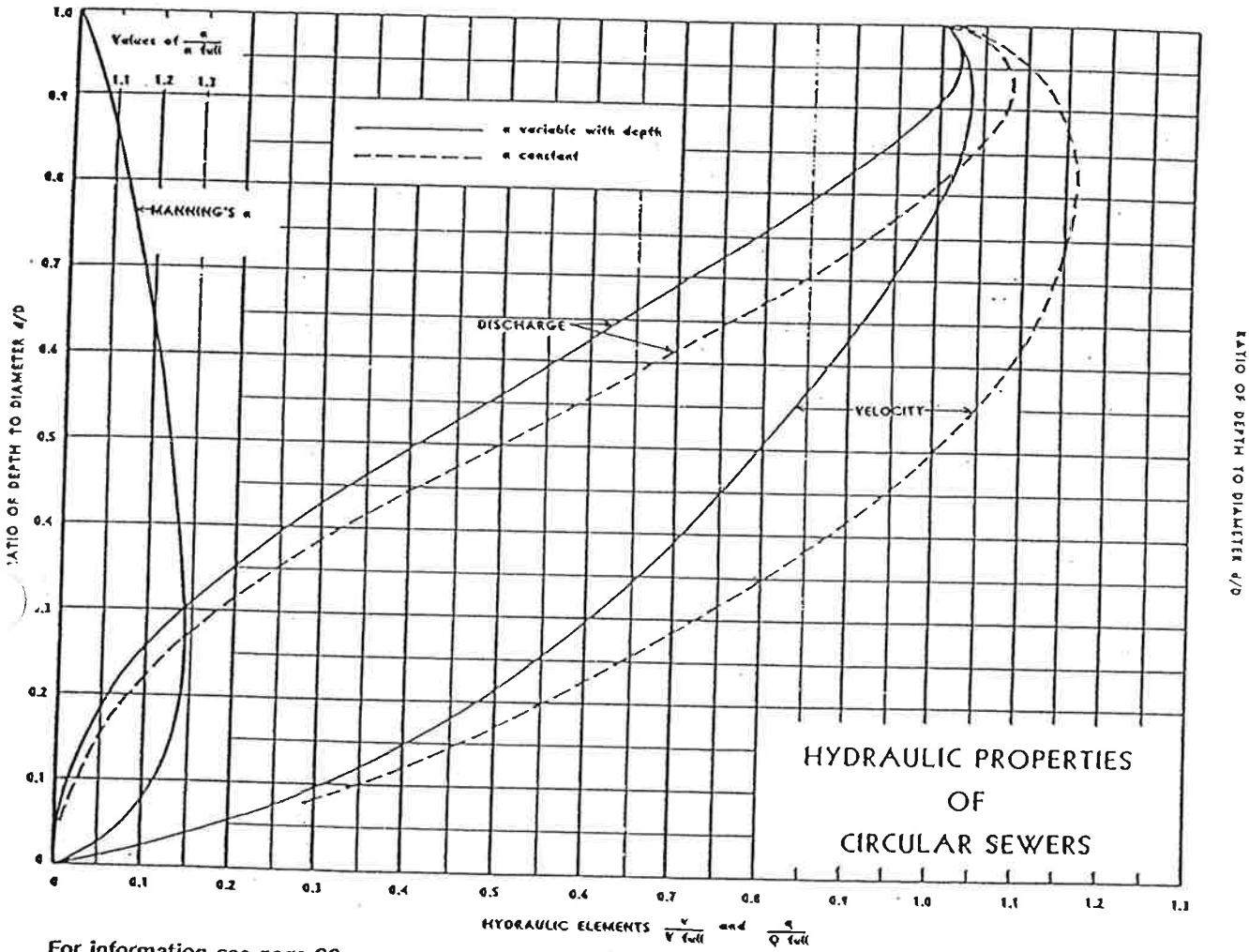
From Chart: Ratio of flow at 70% to flow full = 0.7

$$Q (70\% \text{ full}) = 3.26 * 0.7 = 2.28 \text{ cfs}$$

Capacity available for College Station is **2.28 cfs or 1024 gpm**

EXHIBIT "4"

Mannings Formula consisting of
2 pages



For information see page 22.

98 091827

**SEWER SERVICE CONTRACT FOR
COLLEGE STATION UNINCORPORATED AREA**

BETWEEN

PULASKI COUNTY, ARKANSAS

and

**CITY OF LITTLE ROCK, ARKANSAS/
LITTLE ROCK SANITARY SEWER
COMMITTEE**

FILED AND RECORDED
1998 NOV 17 P 2:36
CAROLYN STALEY
CIRCUIT COUNTY CLERK

Dated: October 15, 1998,
Consisting of pages 1-21
and Exhibit Nos. A and B

**SEWER SERVICE CONTRACT FOR
COLLEGE STATION UNINCORPORATED AREA
BETWEEN
PULASKI COUNTY, ARKANSAS
and
CITY OF LITTLE ROCK, ARKANSAS/
LITTLE ROCK SANITARY SEWER COMMITTEE**

TABLE OF CONTENTS

1.	Sewage Treatment and Extension of Sewer Service by Little Rock	4
2.	Charges for Sewer Service	5
3.	Sewer Use Ordinance Adopted by Pulaski County and Authority of City of Little Rock	5
4.	Future Connections with the Sewer System in College Station Community	9
5.	Future Extensions of Service	10
6.	Extraterritorial Zoning of College Station Community	11
7.	Maintenance Responsibility for Public Sewer Facilities Located and/or to be Located in College Station	12
8.	Title and Maintenance Responsibility for Building Sewer or Private Service Lines	12
9.	Term of Contract	13
10.	Assignment or Transfer	13
11.	Termination	13
12.	Notices	15
13.	Update or Regulations	15
14.	Governmental Function	15
15.	Invalid Provision Shall Not Invalidate Contract	16

16. Contract Legally Binding 16
17. Plumbing Permit/Inspection 16
Table of Exhibits 20

Exhibit A: Map of the boundary of
SID 243

Exhibit B: Copy of definitions contained
in C.F.R. §403.3, as amended

FILED AND RECORDED

1998 NOV 17 P 2:36
CAROLYN STALEY
CIRCUIT CLERK

98 091827

SEWER SERVICE CONTRACT FOR
COLLEGE STATION UNINCORPORATED AREA BETWEEN
PULASKI COUNTY, ARKANSAS AND
CITY OF LITTLE ROCK/LITTLE ROCK
SANITARY SEWER COMMITTEE

THIS CONTRACT is entered into by and between the City of Little Rock, Arkansas and the Little Rock Sanitary Sewer Committee (both hereinafter collectively "Little Rock" with sometimes separate references to "the Sewer Committee") and Pulaski County, Arkansas ("Pulaski County"), by their undersigned duly authorized representatives;

W I T N E S S E T H:

WHEREAS, College Station Suburban Sewer Improvement District No. 243 ("SID 243") has requested sewer service and treatment for its unincorporated area located outside of the City of Little Rock, and Pulaski County is unable to accommodate that request and desires Little Rock to do so on the terms and conditions hereinafter set forth; and,

WHEREAS, Little Rock and Pulaski County both desire that sanitary sewer service should be extended by Little Rock to the unincorporated area of the College Station Community ("College Station Community") located contiguous to the city limits of Little Rock and within the boundary of SID 243, as well as to the land located in the College Station Community lying north of SID 243 and outside the existing city limits, as shown on the map marked



attached hereto, to be constructed in the future in that area; and,

WHEREAS, Little Rock has the necessary sewer treatment facilities and capacity to treat sewage from the College Station Community which Pulaski County does not have and, therefore, both parties hereto want Little Rock to assume that responsibility with sufficient legal authority necessary to operate, maintain and regulate sewer service to College Station Community, and they desire to enter into this Contract pursuant to A.C.A. §14-235-212 for that purpose; and,

WHEREAS, Little Rock has or will contract with SID 243 for the extension of sanitary sewer service to the College Station Community, as well as to the land located in the College Station Community lying north of SID 243 and outside the existing city limits, pursuant to A.C.A. §14-235-212, and at some future date to be agreed upon by Little Rock and SID 243, Little Rock will become the owner of any and all of the sanitary sewer facilities (excluding stormwater facilities) to be constructed now or in the future in the College Station Community outside the city limits of Little Rock, consisting of pipes eight (8) inches or larger in diameter and manholes with covers and appurtenances thereto situated within the College Station Community outside Little

Rock's city limits, as well as easements for these sanitary Sewer Facilities; and,

WHEREAS, all parties to this Contract recognize the necessity of having adequate legal authority by Little Rock in order to protect the water quality in the area as mandated by federal and state law, and also to protect and regulate the operation and use of the sanitary Sewer Facilities to be constructed which Little Rock will own, operate and maintain after completion of construction; and,

WHEREAS, Pulaski County has adopted a sewer use ordinance giving Little Rock exclusive legal authority over the Sewer Facilities to be located to the College Station Community and now wants to enter into this Contract to agree (a) to keep such sewer use ordinance in effect for the duration of the time Little Rock extends sanitary sewer service to the College Station Community or until such time when Pulaski County desires to assume that responsibility and (b) further agree to amend said sewer use ordinance or replace it with another sewer ordinance, as Little Rock may from time to time deem necessary to comply with federal and state regulatory requirements;

NOW, THEREFORE, in consideration of the mutual benefits to be derived, it is hereby agreed by and between the parties:

1. Sewage Treatment and Extension of Sewer Service by Little Rock. Little Rock, acting through the Sewer Committee operating Little Rock Wastewater Utility ("LRWU"), agrees that the Sewer Facilities to be constructed in the College Station Community, as well as those on land located in the College Station Community lying north of SID 243 and outside the existing city limits, as shown on Exhibit "A", may be connected to Little Rock's sewer system in accordance with this Contract, including approved extensions, and Little Rock agrees to perform the appropriate treatment of the sewage in accordance with the applicable law, subject to the provisions of this Contract; and the parties hereto agree to comply with all provisions of this Contract, including the enforcement by Little Rock with the cooperation of Pulaski County of all rules, regulations, ordinances, and laws referred to herein applicable to the use, operation and maintenance of the Sewer Facilities to be located in the College Station Community referred to in this Contract for the duration of such sewer services being furnished by Little Rock, as well as any extensions thereof, subject to the adoption of the sewer use ordinance and amendments thereto by Pulaski County, to remain in full force and effect until this Contract is terminated by Little Rock.

2. Charges for Sewer Service. All charges for sanitary sewer services provided by Little Rock under this Contract to customers residing within the College Station Community, as shown on Exhibit "A" shall be included on the water bills of Little Rock Municipal Water Works in accordance with the existing city ordinances establishing rates for sanitary sewer service based on outside city rates, as those rates are currently established at and as these rates may be adjusted from time to time. In the event such sanitary sewer service is provided to customers who do not receive water service from Little Rock Municipal Water Works and, therefore, receive no water bills which would otherwise also contain sanitary sewer charges, those customers shall be billed in accordance with such procedures as Little Rock, acting through the Sewer Committee operating LRWU, may establish in order to collect the outside city sewer rates for such sanitary sewer service according to the applicable rate ordinance, and as it may be amended in the future.

3. Sewer Use Ordinance Adopted by Pulaski County and Authority of City of Little Rock. The parties hereto agree that the sewer use ordinance adopted by Pulaski County dated January 28, 1998, No. 98-OR-04 for the use, operation and maintenance of the Sewer Facilities to be located in the College Station Community as shown on Exhibit "A", and any

extension thereof, shall be governed by the provisions contained therein, (as well as Little Rock sewer ordinances) and it shall remain in full force and effect for the duration of sewer services furnished by Little Rock until this Contract is terminated by Little Rock unless repealed by another sewer ordinance(s) as Little Rock may request; and Little Rock shall have the sole authority to interpret, apply and enforce said ordinance(s) or amendments, as well as any rules, regulations and laws in accordance with the provisions contained therein; and the parties hereto further agree as follows:

(a) The operation and maintenance of the Sewer Facilities referred to herein, including any present or future service or extension thereof, shall be governed by the Sewer Use Ordinance(s) adopted by Pulaski County or adopted in the future, including amendments, and, additionally, by the provisions of all existing and future ordinances enacted by the City of Little Rock, Arkansas relating to the operation and maintenance of sewers including, but not limited to, sanitary sewer use and pretreatment requirements of any nature whatsoever; and the provisions of these ordinances shall be binding on the parties hereto, including the rates as may be from time to time specified in those ordinances and further, in the event

of conflicts, those ordinances enacted by Little Rock shall prevail.

(b) That the authority of the Sewer Committee includes, but is not limited to, the authority to:

(1) Deny or condition new or increased contributions of pollutants, or changes in the nature of pollutants, to the Publicly Owned Treatment Works ("POTW") owned by the Sewer Committee by Industrial Users where such contributions do not meet applicable Pre-treatment Standards and Requirements (as same are defined in applicable Federal and Arkansas statutes and regulations and ordinances of the City of Little Rock, as the same may be amended from time to time) or where such contributions would cause the POTW to violate its National Pollutants Discharge Elimination System ("NPDES") permit;

(2) Require compliance with applicable Pretreatment Standards and Requirements by Industrial Users;

(3) Control, through permit, contract, order, or similar means, the contribution to the POTW by each Industrial User to ensure compliance with applicable Pretreatment Standards and Requirements;

(4) Require (a) the development of a compliance schedule by each Industrial User for the installation of technology required to meet applicable Pretreatment Standards and Requirements and (b) the submission of all

notices and self-monitoring reports from Industrial Users as are necessary to assess and assure compliance by Industrial Users with Pretreatment Standards and Requirements, including but not limited to the reports required in Volume 40 of the Code of Federal Regulations at 40 C.F.R. §403.12, as adopted into Section 4 of Regulation No. 6 of the Regulations for State Administration of the National Pollutants Discharge Elimination System of the Arkansas Department of Pollution Control and Ecology, or any future amendment to these regulations, as same are administered and enforced by the Arkansas Department of Pollution Control and Ecology;

(5) Carry out all inspection, surveillance and monitoring procedures necessary to determine, independent of information supplied by Industrial Users, compliance or non-compliance with applicable Pretreatment Standards and Requirements by Industrial Users. Representatives of the POTW shall be authorized to enter any premises of any Industrial User in which a Discharge source or treatment system is located or in which records are required to be kept under applicable federal or state regulations including but not limited to 40 C.F.R. §403.12(m) to assure compliance with Pretreatment Standards. Such authority shall be at least as extensive as the authority provided under Section 308 of the Clean Water Act of 1972, as amended, and any

applicable Arkansas regulations and statutes including the Arkansas Water and Air Pollution Control Act, Act 472 of 1949, as amended, and ordinances of the City of Little Rock, as same may be enacted or amended from time to time;

(6) Obtain remedies for noncompliance by any Industrial User with any Pretreatment Standard and Requirement. The Sewer Committee shall be entitled to seek injunctive relief for noncompliance by Industrial Users with Pretreatment Standards and Requirements. The Sewer Committee is authorized to enter into contracts with Industrial Users to assure compliance by Industrial Users with Pretreatment Standards and Requirements. Any such contract will provide for liquidated damages for violation of Pretreatment Standards and Requirements and will include an agreement by the Industrial User to submit to the remedy of specific performance for breach of contract, enforceable by a court situated in Pulaski County, Arkansas.

(7) The definitions set forth at 40 C.F.R. §403.3, as amended, are expressly incorporated by reference herein as if set forth word for word and a copy thereof is attached hereto marked Exhibit "B".

4. Future Connections with the Sewer System in College Station Community. Pulaski County shall have no authority to extend or permit any future connections to the Sewer Facilities referred to in this Contract and the

parties hereto agree not to allow or permit any sewer extension to any area outside the College Station Community area as the boundaries exist on the date when this Contract is executed or when they may be changed in the future without the prior written approval of Little Rock, as provided herein, and written approval by the Manager of LRWU. Pulaski County further agrees not to allow or permit any future sewer main extensions in any portion of the College Station Community, as shown on Exhibit "A", served or not currently served unless prior written approval in writing is obtained from Little Rock Sanitary Sewer Committee and the Manager of LRWU after written application for such extension(s) with full information of the reasons and proposed location of the connections.

5. Future Extensions of Service. Little Rock and the Sewer Committee shall not be obligated for and assume no liability for any future extension of service not specifically set forth herein, and no such extension shall be made without the prior written approval of the governing body of Little Rock and the Sewer Committee. This Contract anticipates no more than 1,000 residential College Station Community connections which generate an amount of wastewater flow not to exceed a peak daily flow rate of 1,000 gallons per minute with the maximum flow rate being based on the capacity of the fifteen (15) inch diameter collector

constructed to serve the College Station Community area, as determined by the Mannings formula; provided, however, there may be a combination of residential, commercial, and industrial users otherwise permitted by land use controls such as zoning, and subdivision regulations, on condition that the maximum peak daily wastewater flow rate for any combination of such permitted users does not exceed the peak daily wastewater flow rate of 1,000 gallons per minute as specified herein. In any event, anyone desiring such an extension of service beyond the existing facilities hereby served shall bear the full cost thereof, including all costs of any nature whatsoever involved in making such extension or making available such service and any connection fees set by the Sewer Committee, which shall have the sole authority to do so. The further extension of service shall be in accordance with the rules and regulations of the Sewer Committee and subject to its approval at the time of the extension of service, as well as in accordance with any applicable policy of the City of Little Rock, as adopted by its City Board of Directors.

6. Extraterritorial Zoning of College Station Community. Before any sewer service is provided to the College Station Community under this Contract through connections to or extensions of the Sewer Facilities referred to in this Contract, a land use plan for the

College Station Community shall be adopted by Little Rock, and such land use plan shall include a zoning plan under Little Rock's zoning powers in order to protect Little Rock's sewer system and treatment plants from changes in land use which might include industrial users making prohibited discharges into Little Rock's sewer system in violation of law. The land use plan and extraterritorial zoning powers shall be maintained and enforced at all times and all parties agree to the enforcement of said land use plan by Little Rock.

7. Maintenance Responsibility for Public Sewer Facilities Located and/or to be Located in College Station Community. Little Rock shall have maintenance responsibility for any and all public sewer facilities subject to this contract being defined as those pipes or conduits having a diameter of eight (8) inches or larger, normally equipped with manholes located in rights of way or easements together with all appurtenances thereto, provided however, any storm water facilities are not included as part of the Sewer Facilities herein referred to or assigned, and any storm water facilities shall remain the property of Pulaski County or SID 243, as the case may be.

8. Title and Maintenance Responsibility for Building Sewer or Private Service Lines. Title to and maintenance responsibility for any building sewer connecting each

customer's public facilities to any public sewer line constructed in the College Station Community, as shown on Exhibit "A" attached hereto or private service line or to any extension thereof shall remain with the respective property owner, even though a portion of the building sewer or service line may be installed in a right of way or easement; and Little Rock shall have no liability or responsibility for the operation or maintenance of said building sewer, as defined in the applicable sewer ordinance.

9. Term of Contract. Unless terminated earlier, the term of this Contract shall be for a period of fifteen (15) years from the date hereof at which time it will expire; provided, however, this Contract may be extended by the agreement of the parties hereto upon notice given by either party prior to the end of the term and adoption, thereafter, of the necessary approving ordinances or resolutions as required by law.

10. Assignment or Transfer. This Contract and the rights hereunder shall not be assigned or transferred by Pulaski County, and all provisions of this Contract shall be binding upon the successors of the parties hereto.

11. Termination. This Contract may be terminated by Little Rock if Pulaski County fails to comply fully with any of the terms and provisions of this Contract. Termination

of this Contract may occur only after actual written notice is given of the nature of the breach or non-performance of any provision of this Contract and a reasonable opportunity to cure the alleged breach or non-performance of any provision of this Contract has been provided to Pulaski County. In the event of the termination of this Contract, all obligations of Little Rock to treat the sewage under this contract shall cease and SID 243 shall be responsible for treatment of sewage in the College Station Community. In the event of termination, such action as is necessary to immediately remove the sanitary sewer connection(s) to Little Rock's sewer system shall be taken by the responsible party, i.e., SID 243. It is the intention of the parties hereto that SID 243 shall be responsible for the treatment of its sewage upon termination of this Contract, failing which Little Rock shall be entitled to recover from SID 243 all damages sustained by Little Rock of any nature whatsoever proximately caused by the breach of or failure to perform by SID 243 of any provision(s) of this Contract, including but not limited to the failure of SID 243 to assume full responsibility for the treatment of sewage of the College Station Community and the removal of any sanitary sewer connection(s) to Little Rock's system located in its territorial limits in the event of termination by Little Rock.

12. Notices. All notices hereunder shall be in writing and shall be deemed to have been duly given when sent by certified mail, postage prepaid, as follows:

If to Little Rock:

Little Rock Wastewater Utility	AND City of Little Rock
221 East Capitol Avenue	City Hall, 500 W. Markham
Little Rock, Arkansas 72201	Little Rock, Arkansas 72201
Attn: Manager	Attn: City Manager and Mayor

If to Pulaski County:

County Judge of Pulaski County
Pulaski County Admin. Building
201 South Broadway
Little Rock, Arkansas 72201

13. Update or Regulations. All parties hereto agree to abide by the rules and regulations published from time to time concerning the treatment of sewage by Little Rock and all applicable federal, state, county and municipal regulations concerning construction, operating, maintenance, and protection of treatment of sewage pursuant to this Contract. Little Rock by the Sewer Committee acting through LRWU shall have the right at all times, if it deems necessary or appropriate, to inspect all individual tie-ons, connections to or extensions of the Sewer Facilities referred to in this Contract.

14. Governmental Function. The parties recognize that treatment of sewage pursuant to this agreement is a governmental function and this contract shall be performed by the parties hereto in their respective governmental capacities.

15. Invalid Provision Shall Not Invalidate Contract.

The parties agree that in the event any paragraph, sentence, clause or word(s) of this Contract shall be held to be invalid, illegal or unenforceable, all other terms and provisions of this Contract shall remain in full force and effect, and this Contract shall be construed as if not containing the particular provision or provisions held to be invalid.

16. Contract Legally Binding. All parties to the

Contract agree to the terms contained herein and represent to each other that the terms of this Contract have been duly accepted and approved by the authorized representatives of the parties hereto; and all parties covenant to each other that all action required by law has been taken to make this Contract legally binding and enforceable and that the parties hereto shall have all of the rights and remedies under the law of Arkansas to enforce the terms of this Contract, any action on which the parties stipulate and agree shall be brought in Pulaski County, Arkansas.

17. Plumbing Permit/Inspection. All applicants for

sewer service shall be required to obtain and pay for a plumbing permit from the City of Little Rock and receive an inspection to meet the State and City Plumbing Code before the extension of sewer service, as provided herein.

IN WITNESS WHEREOF, the parties have caused this contract to be executed by their duly authorized representatives on the 15th day of October, 1998.



CITY OF LITTLE ROCK, ARKANSAS

By: Jim Bailey
Mayor

Attest:

Robbie Hancock
10-15-98
City Clerk

LITTLE ROCK SANITARY SEWER
COMMITTEE

By: Charles Bass
Acting Chairman and Secretary

ATTEST:

Reggie L. Corbett
Manager
Little Rock Wastewater Utility

PULASKI COUNTY, ARKANSAS

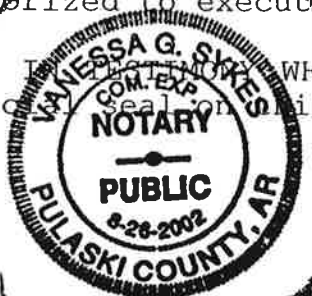
By: Gloyd H. Villines, III
County Judge

ACKNOWLEDGMENT

STATE OF ARKANSAS)
COUNTY OF PULASKI)

On this day, before me, the undersigned, a Notary Public in and for the aforementioned state and county, duly commissioned and sworn personally appeared James Dailey, to me known to be the Mayor of the City of Little Rock and duly authorized representative of the City of Little Rock, that he executed the foregoing contract, and acknowledged the said contract to be his free and voluntary act and deed on behalf of said City of Little Rock, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute the said contract.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal on this 15th day of October, 1998.



Vanessa Sikes
Notary Public

My Commission Expires:
August 26, 2002
(SEAL)

ACKNOWLEDGMENT

STATE OF ARKANSAS)
COUNTY OF PULASKI)

On this day, before me, the undersigned, a Notary Public in and for the aforementioned state and county, duly commissioned and sworn personally appeared Reggie A. Corbitt to me known to be the Manager of the Little Rock Wastewater Utility and duly authorized representative of the Little Rock Sanitary Sewer Committee, that he executed the foregoing contract, and acknowledged the said contract to be his free and voluntary act and deed on behalf of said Sewer Committee, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute the said contract.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal on this 15th day of October, 1998.

Rebecca Jane Campbell
Notary Public

My Commission Expires:

July 6, 2000
(SEAL)

ACKNOWLEDGMENT

STATE OF ARKANSAS)
COUNTY OF PULASKI)

On this day, before me, the undersigned, a Notary Public in and for the aforementioned state and county, duly commissioned and sworn personally appeared F. G. "Buddy" Villines III, to me known to be the County Judge of Pulaski County, Arkansas and duly authorized representative of Pulaski County, that he executed the foregoing contract, and acknowledged the said contract to be his free and voluntary act and deed on behalf of said Pulaski County, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute the said contract.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal on this 15th day of October, 1998.

Rebecca Jane Campbell
Notary Public

REBECCA JANE CAMPBELL
NOTARY PUBLIC
My Commission Expires:
July 6, 2000
(SEAL)

ACKNOWLEDGMENT

STATE OF ARKANSAS)
COUNTY OF PULASKI)

On this day, before me, the undersigned, a Notary Public in and for the aforementioned state and county, duly commissioned and sworn personally appeared Charles A. Goss, to me known to be the Acting Chair and duly authorized representative of the Little Rock Sanitary Sewer Committee, that he executed the foregoing contract, and acknowledged the said contract to be his free and voluntary act and deed on behalf of said Sewer Committee, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute the said contract.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal on this 15th day of October, 1998.

Rebecca Jane Campbell
Notary Public

My Commission Expires:

July 6, 2000
NOTARY SEAL
PULASKI
PUBLIC

TABLE OF EXHIBITS
OF
SEWER SERVICE CONTRACT FOR
COLLEGE STATION UNINCORPORATED AREA BETWEEN
PULASKI COUNTY, ARKANSAS
and
CITY OF LITTLE ROCK/LITTLE ROCK
SANITARY SEWER COMMITTEE

- EXHIBIT "A" Map of the boundary of SID 243
- EXHIBIT "B" Copy of definitions contained in 40 C.F.R.
 §403.3, as amended

BLAYLOCK, THREET, PHILLIPS & ASSOCIATES, INC.

Consulting Engineers - Land Surveyors

1501 MARKET DRIVE
LITTLE ROCK, ARKANSAS 72211
(501) 224-3922 (501) 224-3926 FAX
email: BTPA@SWBELL.NET

LETTER OF TRANSMITTAL

TO Don Hamilton, Attorney
c/o Little Rock Wastewater Utility
221 East Capitol
Little Rock, AR 72202

DATE February 6, 1998 JOB NO. 97-069-4

ATTENTION _____

RE: College Station Wastewater Facilities

WE ARE SENDING YOU Attached Under separate cover via _____ the following items:
 Shop drawings Prints Copy of letter Plans Samples Specifications
 Estimate Change Order See Below

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6	Blue Lines Boundary District No. 243
1	District Legal Description

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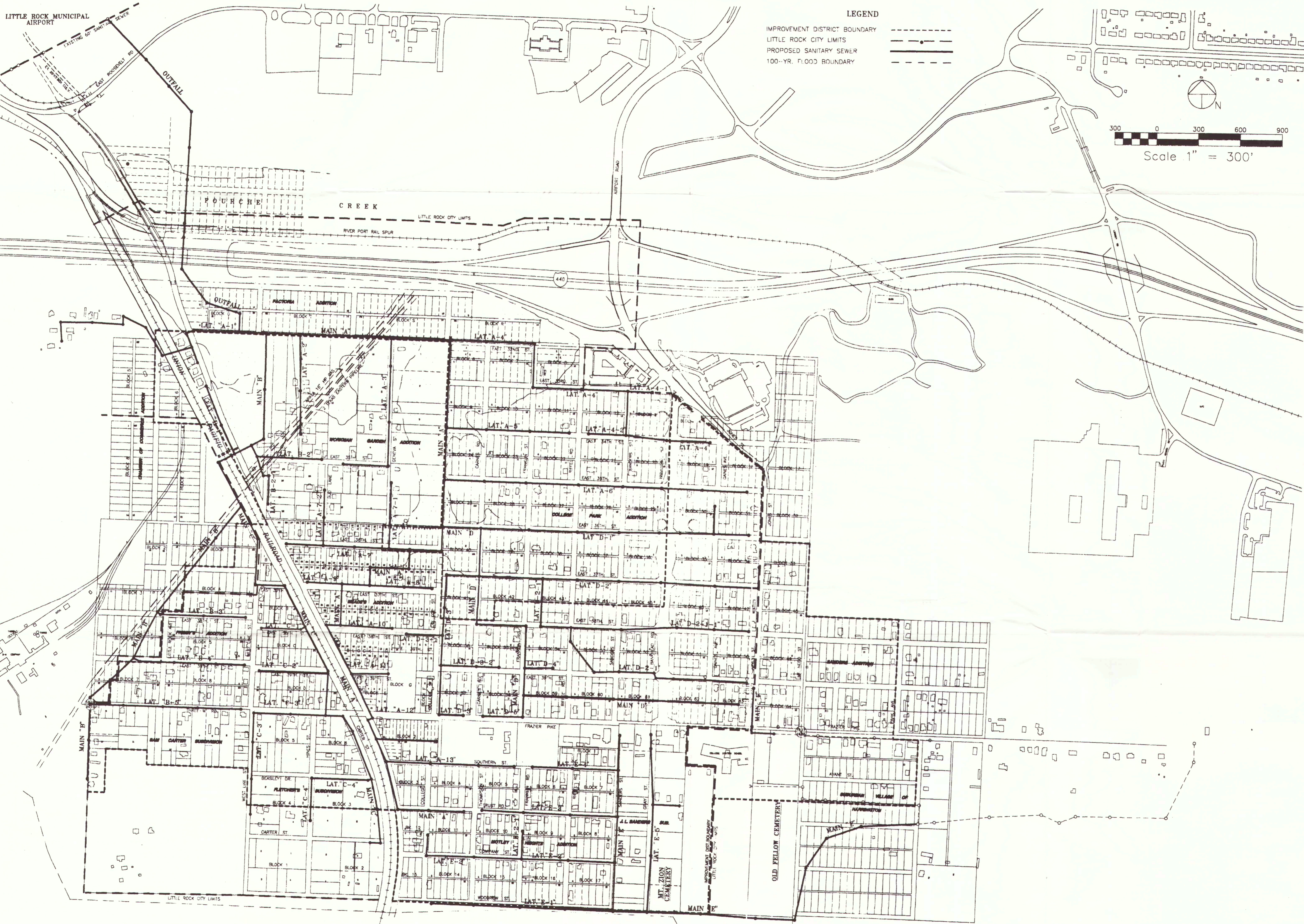
REMARKS

PY TO _____ SIGNED JAMES L. PHILLIPS, P.E., R.L.S.

If enclosures are not as noted, kindly notify us at once.

EXHIBIT "A"

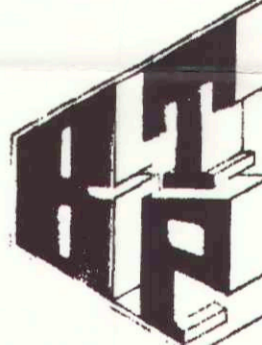
Map of the boundary of SID 243



DATE	REVISIONS

SURVEY BY:
 CHECKED BY:
 DRAWN BY:
 DESIGN BY:

COLLEGE STATION WASTEWATER IMPROVEMENTS
 COLLEGE STATION SUBURBAN SEWER IMPROVEMENT DISTRICT #243
 PULASKI COUNTY ARKANSAS



**Blaylock
Threet
Phillips
and
Associates
Inc.**
 consulting
engineers
 MECHANICAL-ELECTRICAL
 CIVIL-SURVEYING
 1501 MARKET DRIVE
 LITTLE ROCK, ARKANSAS 72211

CORPORATE REGISTRATION
 BLAYLOCK,
 THREET,
 PHILLIPS &
 ASSOCIATES, INC.
 #222
 ARKANSAS ENGINEER

SCALE:
 1" = 300'-0"
 DATE: PROJECT NO:
 JAN. 1998 81-095-4

SHEET 1 OF 63

LEGAL DESCRIPTION

COLLEGE STATION SUBURBAN

SEWER IMPROVEMENT DISTRICT #243

(REVISED SEPTEMBER 23, 1997)

PART OF SECTIONS 17, 18, 19, AND 20, T-1-N, R-11-W OF THE FIFTH PRINCIPAL MERIDIAN, PULASKI COUNTY, ARKANSAS; MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SECTION 18, T-1-N, R-11-W; THENCE EAST ALONG THE SOUTH LINE OF SAID SECTION 18 TO ITS POINT OF INTERSECTION WITH THE WEST LINE OF LOT 12, BLOCK 7, FRISBY'S ADDITION, EXTENDED SOUTH; THENCE NORTH ALONG SAID WEST LINE OF LOT 12 TO THE SOUTHWEST CORNER OF LOT 7, BLOCK 7, FRISBY'S ADDITION; THENCE EAST ALONG THE SOUTH LINE OF SAID LOT 7 TO THE SOUTHEAST CORNER OF SAID LOT 7; THENCE NORTH ALONG THE EAST LINE OF SAID LOT 7 TO THE NORTHWEST CORNER OF LOT 6, BLOCK 7, FRISBY'S ADDITION; THENCE EAST ALONG THE NORTH LINE OF BLOCK 7, FRISBY'S ADDITION TO THE NORTHEAST CORNER THEREOF; THENCE NORTH ALONG THE EAST LINE OF BLOCK 6, FRISBY'S ADDITION TO THE SOUTHEAST CORNER OF BLOCK 3, FRISBY'S ADDITION; THENCE EAST ALONG THE SOUTH LINE OF BLOCK 4, FRISBY'S ADDITION TO THE SOUTHWEST CORNER OF LOT 15, BLOCK 4; THENCE NORTH ALONG THE WEST LINE OF LOTS 10 AND 15, BLOCK 4 TO A POINT ON THE SOUTH LINE OF BLOCK 1, FRISBY'S ADDITION; THENCE EAST ALONG SAID SOUTH LINE OF BLOCK 1 TO THE SOUTHWEST CORNER OF LOT 21, BLOCK 1, FRISBY'S ADDITION; THENCE NORTH ALONG THE WEST LINE OF LOTS 2 AND 21, BLOCK 1, TO A POINT ON THE SOUTH LINE OF THE CHAMBER

OF COMMERCE ADDITION; THENCE EAST ALONG SAID SOUTH ADDITION LINE EXTENDED TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE OF THE UNION PACIFIC RAILROAD; THENCE NORTHWESTERLY ALONG SAID EASTERLY RIGHT-OF-WAY LINE TO ITS POINT OF INTERSECTION WITH THE NORTH LINE OF BLOCK 7, CHAMBER OF COMMERCE ADDITION EXTENDED; THENCE WEST ALONG SAID NORTH LINE TO THE NORTHEAST CORNER OF BLOCK 8, CHAMBER OF COMMERCE ADDITION; THENCE NORTH ALONG THE EAST LINE OF BLOCK 5, CHAMBER OF COMMERCE ADDITION TO A POINT ON THE NORTH LINE OF THE SW 1/4, SECTION 18, T-1-N, R-11-W; THENCE EAST ALONG SAID NORTH LINE OF SAID SW 1/4 TO THE NORTHWEST CORNER OF SE 1/4, SECTION 18, T-1-N, R-11-W; THENCE SOUTH ALONG THE WEST LINE OF SAID SE 1/4 TO THE NORTHEAST CORNER OF MEADE'S ADDITION; THENCE WEST ALONG THE NORTH LINE OF MEADE'S ADDITION TO THE NORTHWEST CORNER OF LOT 10, BLOCK "K", MEADE'S ADDITION; THENCE SOUTH ALONG THE WEST LINE OF LOT 10 TO A POINT ON THE NORTH LINE OF BLOCK "J" OF MEADE'S ADDITION; THENCE EAST ALONG SAID NORTH LINE OF BLOCK "J" TO A POINT ON THE WEST LINE OF BLOCK 40, COLLEGE PARK ADDITION; THENCE SOUTH ALONG THE WEST LINE OF BLOCKS 40 AND 41, COLLEGE PARK ADDITION TO THE SOUTHWEST CORNER OF BLOCK 41; THENCE EAST ALONG THE SOUTH LINES OF BLOCKS 41 AND 42, COLLEGE PARK ADDITION TO THE SOUTHWEST CORNER OF LOT 9, BLOCK 42, SAID ADDITION; THENCE NORTH ALONG THE WEST LINE OF LOT 9, BLOCK 42 TO THE NORTHWEST CORNER OF SAID LOT 9; THENCE EAST ALONG SOUTH ALLEY LINE OF BLOCKS 42, 43, 44 AND 45 TO THE NORTHEAST CORNER OF LOT 12, BLOCK 45, COLLEGE PARK ADDITION; THENCE NORTH ALONG THE EAST LINES OF BLOCKS 45, 36, 29, 20 AND 13, COLLEGE PARK ADDITION TO A POINT ON THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF

JONES/BANKHEAD ROAD; THENCE SOUTHEASTERLY ALONG THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF JONES/BANKHEAD ROAD TO A POINT ON THE EAST LINE OF BLOCK 18, COLLEGE PARK ADDITION; THENCE SOUTH ALONG THE EAST LINE OF BLOCKS 18 AND 31, COLLEGE PARK ADDITION TO THE NORTHEAST CORNER OF BLOCK 34, COLLEGE PARK ADDITION; THENCE EAST ALONG THE NORTH LINE OF BLOCK 33, SAID ADDITION TO A POINT ON THE EAST LINE OF SECTION 18, T-1-N, R-11-W; THENCE SOUTH ALONG SAID EAST LINE OF SECTION 18 TO ITS POINT OF INTERSECTION WITH THE NORTH LINE OF SANDERS ADDITION; THENCE EAST ALONG SAID NORTH ADDITION LINE TO THE NORTHEAST CORNER OF BLOCK 2, SANDERS ADDITION; THENCE SOUTH ALONG THE EAST LINES OF BLOCKS 2, 3, AND 6 TO A POINT ON THE NORTH LINE OF BLOCK 1, SUBURBAN VILLAGE OF HARRINGTON ADDITION; THENCE EAST ALONG SAID NORTH LINE OF BLOCK 1 TO THE NORTHEAST CORNER OF BLOCK 1, SAID ADDITION; THENCE SOUTH ALONG THE EAST LINES OF BLOCKS 1 AND 2, SUBURBAN VILLAGE OF HARRINGTON ADDITION TO THE NORTHEAST CORNER OF LOT 32, BLOCK 2, SAID ADDITION; THENCE WEST ALONG THE NORTH LINE OF LOTS 17 THROUGH 32 EXTENDED TO A POINT 708.6 FEET EAST OF THE WEST LINE OF THE NE 1/4 NE 1/4, SECTION 19, T-1-N, R-11-W; THENCE SOUTH AND PARALLEL TO SAID WEST LINE NE 1/4 NE 1/4 TO A POINT ON THE SOUTH LINE OF SAID NE 1/4 NE 1/4, SECTION 19, T-1-N, R-11-W; THENCE WEST ALONG THE NE 1/4 NE 1/4 AND NW 1/4 NE 1/4 AND NE 1/4 NE 1/4, SECTION 19, T-1-N, R-11-W TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE OF THE UNION PACIFIC RAILROAD; THENCE NORTHERLY ALONG SAID EASTERLY RIGHT-OF-WAY LINE TO ITS POINT OF INTERSECTION WITH THE SOUTH LINE OF LOTS 1, 2 AND 3, BLOCK 3, FLETCHER'S SUBDIVISION; THENCE WEST ALONG SAID SOUTH LINE EXTENSION

THROUGH BLOCKS 3 AND 4, FLETCHER'S SUBDIVISION TO A POINT ON THE WEST LINE OF FLETCHER'S SUBDIVISION; THENCE NORTH ALONG SAID WEST SUBDIVISION LINE TO THE SOUTHEAST CORNER OF LOT 1, SAM CARTER'S SUBDIVISION; THENCE WEST ALONG THE SOUTH ADDITION LINE OF SAM CARTER'S SUBDIVISION TO THE SOUTHWEST CORNER OF LOT 7; THENCE NORTH ALONG THE WEST LINE OF LOT 7, TO THE SOUTHEAST CORNER OF LOT 11; THENCE WEST ALONG THE SOUTH LINES OF LOTS 10 AND 11 TO A POINT 120 FEET EAST OF THE WEST LINE OF SECTION 19, T-1-N, R-11-W; THENCE SOUTH 313 FEET AND PARALLEL TO THE WEST LINE OF SECTION 19 TO A POINT; THENCE WEST 120 FEET TO A POINT ON SAID WEST SECTION 19; THENCE NORTH 625 FEET ALONG SAID WEST SECTION LINE TO THE POINT OF BEGINNING.

§ 403.1

40 CFR Ch. I (7-1-96)

- 403.10 Development and submission of NPDES State pretreatment programs.
- 403.11 Approval procedures for POTW pretreatment programs and POTW granting of removal credits.
- 403.12 Reporting requirements for POTW's and industrial users.
- 403.13 Variances from categorical pretreatment standards for fundamentally different factors.
- 403.14 Confidentiality.
- 403.15 Net/Gross calculation.
- 403.16 Upest provision.
- 403.17 Bypass.
- 403.18 Modification of POTW Pretreatment Programs.

APPENDIX A TO PART 403—PROGRAM GUIDANCE MEMORANDUM

APPENDIX B TO PART 403—[RESERVED]

APPENDIX C TO PART 403—[RESERVED]

APPENDIX D TO PART 403—SELECTED INDUSTRIAL SUBCATEGORIES CONSIDERED DILUTE FOR PURPOSES OF THE COMBINED WASTESTREAM FORMULA

APPENDIX E TO PART 403—SAMPLING PROCEDURES

APPENDIX F [RESERVED]

APPENDIX G TO PART 403—Pollutants Eligible for a Removal Credit

AUTHORITY: Sec. 51(o)(2) of the Clean Water Act of 1977, (Pub. L. 95-217) sections 204(b)(1)(C), 208(b)(2)(C)(iii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(b)(2)(C), 301(h)(5), 301(i)(2), 304(e), 304(g), 307, 308, 309, 402(b), 406 and 501(a) of the Federal Water Pollution Control Act (Pub. L. 92-500) as amended by the Clean Water Act of 1977 and the Water Quality Act of 1987 (Pub. L. 100-4).

SOURCE: 46 FR 9439, Jan. 28, 1981, unless otherwise noted.

§ 403.1 Purpose and applicability.

(a) This part implements sections 204(b)(1)(C), 208(b)(2)(C)(iii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(h)(5) and 301(i)(2), 304(e) and (g), 307, 308, 309, 402(b), 406, and 501(a) of the Federal Water Pollution Control Act as amended by the Clean Water Act of 1977 (Pub. L. 95-217) or "The Act". It establishes responsibilities of Federal, State, and local government, industry and the public to implement National Pretreatment Standards to control pollutants which pass through or interfere with treatment processes in Publicly Owned Treatment Works (POTWs) or which may contaminate sewage sludge.

(b) This regulation applies:

(1) To pollutants from non-domestic sources covered by Pretreatment Standards which are indirectly discharged into or transported by truck or

rail or otherwise introduced into POTWs as defined below in § 403.3;

(2) To POTWs which receive wastewater from sources subject to National Pretreatment Standards;

(3) To States which have or are applying for National Pollutant Discharge Elimination System (NPDES) programs approved in accordance with section 402 of the Act; and

(4) To any new or existing source subject to Pretreatment Standards. National Pretreatment Standards do not apply to sources which Discharge to a sewer which is not connected to a POTW Treatment Plant.

(46 FR 9439, Jan. 28, 1981, as amended at 48 FR 7776, Jan. 21, 1983; 60 FR 33332, June 23, 1995)

§ 403.2 Objectives of general pretreatment regulations.

By establishing the responsibilities of government and industry to implement National Pretreatment Standards this regulation fulfills three objectives:

(a) To prevent the introduction of pollutants into POTWs which will interfere with the operation of a POTW, including interference with its use or disposal of municipal sludge;

(b) To prevent the introduction of pollutants into POTWs which will pass through the treatment works or otherwise be incompatible with such works; and

(c) To improve opportunities to recycle and reclaim municipal and industrial wastewaters and sludges.

§ 403.3 Definitions.

For the purposes of this part:

(a) Except as discussed below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR part 401 shall apply to this regulation.

(b) The term Act means Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq.

(c) The term Approval Authority means the Director in an NPDES State with an approved State pretreatment program and the appropriate Regional Administrator in a non-NPDES State or NPDES State without an approved State pretreatment program.

EXHIBIT "B"

Copy of definitions contained in 40 C.F.R. Sec. 403.3, as amended consisting of 4 pages

(d) The term *Approved POTW Pretreatment Program* or *Program* or *POTW Pretreatment Program* means a program administered by a POTW that meets the criteria established in this regulation (§§ 403.8 and 403.9) and which has been approved by a Regional Administrator or State Director in accordance with § 403.11 of this regulation.

(e) The term *Director* means the chief administrative officer of a State or Interstate water pollution control agency with an NPDES permit program approved pursuant to section 402(b) of the Act and an approved State pretreatment program.

(f) The term *Water Management Division Director* means one of the Directors of the Water Management Divisions within the Regional offices of the Environmental Protection Agency or this person's delegated representative.

(g) The term *Indirect Discharge* or *Discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under section 307(b), (c) or (d) of the Act.

(h) The term *Industrial User* or *User* means a source of Indirect Discharge.

(i) The term *Interference* means a Discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

(1) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(2) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

(j) The term *National Pretreatment Standard*, *Pretreatment Standard*, or *Standard* means any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307 (b) and (c) of the Act, which applies to Industrial Users. This term includes prohibitive discharge limits established pursuant to § 403.5.

(k)(1) The term *New Source* means any building, structure, facility or installation from which there is or may be a Discharge of pollutants, the construction of which commenced after the publication of proposed Pretreatment Standards under section 307(c) of the Act which will be applicable to such source if such Standards are thereafter promulgated in accordance with that section, *provided that*:

(i) The building, structure, facility or installation is constructed at a site at which no other source is located; or

(ii) The building, structure, facility or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

(iii) The production or wastewater generating processes of the building, structure, facility or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source should be considered.

(2) Construction on a site at which an existing source is located results in a modification rather than a new source if the construction does not create a new building, structure, facility or installation meeting the criteria of paragraphs (k)(1)(i), or (k)(1)(iii) of this section but otherwise alters, replaces, or adds to existing process or production equipment.

(3) Construction of a new source as defined under this paragraph has commenced if the owner or operator has:

(i) Begun, or caused to begin as part of a continuous onsite construction program:

(A) Any placement, assembly, or installation of facilities or equipment; or

(B) Significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or

(ii) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.

(l) The terms *NPDES Permit* or *Permit* means a permit issued to a POTW pursuant to section 402 of the Act.

(m) The term *NPDES State* means a State (as defined in 40 CFR 122.2) or Interstate water pollution control agency with an NPDES permit program approved pursuant to section 402(b) of the Act.

(n) The term *Pass Through* means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

(o) The term *Publicly Owned Treatment Works* or *POTW* means a treatment works as defined by section 212 of the Act, which is owned by a State or municipality (as defined by section 502(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in section 502(4) of the Act, which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works.

(p) The term *POTW Treatment Plant* means that portion of the POTW which is designed to provide treatment (in-

cluding recycling and reclamation) of municipal sewage and industrial waste.

(q) The term *Pretreatment* means the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. The reduction or alteration may be obtained by physical, chemical or biological processes, process changes or by other means, except as prohibited by § 403.6(d). Appropriate pretreatment technology includes control equipment, such as equalization tanks or facilities, for protection against surges or slug loadings that might interfere with or otherwise be incompatible with the POTW. However, where wastewater from a regulated process is mixed in an equalization facility with unregulated wastewater or with wastewater from another regulated process, the effluent from the equalization facility must meet an adjusted pretreatment limit calculated in accordance with § 403.6(e).

(r) The term *Pretreatment requirements* means any substantive or procedural requirement related to Pretreatment, other than a National Pretreatment Standard, imposed on an Industrial User.

(s) The term *Regional Administrator* means the appropriate EPA Regional Administrator.

(t) *Significant Industrial User*. (1) Except as provided in paragraph (t)(2) of this section, the term *Significant Industrial User* means:

(i) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N; and

(ii) Any other industrial user that discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, non-contact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority as defined in 40 CFR 403.12(a) on the

Environmental Protection Agency

§ 403.5

basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(d)(8)).

(2) Upon a finding that an industrial user meeting the criteria in paragraph (t)(1)(ii) of this section has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority (as defined in 40 CFR 403.12(a)) may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(d)(6), determine that such industrial user is not a significant industrial user.

(u) The term *Submission* means:

(1) A request by a POTW for approval of a Pretreatment Program to the EPA or a Director;

(2) A request by a POTW to the EPA or a Director for authority to revise the discharge limits in categorical Pretreatment Standards to reflect POTW pollutant removals; or

(3) A request to the EPA by an NPDES State for approval of its State pretreatment program.

[46 FR 9439, Jan. 28, 1981, as amended at 49 FR 5132, Feb. 10, 1984; 49 FR 23059, July 10, 1984; 51 FR 20430, June 4, 1986; 51 FR 23760, July 1, 1986; 53 FR 1600, Jan. 14, 1988; 53 FR 40610, Oct. 17, 1988; 56 FR 30123, July 24, 1991]

§ 403.4 State or local law.

Nothing in this regulation is intended to affect any Pretreatment Requirements, including any standards or prohibitions, established by State or local law as long as the State or local requirements are not less stringent than any set forth in National Pretreatment Standards, or any other requirements or prohibitions established under the Act or this regulation. States with an NPDES permit program approved in accordance with section 402 (b) and (c) of the Act, or States requesting NPDES programs, are responsible for developing a State pretreatment program in accordance with § 403.10 of this regulation.

§ 403.6 National pretreatment standards: Prohibited discharges.

(a)(1) *General prohibitions.* A User may not introduce into a POTW any pollutant(s) which cause Pass Through or Interference. These general prohibitions and the specific prohibitions in paragraph (b) of this section apply to each User introducing pollutants into a POTW whether or not the User is subject to other National Pretreatment Standards or any national, State, or local Pretreatment Requirements.

(2) *Affirmative Defenses.* A User shall have an affirmative defense in any action brought against it alleging a violation of the general prohibitions established in paragraph (a)(1) of this section and the specific prohibitions in paragraphs (b)(3), (b)(4), (b)(5), (b)(6), and (b)(7) of this section where the User can demonstrate that:

(i) It did not know or have reason to know that its Discharge, alone or in conjunction with a discharge or discharges from other sources, would cause Pass Through or Interference; and

(ii)(A) A local limit designed to prevent Pass Through and/or Interference, as the case may be, was developed in accordance with paragraph (c) of this section for each pollutant in the User's Discharge that caused Pass Through or Interference, and the User was in compliance with each such local limit directly prior to and during the Pass Through or Interference; or

(B) If a local limit designed to prevent Pass Through and/or Interference, as the case may be, has not been developed in accordance with paragraph (c) of this section for the pollutant(s) that caused the Pass Through or Interference, the User's Discharge directly prior to and during the Pass Through or Interference did not change substantially in nature or constituents from the User's prior discharge activity when the POTW was regularly in compliance with the POTW's NPDES permit requirements and, in the case of Interference, applicable requirements for sewage sludge use or disposal.

(b) *Specific prohibitions.* In addition, the following pollutants shall not be introduced into a POTW:

ORDINANCE NO. 17,966

AN ORDINANCE REGULATING THE DISCHARGE OF INDUSTRIAL WASTEWATER TO THE PUBLIC SEWER SYSTEM, PROVIDING PENALTIES FOR THE VIOLATION THEREOF, REPEALING ALL ORDINANCES OR PARTS THEREOF IN CONFLICT THEREWITH CONSISTING OF ARTICLES VI, VII, VIII, AND IX OF ORDINANCE NO. 15,344 PASSED ON SEPTEMBER 1, 1987, AND FOR OTHER PURPOSES, ALL PERTAINING TO THE SEWER LINES AND SYSTEM WITHIN THE JURISDICTION OF THE CITY OF LITTLE ROCK, ARKANSAS, AND DECLARING AN EMERGENCY.

WHEREAS, Articles VI, VII, VIII, and IX of City of Little Rock Ordinance No. 15,344, passed on September 1, 1987, currently regulates the discharge of industrial wastewater to the public sewer system and these provisions should be repealed and revised and expanded provisions in a new ordinance should be adopted to comply with applicable federal and state laws and regulations prescribing requirements on industrial discharges not now included in Ordinance No. 15,344; and,

WHEREAS, the provisions as hereinafter set forth contain the revisions and additions necessary to comply with applicable federal and state laws and regulations prescribing requirements on industrial discharges, including, but not limited to, the penalty or fines in the amount of \$1,000.00 for each violation by Industrial Users of pretreatment standards or requirements, as required by applicable federal law and now authorized by Arkansas law, as set forth in A.C.A. § 8-4-103(g)(1); and,

WHEREAS, said revisions and additions are necessary to more effectively regulate industrial discharges to the sewer system of the City of Little Rock and enable the Little Rock Wastewater Utility to more efficiently and effectively operate the sewer system by regulating industrial discharges according to the provisions contained herein, the titles to which are hereinafter set forth in the following table of contents for convenience of reference only, and not to define or limit any of the terms or the provisions, as hereinafter set forth in this ordinance:

**TABLE OF CONTENTS
OF THIS ORDINANCE**

SECTION 1	GENERAL PROVISIONS	4
	1.1 Title, Purpose and Policy	
	1.2 Administration	
	1.3 Abbreviations	
	1.4 Definitions	
SECTION 2	GENERAL SEWER USE REQUIREMENTS	14
	2.1 Prohibited Discharge Standards	
	2.2 National Categorical Pretreatment Standards	
	2.3 State Pretreatment Standards	
	2.4 Local Limits	
	2.5 Right of Revision	
	2.6 Dilution	
SECTION 3	PRETREATMENT OF WASTEWATER	19
	3.1 Pretreatment Facilities	
	3.2 Additional Pretreatment Measures	
	3.3 Accidental Discharge/Slug Control Plans	
	3.4 Hauled Wastewater	
SECTION 4	WASTEWATER DISCHARGE PERMITS	22
	4.1 Wastewater Survey	
	4.2 Permit Requirements	
	4.3 Permitting: Existing Connections	
	4.4 Permitting: New Connections	
	4.5 Permit Application Contents	
	4.6 Application Signatories and Certification	
SECTION 5	WASTEWATER DISCHARGE PERMIT ISSUANCE PROCESS	26
	5.1 Wastewater Discharge Permit Duration	
	5.2 Wastewater Discharge Permit Contents	
	5.3 Wastewater Discharge Permit Modification	
	5.4 Wastewater Discharge Permit Transfer	
	5.5 Wastewater Discharge Permit Revocation	
	5.6 Wastewater Discharge Permit Reissuance	
	5.7 Regulation of Waste Received from Other Jurisdictions	
SECTION 6	REPORTING REQUIREMENTS	30
	6.1 Baseline Monitoring Reports	
	6.2 Compliance Schedule Progress Reports	
	6.3 Reports on Compliance with Categorical Pretreatment Standard Deadline	
	6.4 Periodic Compliance Reports	
	6.5 Monthly Self Monitoring Reports	
	6.6 Reports of Changed Conditions	
	6.7 Reports of Potential Problems	

	6.8	Other Reports - Permitted and Unpermitted Users	
	6.9	Notice of Violation/Repeat Sampling and Reporting	
	6.10	Notification of the Discharge of Hazardous Waste	
	6.11	Analytical Requirements	
	6.12	Sample Collection	
	6.13	Timing	
	6.14	Record Keeping	
SECTION 7		POWER AND AUTHORITY OF INSPECTORS	39
	7.1	Right of Entry: Inspection and Sampling	
	7.2	Search Warrants	
SECTION 8		CONFIDENTIAL INFORMATION	41
SECTION 9		PUBLICATION OF USERS IN SIGNIFICANT NON-COMPLIANCE	42
SECTION 10		ADMINISTRATIVE ENFORCEMENT REMEDIES	43
	10.1	Non-compliance Incident	
	10.2	Notification of Violation	
	10.3	Consent Orders	
	10.4	Show Cause Hearing	
	10.5	Compliance Orders	
	10.6	Cease and Desist Orders	
	10.7	Administrative Fines	
	10.8	Emergency Suspensions	
	10.9	Termination of Discharge	
SECTION 11		JUDICIAL ENFORCEMENT REMEDIES	48
	11.1	Injunctive Relief	
	11.2	Civil Penalties	
	11.3	Criminal Prosecution	
	11.4	Remedies Nonexclusive	
SECTION 12		SUPPLEMENTAL ENFORCEMENT ACTION	51
	12.1	Performance Bonds	
	12.2	Liability Insurance	
	12.3	Public Nuisances	
SECTION 13		AFFIRMATIVE DEFENSES TO DISCHARGE VIOLATIONS	51
	13.1	Upset	
	13.2	Prohibited Discharge Standards	
	13.3	Bypass	
SECTION 14		EXTRA STRENGTH SURCHARGE RATES	54
	14.1	General	
	14.2	Computations	

SECTION 15	MISCELLANEOUS PROVISIONS	55
	15.1 Pretreatment Charges and Fees	
SECTION 16	SEVERABILITY	56
SECTION 17	REPEAL OF PRIOR ORDINANCES	56
SECTION 18	AUTHORITY OF LITTLE ROCK SANITARY SEWER COMMITTEE, EFFECTIVE DATE, AND DECLARING AN EMERGENCY	56

WHEREAS, it is essential that the Little Rock Sanitary Sewer Committee should have the authority to perform all acts as provided in this ordinance, in order to effectively regulate the use and operation of the public sewer system of the City of Little Rock and the provisions of this ordinance are necessary for the immediate preservation and protection of the public health, safety and welfare;

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE CITY OF LITTLE ROCK, ARKANSAS:

SECTION 1 - GENERAL PROVISIONS

1.1 Title, Purpose and Policy

This ordinance shall be known as "the Pretreatment Ordinance" and sets forth uniform requirements for Users of the Publicly Owned Treatment Works for the City of Little Rock and enables the Little Rock Wastewater Utility, hereafter Utility, to comply with all applicable State and Federal laws, including the Clean Water Act (33 United States Code § 1251 et seq.) and the General Pretreatment Regulations (40 Code of Federal Regulations Part 403). The objectives of this ordinance are:

- A. To prevent the introduction of pollutants into the Publicly Owned Treatment Works that will interfere with its operation, contaminate the resulting biosolids, or interfere with the use and disposal of wastewater or biosolids in compliance with applicable statutes and regulations;
- B. To prevent the introduction of pollutants into the Publicly Owned Treatment Works that will pass through the Publicly Owned Treatment Works, inadequately treated, into receiving waters, or otherwise be incompatible with the Publicly Owned Treatment Works;
- C. To protect both Publicly Owned Treatment Works personnel who may be affected by wastewater and sludge in the course of their employment and the general public;

- D. To promote re-use and recycling of wastewater and biosolids from the Publicly Owned Treatment Works;
- E. To enable the Utility to comply with its National Pollutant Discharge Elimination System permit conditions, biosolids use and disposal requirements, and any other Federal or State laws to which the Utility is subject.
- F. It is in the best interest of the Utility to clarify and update the provisions of the existing Sewer Use Ordinance (15,344) to achieve compliance with the Clean Water Act and regulations pursuant to 40 CFR 403 (General Pretreatment Regulations) as amended July 24, 1990.
- G. To promote and encourage pollution prevention and waste minimization and waste reduction at Industrial Users prior to their recycling, treatment, or disposal options.

This ordinance shall apply to all Users of the Publicly Owned Treatment Works. The Ordinance authorizes the issuance of wastewater discharge permits; provides for monitoring, compliance, and enforcement activities; establishes administrative review procedures; requires User reporting; and provides for the setting of such fees as necessary for the equitable distribution of costs resulting from the program established herein.

1.2 Administration

Except as otherwise provided herein, the Manager shall administer, implement, and enforce the provisions of this Ordinance. Any powers granted to or duties imposed upon the Manager may be delegated by the Manager to other Utility personnel.

1.3 Abbreviations

The following abbreviations, when used in this ordinance, shall have the designated meanings:

BOD	-	Biochemical Oxygen Demand
BTEX	-	Benzene, Toluene, Ethylbenzene, Xylene
CFR	-	Code of Federal Regulations
COD	-	Chemical Oxygen Demand
EPA	-	U.S. Environmental Protection Agency
gpd	-	gallons per day
mg/L	-	milligrams per liter
NPDES	-	National Pollutant Discharge Elimination System
O&G	-	Oil and Grease
POTW	-	Publicly Owned Treatment Works

RCRA	-	Resource Conservation and Recovery Act
SIC	-	Standard Industrial Classification
TSS	-	Total Suspended Solids
U.S.C.	-	United States Code

1.4 Definitions

Unless a provision explicitly states otherwise, the following terms and phrases, as used in this ordinance, shall have the meanings hereinafter designated.

- A. Act or "the Act" The Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. § 1251 et seq.
- B. And/Or shall mean one item or the other or a combination of both or all.
- C. Approval Authority The Arkansas Department of Environmental Quality.
- D. Authorized Representative of the User.
 - (1) If the User is a corporation:
 - (a) The president, secretary, treasurer, or a vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - (b) The manager or Chief Executive Officer ("CEO") of one or more manufacturing, production, or operation facilities employing more than two hundred fifty (250) persons or having gross annual sales or expenditures exceeding twenty-five (25) million dollars (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager or CEO in accordance with corporate procedures.
 - (2) If the User is a partnership or sole proprietorship: a general partner or proprietor, respectively.
 - (3) If the User is a Federal, State, or local governmental facility: a director or highest official appointed or designated to oversee the operation and performance of the activities of the government facility, or their designee.

- (4) The individuals described in paragraphs 1 through 3, above, may designate another authorized representative if the authorization is in writing, the authorization specifies the individual or position responsible for the overall operation of the facility from which the discharge originates or having overall responsibility for environmental matters for the company, and the written authorization is submitted to the Manager or CEO.
- E. Batch Discharge. The discharge of wastewater to a POTW on an intermittent basis.
- F. Biochemical Oxygen Demand or BOD. The relative oxygen requirements of water and wastewater as determined by generally accepted standard laboratory procedures. The test measures the quantity of oxygen utilized in the biochemical oxidation of organic matter and inorganic matter such as sulfides, ferrous iron, and reduced forms of nitrogen. The test is conducted under standard laboratory procedures for five (5) days at 20 degrees centigrade, usually expressed as a concentration (e.g., mg/L).
- G. BTEX. The sum of the milligram per liter concentrations of benzene, toluene, ethylbenzene, and xylene.
- H. BTEX Waters. Those waters associated with underground petroleum storage tanks. This may include water inside the tanks, water within the excavation pit upon removal of such tanks, or contaminated groundwater in the immediate vicinity of such a tank.
- I. Categorical Pretreatment Standard or Categorical Standard. Any regulation containing pollutant discharge limits promulgated by EPA in accordance with Sections 307(b) and (c) of the Act (33 U.S.C. § 1317) which apply to a specific category of Users and which appear in 40 CFR Chapter I, Subchapter N, Parts 405-471.
- J. City. The City of Little Rock, Arkansas.
- K. Composite Sample. A series of individual grab samples collected over a known period of time or proportional to flow and combined to make one sample.
- L. Control Authority. The City of Little Rock Wastewater Utility.
- M. Control Manhole. The manhole through which or into which the majority of the significant industrial wastestreams from

a discharger flows and which is suitable for obtaining a representative sample of the discharge.

- N. Environmental Protection Agency or EPA. The U.S. Environmental Protection Agency or, where appropriate, the Regional Water Management Division Director, or other duly authorized official of said agency.
- O. Existing Source. Any source of discharge, the construction or operation of which commenced prior to the publication by EPA of proposed categorical pretreatment standards, which will be applicable to such source if the standard is thereafter promulgated in accordance with Section 307 of the Act.
- P. Extra Strength Surcharge or Surcharge. The additional monthly sewer charge assessed to persons discharging wastewater exceeding the average domestic concentrations for BOD, TSS, and/or Oil and Grease. The surcharge is based on the pounds of pollutant discharged and reflects the additional cost of treating high strength discharges.
- Q. Garbage. The solid wastes from the domestic and commercial preparation, cooking and disposing of food, and from the handling, storage, and sale of produce.
- R. Grab Sample. A sample which is taken from a wastestream without regard to the flow in the wastestream and over a period of time not to exceed fifteen (15) minutes.
- S. Indirect Discharge or Discharge. The introduction of pollutants into the POTW from any non-domestic source regulated under Section 307(b), (c), or (d) of the Act.
- T. Industrial User or User. A source of indirect discharge.
- U. Interference. A discharge, which alone or in conjunction with a discharge or discharges from other sources, inhibits or disrupts the POTW, its treatment processes or operations or its biosolids processes, use or disposal; and therefore, is a cause of a violation of the POTW's NPDES permit or of the prevention of biosolids use or disposal in compliance with any of the following statutory/regulatory provisions or permits issued thereunder, or any more stringent State or local regulations: Section 405 of the Act; the Solid Waste Disposal Act, including Title II commonly referred to as the Resource Conservation and Recovery Act (RCRA); any State regulations contained in any State biosolids management plan prepared pursuant to Subtitle D of the Solid Waste Disposal

Act; the Clean Air Act; the Toxic Substances Control Act; and the Marine Protection, Research, and Sanctuaries Act.

- V. Landfill Leachate. Those waters collected from the under drainage collection system of a sanitary landfill.
- W. Medical Waste. Isolation wastes, infectious agents, human blood and blood products, pathological wastes, sharps, body parts, contaminated bedding, surgical wastes, potentially contaminated laboratory wastes, dialysis wastes, and wastes containing radioactive isotopes.
- X. Manager. The Manager of Little Rock Wastewater Utility, or his duly authorized deputy, agent, or representative.
- Y. Maximum Allowable Discharge Limit. The maximum amount of a pollutant (either in concentration or mass) that is allowed to be discharged to the POTW
- Z. NPDES. The National Pollutant Discharge Elimination System.
- AA. New Source.

(1) Any building, structure, facility, or installation from which there is (or may be) a discharge of pollutants, the construction of which commenced after the publication of proposed pretreatment standards under Section 307(c) of the Act which will be applicable to such source if such standards are thereafter promulgated in accordance with that section, provided that:

(a) The building, structure, facility, or installation is constructed at a site at which no other source is located; or

(b) The building, structure, facility, or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

(c) The production or wastewater generating processes of the building, structure, facility, or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source, should be considered.

(2) Construction on a site at which an existing source is located results in a modification rather than a new source if the construction does not create a new building, structure, facility, or installation meeting the criteria of Section (1)(b) or (c) above but otherwise alters, replaces, or adds to existing process or production equipment.

(3) Construction of a new source as defined under this paragraph has commenced if the owner or operator has:

(a) Begun, or caused to begin, as part of a continuous on-site construction program

(i) any placement, assembly, or installation of facilities or equipment; or

(ii) significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or

(b) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.

BB. Non-contact Cooling Water. Water used for cooling which does not come into direct contact with any raw material, intermediate product, waste product, or finished product.

CC. Oil and Grease or O&G. A group of substances with similar physical characteristics are determined quantitatively on the basis of their common solubility in an organic extracting solvent. These substances including fats, waxes, free fatty acids, calcium and magnesium soaps, mineral oils, and certain other non-fatty materials. It includes other materials recovered by the solvent from an acidified sample (such as sulfur compounds, certain organic dyes, and chlorophyll) and not volatilized during the test. At the discretion of the Manager, the Oil and Grease test may be determined by the Partition-Gravimetric Method as outlined in the latest approved listing in 40 Code of

Federal Regulation, Part 136 or the Soxhlet Method contained in the latest approved edition of "Standard Methods for the Examination of Water and Wastes". Further, the solvent used may either be Trichlorotrifluoroethane(1,1,2-trichloro-1,2,2-trifluoro-ethane)or a mixture of 80% n-hexane and 20% methyl-tert-butyl ether.

- DD. Pass Through. A discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit, including an increase in the magnitude or duration of a violation.
- EE. Person. Any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity, or any other legal entity; or their legal representatives, agents, or assigns. This definition includes all Federal, State, and local governmental entities.
- FF. pH. A measure of the hydrogen-ion concentration in a solution, expressed as the logarithm (base ten) of the reciprocal of the hydrogen-ion concentration in gram moles per liter (g/mole/L). On the pH scale (0 to 14), a value of 7 at 25°C (77°F) represents a neutral condition. Decreasing values indicate increasing hydrogen-ion concentration (acidity); increasing values indicate decreasing hydrogen-ion concentration (alkalinity).
- GG. Pollutant. Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, medical wastes, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, municipal, agricultural and industrial wastes, and certain characteristics of wastewater (e.g., TSS, turbidity, color, BOD, COD, cyanide, oil & grease, heavy metals, toxicity, or odor).
- HH. POTW Treatment Plant. That portion of the publicly owned treatment works(POTW) designed to provide treatment to wastewater.
- II. Pretreatment. The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to, or in lieu of, introducing such pollutants into the POTW. This reduction or alteration can be obtained by physical, chemical, or biological processes; by process changes; or by other means, except by diluting the concentration of the

pollutants unless allowed by an applicable pretreatment standard.

- JJ. Pretreatment Program. The Utility's EPA and/or Arkansas Department of Environmental Quality approved program to administer the requirements of 40 CFR 403, the General Pretreatment Regulations, and associated National Categorical Standards as adopted into Section 4 of Regulation No. 6: Regulations for State Administration of the National Pollutant Discharge Elimination System.
- KK. Pretreatment Requirement. Any substantive or procedural requirement related to Pretreatment, other than a National Pretreatment Standard, imposed on an Industrial User.
- LL. Pretreatment Standards or Standards. Pretreatment standards shall mean prohibited discharge standards, categorical pretreatment standards, and local limits.
- MM. Prohibited Discharge Standards or Prohibited Discharges. Absolute prohibitions against the discharge of certain substances; these prohibitions appear in Section 2.1 of this ordinance.
- NN. Publicly Owned Treatment Works or POTW. A "treatment works," as defined by Section 212 of the Act (33 U.S.C. §1292) which is owned by the City of Little Rock. This definition includes any devices or systems used in the collection, storage, treatment, recycling, and reclamation of sewage or industrial wastes of a liquid nature and any conveyances which convey wastewater to a treatment plant.
- OO. Sanitary Sewer. A sewer in which sewage is carried, and to which storm, surface, and ground water are not intentionally admitted.
- PP. Secure Sample Point. Any access point to a building sewer which is used for the purpose of collecting a wastewater sample where the Utility is required to maintain custody of the sample.
- QQ. Septic Tank Waste. Any domestic sewage from holding tanks such as vessels, campers, trailers, and septic tanks.
- RR. Sewage. The spent or used water of a community or industry containing dissolved and suspended matter.
- SS. Sewer. A pipe or conduit for carrying sewage.

- TT. Sewer Committee. The Sanitary Sewer Committee of the City of Little Rock Wastewater Utility.
- UU. Shall is mandatory; May is permissive.
- VV. Significant Industrial User.
- (1) A User subject to categorical pretreatment standards; or
 - (2) A User that:
 - (a) Discharges an average of twenty-five thousand (25,000) gpd or more of process wastewater to the POTW (excluding sanitary, non-contact cooling, and boiler blow down wastewater);
 - (b) Contributes a process wastestream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or
 - (c) Is designated as such by the Manager on the basis that it has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.
- WW. Slug Load or Slug. Any discharge at a flow rate or pollutant concentration which could cause a violation of the prohibited discharge standards in Section 2.1 of this ordinance.
- XX. Standard Industrial Classification (SIC) Code. A classification pursuant to the *North American Industry Classification System - United States, (1997)* issued by the United States Office of Management and Budget's Economic Classification Policy Committee.
- YY. State. The State of Arkansas.
- ZZ. Storm Water. Any flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snow melt.
- AAA. Total Suspended Solids or TSS. The total suspended solids are wastewater residues removed by laboratory filtering and retained on a standard glass-fiber filter with a nominal pore size of 2.0 μm (or smaller) and dried to a constant weight at a temperature of 103° - 105° centigrade.

- BBB. Toxic Pollutant. Any pollutant or combination of pollutants listed as toxic in regulations promulgated by the Administrator of the Environmental Protection Agency under the provisions of the Clean Water Act 307(a) or other acts.
- CCC. Upset. An exceptional incident in which a discharger unintentionally and temporarily is in a state of non-compliance with the standards set forth in this Ordinance or the discharger's Industrial Wastewater Discharge Permit, due to forces beyond the reasonable control of the discharger, and excluding non-compliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation thereof.
- DDD. User or Industrial User. A source of indirect discharge.
- EEE. Utility. The City of Little Rock Wastewater Utility, including the POTW, personnel, and all authorized representatives.
- FFF. Wastewater. Liquid and water-carried industrial wastes and sewage from residential dwellings, commercial buildings, industrial and manufacturing facilities, and institutions, whether treated or untreated, which are contributed to the POTW.

SECTION 2 - GENERAL SEWER USE REQUIREMENTS

2.1 Prohibited Discharge Standards

- A. General Prohibitions. No User shall introduce or cause to be introduced into the POTW any pollutant or wastewater which causes pass through or interference or in any way contaminates the POTW biosolids, scum, or residues to such a level as to render them unacceptable for economical reuse or reclamation. These general prohibitions apply to all Users of the POTW whether or not they are subject to categorical pretreatment standards or any other National, State, or local pretreatment standards or requirements.
- B. Specific Prohibitions. No User shall introduce or cause to be introduced into the POTW the following pollutants, substances, or wastewater:
- (1) Liquids, solids, or gases which by reason of their nature and quantity are, or may be, sufficient either alone or by interaction with other substances to cause a fire or explosion hazard or be injurious in any other

way to the POTW or the operation of the POTW. Such materials include, but are not limited to, gasoline, diesel, benzene, naphtha, fuel oils, kerosene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, or sulfides, or any wastestream with a closed cup flash point of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21;

- (2) Water or wastes having a pH lower than 5.0 S.U. or greater than 12.0 S.U. or having any other corrosive property capable of causing damage or a hazard to the structures, equipment, and personnel of the POTW. In no case shall waters or wastes be discharged at such a flow rate and/or pH which will cause the influent at the POTW treatment plant to be lower than 6.0 S.U. or greater than 9.0 S.U.;
- (3) Solid or viscous substances in quantities or of such size capable of creating a stoppage, plugging, breakage, or any reduction in sewer capacity or any other damage to the POTW such as, but not limited to, ashes, cinders, sand, plastic, wood, un-ground garbage, whole blood, hair and fleshings, entrails, and paper dishes, cups, milk containers, etc. Any additional sewer or sewerage maintenance expenses caused by such a discharge, or any other expenses attributable thereto will be charged to the User by the Utility. Any refusal to pay the additional maintenance expense duly authorized by the Manager shall constitute a violation of the provisions contained herein;
- (4) Pollutants, including oxygen-demanding pollutants (BOD, COD, etc.), released in a discharge at a flow rate and/or pollutant concentration which, either singly or by interaction with other pollutants, will cause interference, upset, or loss of efficiency at POTW. In no case shall a slug load have a flow rate or contain a concentration or quantity of pollutants that exceed for any time period longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration, quantity, or flow during normal operation of the discharger;
- (5) Waters, wastes, or vapors discharged at such a volume or temperature which will inhibit biological activity in the treatment plant resulting in interference, but in no case any such waters or wastes which will cause the POTW influent or pumping station wetwell

temperature to exceed 104°F (40.0°C). Any liquid or vapor having a temperature higher than 130° F (54.4° C) at the point of discharge;

- (6) **Petroleum oil**, non-biodegradable cutting oil, or products of mineral oil origin, in amounts that will cause interference or pass through;
- (7) Waters or wastes containing toxic or poisonous solids, liquids, or gases, or oxygen demanding wastes, in sufficient quantity, either singly or by interaction with other wastes to injure or cause interference with any sewage treatment process, to contaminate the POTW sludges, scum, or residue to such a level to render them unacceptable for economical reuse or reclamation, to pass through the POTW and cause a violation of the POTW's NPDES Permit or create a toxic effect in the receiving stream, to cause a public nuisance, or to constitute a hazard or an acute health or safety problem to the POTW workers or the public;
- (8) Noxious or malodorous liquids, gases, solids, or other wastewater which, either singly or by interaction with other wastes, are sufficient to create a public nuisance or a hazard to life, or to prevent entry into the sewers for maintenance or repair;
- (9) Wastewater which imparts color which cannot be removed by the treatment process, such as, but not limited to, dye wastes and vegetable tanning solutions, which consequently imparts color to the treatment plant's effluent, thereby violating the Utility's NPDES permit;
- (10) Unusual concentrations of inert suspended solids such as, but not limited to, Fuller earth, lime slurries and lime residues, or dissolved solids such as, but not limited to, sodium chloride and sodium sulfate.
- (11) Wastewater containing any radioactive wastes or isotopes except in compliance with applicable State or Federal regulations;
- (12) **Storm water**, surface water, ground water, artesian well water, roof runoff, subsurface drainage, swimming pool drainage, condensate, de-ionized water, non-contact cooling water, and unpolluted wastewater, unless specifically authorized by the Manager;
- (13) Sludges, screenings, or other residues from the pretreatment of industrial wastes;

- (14) Medical wastes, except as specifically authorized by the Manager in a wastewater discharge permit;
- (15) Wastewater causing, alone or in conjunction with other sources, the treatment plant's effluent to fail a toxicity test;
- (16) Detergents, surfactant, or other substances which may cause excessive foaming in the POTW; or
- (17) Wastewater causing two successive readings on an explosion hazard meter at the point of discharge into the POTW, or at any point in the POTW, of more than 10% or any single reading over 20% of the Lower Explosive Limit of the meter.
- (18) Hauled or trucked liquid wastes, except at the specific discharge point(s) designated by the Utility;

Pollutants, substances, or wastewater prohibited by this section shall not be processed or stored in such a manner that they could be discharged to the POTW.

2.2 National Categorical Pretreatment Standards

The categorical pretreatment standards found at 40 CFR Chapter I, Subchapter N, Parts 405-471 are hereby incorporated. Those standards, if more stringent than the limitations imposed by the latest approved "Technically Based Local Limits Development Document" for sources in that sub-category, shall supersede the limitations imposed by the Local Limits.

- A. Where a categorical pretreatment standard is expressed only in terms of either the mass or the concentration of a pollutant in wastewater, the Manager may impose equivalent concentration or mass limits in accordance with 40 CFR 403.6(c).
- B. When wastewater subject to a categorical pretreatment standard is mixed with wastewater not regulated by the same standard, the Manager shall impose an alternate limit using the combined wastestream formula in 40 CFR 403.6(e).

2.3 State Pretreatment Standards

State pretreatment standards located in Section 4 of Regulation No.6: Regulations for State Administration of the National Pollutant Discharge Elimination System for a particular industrial sub-category, if more stringent than the requirements

of this Ordinance, shall supersede the requirements of this Ordinance, are hereby incorporated by reference and will be imposed where applicable and shall include, but is not limited to, discharge limitations and reporting requirements. This shall include those regulations currently promulgated or which will be promulgated in the future including any amendments, and shall be recognized as part of this Ordinance.

2.4 Local Limits

No person shall discharge any waters or wastes at a concentration that would exceed the concentration of pollutants, including but not limited to, those identified in the "Technically Based Local Limits Development Document", and adopted by the Manager of the Little Rock Wastewater Utility and approved by the Arkansas Department of Environmental Quality and the Little Rock Sanitary Sewer Committee.

The Utility will develop and assign specific discharge permit limitations for pollutants for permitted Users based on criteria approved by the Manager. The specific permit limits shall ensure that local limit pollutant concentrations will protect the wastewater treatment plant from upset. The Local Limits shall apply to the total flow or total discharge from the Industrial Users. In developing specific permit limits, the Manager may impose mass limitations in addition to, or in place of, specific concentration-based limits. In addition, the Utility may develop specific discharge limitations for any other toxic pollutants which the Manager of the Utility may determine to be of sufficient quantity to cause POTW interference and/or pass through, endanger the health and safety of the POTW personnel or the public health, cause a POTW permit violation or render the POTW sludges unacceptable for economic reuse or reclamation.

2.5 Right of Revision

The Utility shall at all times have the right to establish, by ordinance or in wastewater discharge permits, more stringent standards or requirements on discharges to the POTW than may be specified in this Ordinance or the "Technically Based Local Limits Document".

2.6 Dilution

No User shall ever increase the use of process water, or in any way attempt to dilute a discharge, as a partial or complete substitute for adequate treatment to achieve compliance with a discharge limitation unless expressly authorized by an applicable pretreatment standard or requirement. The Manager may impose mass

limitations on Users who are using dilution to meet applicable pretreatment standards or requirements, or in other cases when the imposition of mass limitations is appropriate.

SECTION 3 - PRETREATMENT OF WASTEWATER

3.1 Pretreatment Facilities

Users shall provide wastewater treatment as necessary to comply with this Ordinance and shall achieve compliance with all categorical pretreatment standards, local limits, and the prohibitions set out in Section 2.1 of this ordinance within the time limitations specified by EPA, the State, or the Manager, whichever is more stringent. Any facilities necessary for compliance shall be provided, operated, and maintained at the User's expense. Detailed plans describing such facilities and operating procedures shall be submitted to the Manager for review, and shall be acceptable to the Manager before such facilities are constructed. The review of such plans and operating procedures shall in no way relieve the User from the responsibility of modifying such facilities as necessary to produce a discharge acceptable to the Utility under the provisions of this Ordinance.

3.2 Additional Pretreatment Measures

- A. If any waters or wastes which are discharged or which are to be discharged into the public sewers contain or possess any of the characteristics enumerated in Section 2.1(A), 2.1(B), 2.4, and/or 14.1 of this Ordinance and in the judgment of the Manager, may have a deleterious effect upon the sewage works, processes, equipment, sludges, or receiving waters, or which otherwise creates a hazard to life or constitutes a public nuisance, the Manager may (a) reject the wastes, (b) require pretreatment to an acceptable condition for discharge to the public sewer, and/or (c) require control over the quantities and rate of discharge.

If the Manager requires the pretreatment or equalization of waste flows, the design and installation of the plants and equipment shall be subject to the review and approval of the Manager and subject to all applicable codes, ordinances, and laws. Where pretreatment or flow equalization facilities are provided for any waters or wastes, they shall be continuously maintained in satisfactory and effective operation by the owner or occupant at his own expense.

- B. Whenever deemed necessary, the Manager may require Users to restrict their discharge during peak flow periods, designate that certain wastewater be discharged only into specific

sewers, relocate and/or consolidate points of discharge, separate sewage wastestreams from industrial wastestreams, and such other conditions as may be necessary to protect the POTW and determine the User's compliance with the requirements of this Ordinance.

- C. The Manager may require any person discharging into the POTW to install and maintain, on their property and at their expense, a suitable storage and flow-control facility to ensure equalization of flow. A wastewater discharge permit may be issued solely for flow equalization.
- D. Grease, oil, and sand interceptors shall be provided when, in the opinion of the Manager, they are necessary for the proper handling of wastewater containing excessive amounts of grease and oil, any flammable wastes, or sand; except that such interceptors shall not be required for residential Users. All interception units shall be of type and capacity approved by the Manager and shall be so located to be easily accessible for cleaning and inspection. Such interceptors shall be inspected, cleaned, and repaired regularly, as needed, by the User at their expense. Storage, handling, transportation, and disposal of all wastes generated from such interceptors shall be performed in accordance with all applicable Federal, State, and local regulations that pertain to that type and/or class of waste.
- E. Users with the potential to discharge flammable substances may be required to install and maintain an approved combustible gas detection meter.
- F. When required by the Manager, the owner of any property serviced by a building sewer carrying industrial waste shall provide a secure sample point or control manhole which is constructed in accordance with the latest revision of the Little Rock Wastewater Utility's Specification Requirements for Sanitary Sewers. The secure sample point or control manhole shall be safely located and accessible to duly authorized employees and/or representatives of the Utility at all times. When deemed necessary by the Manager, the secure sample point or control manhole shall be provided with meters or other appurtenances to facilitate the monitoring of the wastewater. The cost of the installation and maintenance of a secure sample point or control manhole shall be borne by the owner. Any construction and/or alteration of a secure sample point or control manhole shall be approved by the Manager before any construction has begun.

Any secure sample point or control manhole located in a parking lot or other area where any vehicles may reasonably be expected to be parked must be protected by a permanent barrier, railing, or other means if it is determined necessary by the Manager to ensure continued and uninterrupted access to the secure sample point or control manhole by Utility personnel.

- G. Whenever deemed necessary, the Manager may require the pretreatment system operator(s) to be licensed in accordance with the State of Arkansas' Regulation Number 3, including all amendments thereto, for the operation of industrial wastewater treatment systems.

3.3 Accidental Discharge/Slug Control Plans

At least once every two (2) years, the Manager shall evaluate whether each significant Industrial User needs an accidental discharge/slug control plan. The Manager may require any User to develop, submit for approval, and implement such a plan. Alternatively, the Manager may develop such a plan for any User. An accidental discharge/slug control plan shall address, at a minimum, the following:

- A. Description of discharge practices, including non-routine batch discharges;
- B. Description of stored chemicals;
- C. Procedures for immediately notifying the Manager of any accidental or slug discharge, as required by Section 6.6 of this ordinance; and
- D. Procedures to prevent adverse impact from any accidental or slug discharge. Such procedures include, but are not limited to, inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site runoff, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants, including solvents, and/or measures and equipment for emergency response.

3.4 Hauled Wastewater

- A. Septic tank waste originating from domestic sources may be introduced into the POTW only at locations designated by the Manager, and at such times as are established by the Manager. Such waste shall not violate Section 2 of this Ordinance or any other requirements established by the

Manager. The Manager may require septic tank waste haulers to obtain wastewater discharge permits.

- B. Other hauled liquid wastes may be introduced into the POTW also, with prior approval of the Manager. These other wastes may include, but are not limited to, landfill leachate and waters associated with the removal of underground petroleum storage tanks (BTEX waters). The acceptance of such waters for introduction to the POTW shall comply with Little Rock Wastewater Utility current policies on the acceptance of landfill leachate and BTEX.
- C. The Manager shall require all haulers of liquid wastes discharged into the POTW to use the Utility manifest system for each load of hauled liquid waste. This form must contain, at a minimum, the name and address of the waste hauler, permit number, truck identification, names and addresses of sources of waste, and volume and characteristics of waste. The form shall identify the type of waste and state whether any wastes are RCRA hazardous wastes.

SECTION 4 - WASTEWATER DISCHARGE PERMITS

4.1 Wastewater Survey

When requested by the Manager, all Industrial Users must submit information on the nature and characteristics of their wastewater by completing a wastewater survey prior to commencing their discharge. The Manager is authorized to prepare a form for this purpose and may periodically require Industrial Users to update the survey. Failure to complete this survey shall be reasonable grounds for terminating service to the Industrial User and shall be considered a violation of this Ordinance.

4.2 Permit Requirements

- A. All significant industrial dischargers are required to have a valid Class "C" or Class "S" Industrial Wastewater Discharge Permit. A Class "C" Industrial Wastewater Discharge Permit will be issued to any industrial discharger subject to a Categorical Pretreatment Standard and a Class "S" Industrial Discharge Permit will be issued to all other significant industrial dischargers. A Class "N" Industrial Wastewater Discharge Permit may be issued to any non-significant industrial or commercial customer when it is deemed necessary by the Manager. All Industrial Wastewater Discharge Permits issued by the Manager to Industrial Users or dischargers will have a specific Discharge Permit Number

corresponding to the type of permit issued, e.g., C-04, S-32, N-15.

- B. The Manager may also require any other Users to obtain wastewater discharge permits as necessary to carry out the purposes of this ordinance.
- C. Any violation of the terms and conditions of a wastewater discharge permit shall be deemed a violation of this Ordinance and subjects the wastewater discharge permittee to the sanctions set out in Sections 10 through 12 of this Ordinance. Obtaining a wastewater discharge permit does not relieve a permittee of its obligation to comply with all Federal and State pretreatment standards or requirements or with any other requirements of Federal, State, and local law.

4.3 Permitting - Existing Connections

Any existing Industrial User identified by the Utility and required by the Manager to obtain an Industrial Wastewater Discharge Permit shall be notified by the Manager in writing and shall complete and return an Industrial Wastewater Discharge Permit Application within the time established by the Manager. The Manager may deny or condition the contribution of pollutants by such User in the Industrial Wastewater Discharge Permit.

4.4 Permit - New Connections

Any User required by the Manager to obtain a wastewater discharge permit who proposes to begin or recommence discharging industrial wastes into the POTW must obtain a discharge permit prior to the beginning or recommencing of such discharge. An application for this wastewater discharge permit must be filed at least ninety (90) days prior to the date upon which any discharge will begin or recommence. The Manager may deny or condition the contribution of pollutants by such User in the Industrial Wastewater Discharge Permit.

4.5 Application Contents

All Users required by the Manager shall submit an Industrial Wastewater Discharge Permit Application to the Utility, the form for which shall be provided by the Utility. The information required in the Permit Application shall, where requested or appropriate, include, but is not limited to:

- A. Name, address, and location of the Industrial User or discharger.

the non-compliance within a time period specified by the document. Such order, assurances, or other similar documents shall have the same force and effect as the administrative orders issued pursuant to Sections 10.4 and 10.5 of this ordinance and shall be judicially enforceable.

10.4 Show Cause Hearing

- A. The Manager may order any User which causes or contributes to violation(s) of this Ordinance, wastewater discharge permits, or orders issued hereunder, or any other pretreatment standard or requirement, to appear before the Sewer Committee and show cause why a proposed enforcement action should not be taken. Notice shall be served on the User specifying the time and place for the hearing, the proposed enforcement action, the reasons for such action, and a request that the User show cause why this proposed enforcement action should not be taken. The notice of the meeting shall be served personally or certified mail (return receipt requested) at least ten (10) days prior to the hearing. Such notice may be served on any authorized representative of the User. Whether or not the User appears as ordered, immediate enforcement action may be pursued following the hearing date. A show cause hearing shall not be a prerequisite for taking any other enforcement action.
- B. The Sewer Committee may itself conduct the show cause hearing and take the evidence or the Sewer Committee or its Chairman may designate the Manager to:
- (1) Issue in the name of the Sewer Committee notices of hearings requiring attendance, testimony of witnesses and the production of evidence relevant to any matter involved in such hearings;
 - (2) Take the evidence; and
 - (3) Transmit a report of the evidence and hearing, including transcripts and other evidence together with recommendations to the Sewer Committee for action thereon.
- C. At any hearing held pursuant to this Ordinance, any testimony taken must be under oath and be recorded by cassette tape. Any party desiring stenographic recording may provide the same at its own expense. A copy of a cassette tape or of the stenographic recorded transcript will be made available to any member of the public or any party to the hearing upon payment of the usual charges thereof (such as postage, printing, copying expense, etc.). Any decision made as a consequence of any hearing held

pursuant to this Ordinance shall be subject to review by appeal to the Circuit Court of Pulaski County, in accordance with the law of Arkansas.

- D. Following the show cause hearing, the hearing officer, if other than the Sewer Committee, shall within ten (10) days after the hearing submit his findings and recommendations to the members of the Sewer Committee. Following receipt of the recommendations, the Sewer Committee shall consider the findings and recommendations at its next regularly scheduled meeting or at any special meeting called for that purpose at which meeting the Sewer Committee shall take such action as it deems necessary. Within fifteen (15) days after consideration of the matter, the Sewer Committee shall have served on all parties the action recommended. If the Sewer Committee finds that legal action should be brought against the User for the violation(s), the Sewer Committee may institute such action to seek such civil and/or equitable relief including but not limited to injunctive relief, as may be appropriate; provided, however, that no suit to collect civil or criminal penalties may be initiated until after such time that a resolution authorizing such suit is duly adopted by the Sewer Committee pursuant to A.C.A. § 8-4-103 (g) (1) & (2).

Additionally, the Sewer Committee, through the Manager, may issue to any User in violation, notice that following a specified period of time, the sewer service will be discontinued unless its pretreatment facility shall have installed adequate devices or other related appurtenances are properly operated. Other orders and directives as necessary and appropriate may be issued.

An order directing the cessation of sewer service shall not preclude legal or equitable action as the Sewer Committee may deem appropriate under the circumstances.

10.5 Compliance Orders and Schedules

When the Manager finds that a User has violated, or continues to violate, any provision of this Ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the Manager may issue an order or schedule to the User responsible for the discharge directing that the User come into compliance within a specified time. If the User does not come into compliance within the time provided, sewer service may be discontinued subject to notice and right to a hearing as provided herein unless adequate treatment facilities, devices, or other related appurtenances are installed and properly operated. Compliance orders also may contain other

requirements to address the non-compliance, including additional self-monitoring and management practices designed to minimize the amount of pollutants discharged to the sewer. A compliance order may not extend the deadline for compliance established for a pretreatment standard or requirement, nor does a compliance order relieve the User of liability for any violation, including any continuing violation. Issuance of a compliance order shall not be a bar against, or a prerequisite for, taking any other action against the User.

10.6 Cease and Desist Orders

When the Manager finds that a User has violated, or continues to violate, any provision of this Ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, or that the User's past violations are likely to recur, the Manager may issue an order to the User directing it to cease and desist all such violations and directing the User to:

- A. Immediately comply with all requirements; and,
- B. Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and/or terminating the discharge.

Issuance of a cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the User.

10.7 Administrative Fines

- A. When the Manager finds that a User has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the Manager may fine such User in an amount not to exceed \$1,000.00. Such fines shall be assessed on a per violation basis. In the case of monthly or other long term average discharge limits, fines shall be assessed for each day during the period of violation. Each day of a continuing violation shall be deemed a separate violation.
- B. Users desiring to dispute such fines must file a written request for the Manager to reconsider the fine along with full payment of the fine amount within ten (10) days of being notified of the fine. Where a request has merit, the Manager may convene a hearing on the matter. In the event the User's request is granted, the payment shall be returned

to the User. Collection of a fine can only be effected in a court of competent jurisdiction.

- C. Issuance or pursuit of an administrative fine shall not be a bar against, or a prerequisite for, taking any other action against the User, and in no event shall legal proceedings be initiated to collect said fine or penalty without a resolution of the Sewer Committee authorizing such court action.

10.8 Emergency Suspensions

The Manager may immediately suspend a User's discharge, after notice to the User and a hearing within five (5) days of the suspension, whenever such suspension is necessary to stop an actual or threatened discharge which reasonably appears to present or cause an imminent or substantial endangerment to the health or welfare of persons. The Manager may also immediately suspend a User's discharge, after notice and opportunity to respond, that threatens to interfere with the operation of the POTW, or which presents, or may present, an endangerment to the environment.

- A. Any User notified of a suspension of its discharge shall immediately stop or eliminate its contribution. In the event of a User's failure to immediately comply voluntarily with the suspension order, the Manager may take such steps as deemed necessary, including immediate severance of the sewer connection, to prevent or minimize damage to the POTW, its receiving stream, or endangerment to any individuals. The Manager may allow the User to recommence its discharge when the User has demonstrated to the satisfaction of the Manager that the period of endangerment has passed, unless the termination proceedings in Section 10.8 of this Ordinance are initiated against the User.
- B. A User who is responsible, in whole or in part, for any discharge presenting imminent endangerment shall submit a detailed written statement, describing the causes of the harmful contribution and the measures taken to prevent any future occurrence, to the Manager prior to the date of any show cause or termination hearing under Sections 10.8 or 10.9 of this ordinance.

Nothing in this section shall be interpreted as requiring a hearing prior to any emergency suspension under this section.

10.9 Termination of Discharge

In addition to the provisions in Section 5.5 of this ordinance, any User who violates the following conditions of this Ordinance, wastewater discharge permits, or orders issued pursuant to any provision of this Ordinance may be subject to discharge permit termination:

- A. Violation of wastewater discharge permit conditions;
- B. Failure to accurately report the wastewater constituents and characteristics of its discharge;
- C. Failure to report significant changes in operations or wastewater volume, constituents, and characteristics prior to discharge;
- D. Refusal of reasonable access to the User's premises for the purpose of inspection, monitoring, or sampling; or
- E. Violation of the pretreatment standards in Section 2 of this ordinance. Such User will be notified of the proposed termination of its discharge and be offered an opportunity to show cause under Section 10.4 of this ordinance why the proposed action should not be taken. Exercise of this option by the Manager shall not be a bar to, or a prerequisite for, taking any other action against the User.

SECTION 11 - JUDICIAL ENFORCEMENT REMEDIES

11.1 Injunctive Relief

When the Manager finds that a User has violated, or continues to violate, any provision of this Ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, the Sewer Committee may commence proceedings for the issuance of a temporary or permanent injunction, as appropriate, which restrains or compels the specific performance of the wastewater discharge permit, order, or other requirement imposed by this ordinance on activities of the User. The Sewer Committee may also seek such other action as is appropriate for legal and/or equitable relief, including a requirement for the User to conduct environmental remediation. A complaint for injunctive relief shall not be a bar against, or a prerequisite for, taking any other action against a User.

11.2 Civil Penalties

- A. A User who has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement shall be liable to the Utility for a maximum civil penalty of \$1,000.00 per violation. In the case of a monthly or other long-term average discharge limit, penalties shall accrue for each day during the period of the violation; and, each day of a continuing violation may be deemed a separate violation.
- B. The Manager may recover all costs recoverable under the law of Arkansas, and other expenses associated with enforcement activities, including sampling and monitoring expenses, and the cost of any actual damages incurred by the Utility.
- C. In determining the amount of civil liability, a Court of competent jurisdiction may take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration of the violation, any economic benefit gained through the User's violation, corrective actions by the User, the compliance history of the User, and any other factor as justice requires.
- D. Filing a suit for civil or criminal penalties shall not be a bar against, or a prerequisite for, taking any other action against a User, provided, that no such suit to collect civil or criminal penalties shall be commenced without a resolution of the Sewer Committee authorizing such court action.
 - (1) For Users with properties located within the corporate limits of the City of Little Rock, no suit to collect civil or criminal penalties or fines may be initiated until after such time that a resolution authorizing the suit is duly adopted by the Sewer Committee, as the governing body pursuant to Ark. Code Ann § 8-4-103.
 - (2) For Users with properties located outside the corporate limits of the City of Little Rock, the Board of Directors of the City of Little Rock hereby delegates authority to the Sewer Committee to be the governing body to authorize, by resolution, legal actions to collect civil or criminal penalties or fines.

11.3 Criminal Prosecution

- A. A User who willfully or negligently violates any provision of this Ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement shall, upon conviction, be guilty of a misdemeanor, punishable by a fine of not more than \$1,000.00 per violation or imprisonment for such term as allowed by law or both; provided that no criminal prosecution may be commenced without a prior resolution of the Sewer Committee authorizing such prosecution.
- B. A User who willfully or negligently introduces any substance into the POTW which causes personal injury or property damage shall, upon conviction, be guilty of a misdemeanor and be subject to a penalty of at least one hundred dollars (\$100.00) but not more than five hundred dollars (\$500.00) for any one (1) specified offense or violation thereof, and not less than one hundred dollars (\$100.00) but not more than one thousand dollars (\$1,000.00) for each repetition of such event or violation, or be subject to imprisonment for such term as allowed by law, or both. This penalty shall be in addition to any other cause of action for personal injury or property damage available under State law.
- C. A User who knowingly makes any false statements, representations, or certifications in any application, record, report, plan, or other documentation filed, or required to be maintained, pursuant to this ordinance, wastewater discharge permit, or order issued hereunder, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this ordinance shall, upon conviction, be punished by a fine of at least one hundred dollars (\$100.00) but not more than five hundred dollars (\$500.00) for any one (1) specified offense or violation thereof, and not less than one hundred dollars (\$100.00) but not more than one thousand dollars (\$1,000.00) for each repetition of such event or violation, or be subject to imprisonment for such term as allowed by law, or both. This penalty shall be in addition to any other cause of action for personal injury or property damage available under State law.

11.4 Remedies Nonexclusive

The remedies provided for in this ordinance are not exclusive. The Manager may take any, all, or any combination of these actions against a non-compliant User. Enforcement of pretreatment violations will generally be in accordance with the Utility's enforcement response plan. However, the Manager may

take other action against any User when the circumstances warrant. Further, the Manager is empowered to take more than one enforcement action against any non-compliant User.

SECTION 12 - SUPPLEMENTAL ENFORCEMENT ACTION

12.1 Performance Bonds

The Manager may decline to issue or reissue a wastewater discharge permit to any User who has failed to comply with any provision of this ordinance, a previous wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, unless such User first files a satisfactory bond, payable to the Sewer Committee, in a sum not to exceed a value determined by the Manager to be necessary to achieve consistent compliance.

12.2 Liability Insurance

The Manager may decline to issue or reissue a wastewater discharge permit to any User who has failed to comply with any provision of this ordinance, a previous wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, unless the User first submits proof that it has obtained financial assurances sufficient to restore or repair damage to the POTW caused by its discharge.

12.3 Public Nuisances

A violation of any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement is hereby declared a public nuisance and shall be corrected or abated as directed by the Manager. Any person(s) creating a public nuisance shall be subject to the provisions of the City Code for the City of Little Rock governing such nuisances, including reimbursing the City and/or the Sewer Committee for any costs incurred in removing, abating, or remedying said nuisance.

SECTION 13 - AFFIRMATIVE DEFENSES TO DISCHARGE VIOLATIONS

13.1 Upset

- A. For the purposes of this section, "upset" means an exceptional incident in which there is unintentional and temporary non-compliance with categorical pretreatment standards because of forces beyond the reasonable control of the User. An upset does not include non-compliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack

of preventive maintenance, or careless or improper operation.

- B. An upset shall constitute an affirmative defense to an action brought for non-compliance with categorical pretreatment standards if the requirements of paragraph (C), below, are met.
- C. A User who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - (1) An upset occurred and the User can identify the cause(s) of the upset;
 - (2) The facility was at the time being operated in a prudent and workman-like manner and in compliance with applicable operation and maintenance procedures; and
 - (3) The User has submitted the following information to the Manager within twenty-four (24) hours of becoming aware of the upset. If this information is provided orally, a written submission must be provided within five (5) days:
 - (a) A description of the indirect discharge and cause of non-compliance;
 - (b) The period of non-compliance, including exact dates and times or, if not corrected, the anticipated time the non-compliance is expected to continue; and
 - (c) Steps being taken and/or planned to reduce, eliminate, and prevent recurrence of the non-compliance.
- D. In any enforcement proceeding, the User seeking to establish the occurrence of an upset shall have the burden of proof.
- E. Users will have the opportunity for a judicial determination on any claim of upset only in an enforcement action brought for non-compliance with categorical pretreatment standards.
- F. Users shall control production of all discharges to the extent necessary to maintain compliance with categorical pretreatment standards upon reduction, loss, or failure of its treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other

things, the primary source of power of the treatment facility is reduced, lost, or fails.

13.2 Prohibited Discharge Standards

A User shall have an affirmative defense to an enforcement action brought against it for non-compliance with the general prohibitions in Section 2.1(A) of this ordinance or the specific prohibitions in Sections 2.1(B)(3) through (17) of this Ordinance if it can prove that it did not know, or have reason to know, that its discharge, alone or in conjunction with discharges from other sources, would cause pass through or interference and that either:

- A. A local limit exists for each pollutant discharged and the User was in compliance with each limit directly prior to, and during, the pass through or interference; or
- B. No local limit exists, but the discharge did not change substantially in nature or constituents from the User's prior discharge when the Utility was regularly in compliance with its NPDES permit, and in the case of interference, was in compliance with applicable sludge use or disposal requirements.

13.3 Bypass

- A. For the purposes of this section,
 - (1) "Bypass" means the intentional diversion of wastestreams from any portion of a User's treatment facility.
 - (2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- B. A User may allow any bypass to occur which does not cause pretreatment standards or requirements to be violated, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of paragraphs (C) and (D) of this section.
- C. (1) If a User knows in advance of the need for a bypass, it shall submit prior notice to the Manager at least ten (10) days before the date of the bypass, if possible.

- (2) A User shall submit oral notice to the Manager of an unanticipated bypass that exceeds applicable pretreatment standards within twenty-four (24) hours from the time it becomes aware of the bypass. A written submission shall also be provided within five (5) days of the time the User becomes aware of the bypass. The written submission shall contain a description of the bypass and its cause; the duration of the bypass, including exact dates and times, and, if the bypass has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass. The Manager may waive the written report on a case-by-case basis if the oral report has been received within twenty-four (24) hours.
- D. (1) Bypass is prohibited, and the Manager may take an enforcement action against a User for a bypass, unless
- (a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - (b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - (c) The User submitted notices as required under paragraph (C) of this section.
- (2) The Manager may approve an anticipated bypass, after considering its adverse effects, if the Manager determines that it will meet the three conditions listed in paragraph (D)(1) of this section.

SECTION 14 - EXTRA STRENGTH SURCHARGE RATES

14.1 General

The Manager may at any time collect appropriate samples from any Industrial or Commercial User's discharge and conduct analyses to determine the concentrations of BOD, TSS, and Oil and Grease (O&G). If the sampling and analyses performed by the Manager or his designated assistant indicates concentrations of

BOD, TSS, and O&G exceeding the limits set forth in 14.2 below, he shall compute an extra strength surcharge as set by the existing Sewer Rate Ordinance, and the owner shall be liable for payment of the amount thereof. The collection of an extra strength surcharge is not a penalty, but rather allows the Utility to defray the costs of treating industrial wastewater concentrations that are above average domestic wastewater concentrations. The surcharge shall be considered a sewer charge for which the owner shall be liable in accordance with the applicable law of the State of Arkansas, as amended and upon default in such payment, the Utility shall be entitled to those remedies set forth in said statute.

14.2 Computations

The extra strength surcharge shall be calculated in accordance with the provisions of the applicable rate ordinance (the same being incorporated by reference) using the following limits and calculations:

- 1) BOD in excess of 300 mg/L
- 2) TSS in excess of 300 mg/L
- 3) O&G in excess of 100 mg/L

$$\text{SURCHARGE} = [(\text{BOD}_x - 300 \text{ mg/L}) (8.34) (V) (A)] + [(\text{TSS}_x - 300 \text{ mg/L}) (8.34) (V) (B)] + [(\text{O\&G}_x - 100 \text{ mg/L}) (8.34) (V) (C)]$$

Where:

- BOD_x = concentration of BOD in mg/L
- TSS_x = concentration of TSS in mg/L
- O&G_x = concentration of O&G in mg/L
- 8.34 = weight of one gallon of water, pounds
- V = flow in million gallons per month
- A = unit charge for BOD
- B = unit charge for TSS
- C = unit charge for O&G

SECTION 15 - MISCELLANEOUS PROVISIONS

15.1 Pretreatment Charges and Fees

The Manager may adopt fees for reimbursement of costs of setting up and operating the Utility's Pretreatment Program which may include, but is not limited to the following:

- A. Fees for wastewater discharge permit applications including the cost of processing such applications;

- B. Fees for monitoring, inspection, and surveillance procedures including the cost of sample collection and analyzing a User's discharge, and reviewing monitoring reports submitted by Users;
- C. Fees for reviewing and responding to accidental discharge, including reasonable costs incurred for labor, materials, and proper disposal of incompatible wastes not subject to treatment by the POTW Treatment Plant;
- D. Fees for reviewing written requests for discharge of special wastes;
- E. Fees for filing appeals; and
- F. Other fees as the Manager may deem necessary to carry out the requirements contained herein. These fees relate solely to the matters covered by this ordinance and are separate from all other fees, fines, and penalties chargeable by the City.

SECTION 16 - SEVERABILITY

The provisions of this Ordinance are severable, and if any provision, paragraph, word, section, or article of this Ordinance is invalidated by any court of competent jurisdiction, it shall not affect the remainder of this Ordinance and the remaining provisions, paragraphs, words, sections, and articles shall not be affected and shall continue in full force and effect.

SECTION 17 - REPEAL OF PRIOR ORDINANCE

All Ordinances and parts of ordinances inconsistent or conflicting with any part of this Ordinance are hereby repealed to the extent of such inconsistency or conflict, including Articles VI, VII, VIII, and IX of Ordinance No. 15,344 passed on September 1, 1987.

SECTION 18 - AUTHORITY OF LITTLE ROCK SANITARY SEWER COMMITTEE, EFFECTIVE DATE, DECLARING AN EMERGENCY

The City Board of Directors of the City of Little Rock has determined that it is essential that the Little Rock Sanitary Sewer Committee should have the authority to regulate the use of public and private sewers in accordance with the provisions contained in this Ordinance in order to accomplish the purposes thereof. Therefore, an emergency is hereby declared to exist, and this Ordinance, being necessary for the immediate preservation of the public health, safety, welfare and safety,

shall be in full force and effect immediately after its passage and approval.

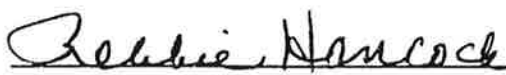
PASSED: **March 16, 1999**

APPROVED:



MAYOR **JIM DAILEY**

ATTEST:



CITY CLERK **ROBBIE HANCOCK**

APPROVED:



TOM CARPENTER, CITY ATTORNEY

PREPARED BY:

Don F. Hamilton, General Counsel
Little Rock Wastewater Utility
221 E. Capitol
Little Rock, AR 72202
Ark. Sup. Ct. #63022
(501) 688-1403

CERTIFICATE

**STATE OF ARKANSAS)
COUNTY OF PULASKI) SS
CITY OF LITTLE ROCK)**

I, Robbie Hancock, City Clerk within and for the City aforesaid, do hereby certify that the foregoing is a true and correct copy of Ordinance No. 17,966 of the Ordinances of the City of Little Rock, Arkansas, entitled: "**AN ORDINANCE REGULATING THE DISCHARGE OF INDUSTRIAL WASTEWATER TO THE PUBLIC SEWER SYSTEM, PROVIDING PENALTIES FOR THE VIOLATION THEREOF; REPEALING ALL ORDINANCES OR PARTS THEREOF IN CONFLICT THEREWITH CONSISTING OF ARTICLES VI, VII, VIII, AND IX OF ORDINANCE NO. 15,344, PASSED ON SEPTEMBER 1, 1987; AND FOR OTHER PURPOSES, ALL PERTAINING TO THE SEWER LINES AND SYSTEM WITHIN THE JURISDICTION OF THE CITY OF LITTLE ROCK, ARKANSAS, AND DECLARING AN EMERGENCY**"; passed by the Board of Directors of said City on March 16, 1999, said Ordinance now appearing of record in this office.

IN WITNESS WHEREOF, I have hereunto set my hand and seal of office on this 5th day of April, 1999.



Robbie Hancock

City Clerk
City of Little Rock, Arkansas

- (6) Certification. A statement, reviewed by the User's authorized representative and certified by a qualified professional, indicating whether pretreatment standards are being met on a consistent basis, and, if not, whether additional operation and maintenance (O&M) and/or additional pretreatment is required to meet the pretreatment standards and requirements.
- (7) Compliance Schedule. If additional pretreatment and/or O&M will be required to meet the pretreatment standards, the shortest schedule by which the User will provide such additional pretreatment and/or O&M. The completion date in this schedule shall not be later than the compliance date established for the applicable pretreatment standard. A compliance schedule pursuant to this section must meet the requirements set out in Section 6.2 of this ordinance.
- (8) Signature and Certification. All baseline monitoring reports must be signed and certified in accordance with Section 4.6 of this ordinance.

6.2 Compliance Schedule Progress Reports

The following conditions shall apply to the compliance schedule required by Section 6.1(B)(7) of this ordinance and/or any compliance schedule issued by the Manager under Section 10.5 of this ordinance:

- A. The schedule shall contain progress increments in the form of dates for the commencement and completion of major events leading to the construction and operation of additional pretreatment required for the User to meet the applicable pretreatment standards. Such events include, but are not limited to, hiring an engineer, completing preliminary and final plans, executing contracts for major components, commencing and completing construction, and beginning and conducting routine operation;
- B. No increment referred to above shall exceed nine (9) months;
- C. The User shall submit a progress report to the Manager no later than fourteen (14) days following each date in the schedule and the final date of compliance including, as a minimum, whether or not it complied with the increment of progress, the reason for any delay, and, if appropriate, the steps being taken by the User to return to the established schedule; and

- D. In no event shall more than nine (9) months elapse between such progress reports to the Manager.

6.3 Reports on Compliance with Categorical Pretreatment Standard Deadline

Within ninety (90) days following the date for final compliance with applicable categorical pretreatment standards, or in the case of a new source following commencement of the introduction of wastewater into the POTW, any User subject to such pretreatment standards and requirements shall submit to the Manager a report containing the information described in Section 6.1(B)(4-6) of this ordinance. For Users subject to equivalent mass or concentration limits established in accordance with the procedures in 40 CFR 403.6(c), this report shall contain a reasonable measure of the User's long-term production rate. For all other Users subject to categorical pretreatment standards expressed in terms of allowable pollutant discharge per unit of production (or other measure of operation), this report shall include the User's actual production during the appropriate sampling period. All compliance reports must be signed and certified in accordance with Section 4.6 of this ordinance.

6.4 Periodic Compliance Reports

- A. All significant Industrial Users shall, at a frequency determined by the Manager, but in no case less than twice per year (in June and December), submit a report indicating the nature and concentration of pollutants in the discharge which are limited by pretreatment standards and the measured or estimated average and maximum daily flows for the reporting period. All periodic compliance reports must be signed and certified in accordance with Section 4.6 of this ordinance.
- B. When the Utility conducts the sampling and flow data collection for the significant Industrial User, the reporting requirements listed under 6.4.A. above shall be waived.
- C. All wastewater samples must be representative of the User's discharge. Wastewater monitoring and flow measurement facilities shall be properly operated, kept clean, and maintained in good working order at all times. The failure of a User to keep its monitoring facility in good working order shall not be grounds for the User to claim that sample results are unrepresentative of its discharge.
- D. If a User subject to the reporting requirement in this section monitors any pollutant more frequently than required

by the Manager, using the procedures prescribed in Section 6.11 of this ordinance, the results of this monitoring shall be included in the report.

- E. All significant Industrial Users required by the Manager to submit Periodic Compliance Reports shall use the form supplied by the Manager or other approved form.

6.5 Monthly Self-Monitoring Reports

- A. When required by the Manager, all Industrial Users subject to a National Categorical Pretreatment Standard shall submit a monthly self-monitoring report indicating the nature and concentration and/or mass of pollutants in the discharge which are limited by pretreatment standards and the measured or estimated average and maximum daily flows for the reporting period. All monthly self-monitoring reports must be signed and certified in accordance with Section 4.6 of this ordinance.
- B. All wastewater samples must be representative of the User's discharge. Wastewater monitoring and flow measurement facilities shall be properly operated, kept clean, and maintained in good working order at all times. The failure of a User to keep its monitoring facility in good working order shall not be grounds for the User to claim that sample results are unrepresentative of its discharge.
- C. If a User subject to the reporting requirement in this section monitors any pollutant more frequently than required by the Manager, using the procedures prescribed in Section 6.11 of this ordinance, the results of this monitoring shall be included in the report.
- D. All categorical Industrial Users required by the Manager to submit monthly self-monitoring reports shall use the form supplied by the Manager or other approved form.

6.6 Reports of Changed Conditions

Each User must notify the Manager of any planned significant changes to the User's operations or system which might alter the nature, quality, or volume of its wastewater at least sixty (60) days before the change.

- A. The Manager may require the User to submit such information as may be deemed necessary to evaluate the changed condition, including the submission of a wastewater discharge permit application under Section 4.5 of this ordinance.

- B. The Manager may issue a wastewater discharge permit under Section 4.5 of this Ordinance or modify an existing wastewater discharge permit under Section 5.4 of this Ordinance in response to changed conditions or anticipated changed conditions.
- C. For purposes of this requirement, significant changes include, but are not limited to, flow increases of twenty percent (20%) or greater, and the discharge of any previously unreported pollutants.
- D. No User shall implement the planned change condition(s) until and unless the Manager has responded to the Users notice.

6.7 Reports of Potential Problems

- A. In the case of any discharge, including, but not limited to, accidental discharges, discharges of a non-routine, episodic nature, a non-customary batch discharge, or a slug load, that may cause potential problems for the POTW, the User shall immediately telephone and notify the Manager of the incident. This notification shall include the location of the discharge, type of waste, concentration and volume, if known, and corrective actions taken by the User.
- B. Within five (5) days following such discharge, the User shall, unless waived by the Manager, submit a detailed written report describing the cause(s) of the discharge and the measures to be taken by the User to prevent similar future occurrences. Such notification shall not relieve the User of any expense, loss, damage, or other liability which may be incurred as a result of damage to the POTW, natural resources, or any other damage to person or property; nor shall such notification relieve the User of any fines, penalties, or other liability which may be imposed pursuant to this Ordinance.

6.8 Other Reports - Permitted and Unpermitted Users

All Users shall provide appropriate reports to the Manager as the Manager may require. Such reports may request, but are not limited to, the nature and characteristics of the Users wastewater (industrial waste survey). Failure to complete requested reports or survey shall be considered a violation of this Section and considered reasonable grounds for legal action as provided by this ordinance.

6.9 Notice of Violation/Repeat Sampling and Reporting

If sampling performed by a User indicates a violation, the User must notify the Manager within twenty-four (24) hours of becoming aware of the violation. The User shall also repeat the sampling and analysis and submit the results of the repeat analysis to the Manager within thirty (30) days after becoming aware of the violation. The User is not required to re-sample if the Manager monitors at the User's facility at least once a month, or if the Manager samples between the User's initial sampling and when the User receives the results of this sampling.

6.10 Notification of the Discharge of Hazardous Waste

- A. Any User who commences the discharge of hazardous waste shall notify the POTW, the EPA Regional Waste Management Division Director, and State hazardous waste authorities, in writing, of any discharge into the POTW of a substance which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261. Such notification must include the name of the hazardous waste as set forth in 40 CFR Part 261, the EPA hazardous waste number, and the type of discharge (continuous, batch, or other). If the User discharges more than one hundred (100) kilograms of such waste per calendar month to the POTW, the notification also shall contain the following information to the extent such information is known and readily available to the User: an identification of the hazardous constituents contained in the wastes, an estimation of the mass and concentration of such constituents in the wastestream discharged during that calendar month, and an estimation of the mass of constituents in the wastestream expected to be discharged during the following twelve (12) months. All notifications must take place no later than one hundred and eighty (180) days after the discharge commences. Any notification under this paragraph need be submitted only once for each hazardous waste discharged. However, notifications of changed conditions must be submitted under Section 6.5 of this Ordinance. The notification requirement in this section does not apply to pollutants already reported by Users subject to categorical pretreatment standards under the self-monitoring requirements of Sections 6.1, 6.3, 6.4, and 6.5 of this ordinance.
- B. Dischargers are exempt from the requirements of paragraph A, above, during a calendar month in which they discharge no more than fifteen (15) kilograms of hazardous wastes, unless the wastes are acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e). Discharge of more than fifteen (15) kilograms of non-acute hazardous wastes in a calendar

month, or of any quantity of acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e), requires a one-time notification. Subsequent months during which the User discharges more than such quantities of any hazardous waste do not require additional notification.

- C. In the case of any new regulations under Section 3001 of RCRA identifying additional characteristics of hazardous waste or listing any additional substance as a hazardous waste, the User must notify the Manager, the EPA Regional Waste Management Waste Division Director, and State hazardous waste authorities of the discharge of such substance within ninety (90) days of the effective date of such regulations.
- D. In the case of any notification made under this section, the User shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical.
- E. This provision does not create a right to discharge any substance not otherwise permitted to be discharged by this Ordinance, a permit issued thereunder, or any applicable Federal or State law.

6.11 Analytical Requirements

All pollutant analyses, including sampling techniques, to be submitted as part of a wastewater discharge permit application or report shall be performed in accordance with the techniques prescribed in 40 CFR Part 136, unless otherwise specified in an applicable categorical pretreatment standard. If 40 CFR Part 136 does not contain sampling or analytical techniques for the pollutant in question, sampling and analyses must be performed in accordance with procedures approved by EPA. All samples shall be collected at the secure sample point, control manhole, or process sampling point as designated by the Manager.

All independent laboratories performing analyses for Industrial Users, including, but not limited to self monitoring reports, Periodic Reports on Continuing Compliance, Baseline Monitoring Reports and/or split sample verification, shall be certified by the Arkansas Department of Environmental Quality Laboratory Certification Program for the specific analysis being performed. The Manager reserves the right to reject any analysis performed by an independent laboratory that is not duly certified for a particular analysis.

6.12 Sample Collection

- A. If as a result of any sampling and analyses authorized by the Manager, or due to the existence of any other information, the Manager may have sufficient reason to suspect the presence of toxic or prohibited substances as limited or prohibited by this ordinance to exist in the wastewater discharge of a facility, the Manager may direct the owner or operator of said facility to have a representative of that facility's wastewater subjected to the appropriate physical, chemical, and biological tests performed by a qualified laboratory acceptable to the Manager. The purpose of such tests shall be to determine the conformance of the wastewater characteristics to this Ordinance. A prompt report shall be made in writing to the Manager by the laboratory stating the results of the tests. The costs associated with the sampling and testing required by this section shall be borne by the owner or operator.
- B. Any sampling, testing, and/or sample delivery associated with duplicate sample analysis in excess of the regularly scheduled sampling and analysis performed by the Utility that is requested by an industrial customer for the purpose of assessing a surcharge or enforcement of this ordinance will be borne by the owner or operator of the facility. The owner or operator of the facility which has a duplicate analysis performed by an independent laboratory will submit a prompt report in writing from the laboratory giving the results of the analyses and all quality assurance information relative to the analyses.
- C. Except as indicated in Section D, below, the User must collect wastewater samples using flow proportional composite collection techniques. In the event flow proportional sampling is not feasible, the Manager may authorize the use of time proportional sampling or a minimum of four (4) grab samples where the User demonstrates that this will provide a representative sample of the effluent being discharged. In addition, grab samples may be required to show compliance with instantaneous discharge limits.
- D. Samples for oil and grease, temperature, pH, cyanide, phenols, sulfides, and volatile organic compounds must be obtained using grab sample collection techniques.
- E. Sampling and testing shall be performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto. The sampling methods performed shall include at a minimum procedures for sample chain of custody, preservation techniques, and holding times.

6.13 Timing

Written reports will be deemed to have been submitted on the date they are received by the Manager.

6.14 Record Keeping

Users subject to the reporting requirements of this Ordinance shall retain, and make available for inspection and copying, all records of information obtained pursuant to any monitoring activities required by this Ordinance and any additional records of information obtained pursuant to monitoring activities undertaken by the User independent of such requirements. Records shall include the date, exact place, method, and time of sampling, and the name of the person(s) taking the samples; the dates analyses were performed; who performed the analyses; the analytical techniques or methods used; and the results of such analyses. These records shall remain available for a period of at least three (3) years. This period shall be automatically extended for the duration of any litigation concerning the User or the City, or where the User has been specifically notified of a longer retention period by the Manager.

SECTION 7 - POWER AND AUTHORITY OF INSPECTORS

7.1 Right of Entry: Inspection and Sampling

The Manager shall have the right to enter the premises of any User to determine whether the User is complying with all requirements of this Ordinance and any wastewater discharge permit or order issued hereunder. Users shall allow the Manager ready access to all parts of the premises for the purposes of inspection, sampling, records examination and copying, and the performance of any additional duties. The Manager shall conduct inspection and sampling tasks at a minimum of once a year for every User.

- A. Where a User has security measures in force which require proper identification and clearance before entry into its premises, the User shall make necessary arrangements with its security guards so that, upon presentation of suitable identification, the Manager will be permitted to enter without delay for the purposes of performing specific responsibilities.
- B. The Manager shall have the right to set up on the User's property, or require installation of, such devices as are

necessary to conduct sampling and/or metering of the User's operations.

- C. The Manager may require the User to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the User at its own expense. All devices used to measure wastewater flow and quality shall be calibrated at least annually to ensure their accuracy.
- D. Any temporary or permanent obstruction to safe and easy access to the facility to be inspected or sampled shall be promptly removed by the User at the written or verbal request of the Manager and shall not be replaced. The costs of clearing such access shall be born by the User.
- E. Unreasonable delays and/or refusals in allowing the Manager access to the User's premises for the purpose of making an inspection authorized by this section shall be a violation of this Ordinance.
- F. In addition to the provisions of this Ordinance, the Sewer Committee of the City of Little Rock is specifically authorized to make such other reasonable rules and regulations in regard to the construction, use, and operation of sanitary sewers to be connected to, or connecting into, the mains of the Little Rock Wastewater Utility system. Such rules and regulations so made and adopted at a regular meeting of the Sewer Committee shall become effective as follows:
 - (1) A public notice of intent to enact and intention of proposed rules and regulations shall be placed in a daily newspaper in the City of Little Rock, Arkansas, one (1) day for each of two (2) successive weeks with a brief summary of the proposed rules and regulations.
 - (2) The proposed rules and regulations shall be available for public inspection and reproduction at the office of the Manager of Little Rock Wastewater Utility for thirty (30) days following the first publication of the public notice.
 - (3) A correct copy of those rules and regulations shall be filed for permanent record with the City Clerk of the City of Little Rock together with any written objections to the proposed rules and regulations at the end of the thirty (30) day public review period.

- (4) Said rules and regulations shall become effective on the filing of said copy for permanent record with the City Clerk.

7.2 Search Warrants

If the Manager has been refused access to a building, structure, or property, or any part thereof, and if the Manager is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program of the Utility designed to verify compliance with this Ordinance or any permit or order issued hereunder, or to protect the overall public health, safety and welfare of the community, then upon application and affidavit by the Little Rock Sanitary Sewer Committee by its attorney, the appropriate Municipal Court Judge of the City of Little Rock, Arkansas, may issue a search and/or seizure warrant describing therein the specific location subject to the warrant. The warrant shall specify what, if anything, may be searched and/or seized on the property described. Such warrant shall be served at reasonable hours by the Manager or the Little Rock Sanitary Sewer Committee attorney in the company of a uniformed police officer of the City of Little Rock, Arkansas. In the event of an emergency affecting public health and safety, inspections shall be made without the issuance of a warrant.

SECTION 8 - CONFIDENTIAL INFORMATION

Information and data on a User obtained from reports, surveys, wastewater discharge permit applications, wastewater discharge permits, and monitoring programs, and from the Managers inspection and sampling activities, shall be available to the public without restriction, unless the User specifically requests, and is able to demonstrate to the satisfaction of the Manager, that the release of such information would divulge information, processes, or methods of production entitled to protection as trade secrets under applicable State law. Any such request must be asserted at the time of submission of the information or data. When requested and demonstrated by the User furnishing a report that such information should be held confidential, the portions of a report which might disclose trade secrets, secret processes, or proprietary information shall not be made available for inspection by the public, but shall be made available immediately upon request to governmental agencies for uses related to the NPDES program or pretreatment program, and in enforcement proceedings involving the person furnishing the report subject to the provisions of the Arkansas Freedom of Information Act, A.C.A. § 25-19-101 et seq. Wastewater constituents and characteristics and other "effluent data" as

defined by 40 CFR 2.302 will not be recognized as confidential information and will be available to the public without restriction.

SECTION 9 - PUBLICATION OF USERS IN SIGNIFICANT NON-COMPLIANCE

The Manager shall publish annually, in the largest daily newspaper published in the City of Little Rock, a list of the Users which, during the previous twelve (12) months, were in significant non-compliance with applicable pretreatment standards and requirements. The term significant non-compliance shall mean:

- A. Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent (66%) or more of wastewater measurements taken during a six (6) month period exceed the daily maximum limit or average limit for the same pollutant parameter by any amount;
- B. Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent (33%) or more of wastewater measurements taken for each pollutant parameter during a six (6) month period equals or exceeds the product of the daily maximum limit or the average limit multiplied by the applicable criteria (1.4 for BOD, TSS, oil and grease, and 1.2 for all other pollutants except pH);
- C. Any other discharge violation that the Manager believes has caused, alone or in combination with other discharges, interference or pass through, including endangering the health of POTW personnel or the general public;
- D. Any discharge of pollutants that has caused imminent endangerment to the public or to the environment, or has resulted in the Manager's exercise of its emergency authority to halt or prevent such a discharge;
- E. Failure to meet, within ninety (90) days of the scheduled date, a compliance schedule milestone contained in a wastewater discharge permit or enforcement order for starting construction, completing construction, or attaining final compliance;
- F. Failure to provide within thirty (30) days after the due date, any required reports, including baseline monitoring reports, reports on compliance with categorical pretreatment standard deadlines, periodic self-monitoring reports, monthly self-monitoring reports, and reports on compliance with compliance schedules;

- G. Failure to accurately report non-compliance; or
- H. Any other violation(s) which the Manager determines will adversely affect the operation or implementation of the local pretreatment program.

SECTION 10 - ADMINISTRATIVE ENFORCEMENT REMEDIES

10.1 Non-compliance Incident

Whenever the Manager or his designated agent finds that any User has violated or is violating this Ordinance, a wastewater discharge permit or order issued hereunder, or any other requirement, the Manager or his agent may notify the User of non-compliance. This notification may be oral or written. Within thirty (30) days of the receipt of the notice of non-compliance incident, the User must notify the Utility of the reason for the non-compliance and the steps taken to prevent any recurrence. Submission of this information in no way relieves the User of liability for any violation occurring before or after receipt of the notice of the non-compliance incident. Nothing in this section shall limit the authority of the Utility to take any action, including emergency actions or any other enforcement action, without first issuing a notice of a non-compliance incident.

10.2 Notice of Violation

When the Manager finds that a User has violated, or continues to violate, any provision of this Ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the Manager shall serve upon that User a written Notice of Violation. Within thirty (30) days of the receipt of this notice, an explanation of the violation and a plan for the satisfactory correction and prevention thereof, to include specific required actions, shall be submitted by the User to the Manager. Submission of this plan in no way relieves the User of liability for any violations occurring before or after receipt of the Notice of Violation. Nothing in this section shall limit the authority of the Manager to take any action, including emergency actions or any other enforcement action, without first issuing a Notice of Violation.

10.3 Consent Orders

The Manager is authorized to enter into consent orders, assurances of voluntary compliance, or other similar documents establishing an agreement with any User responsible for non-compliance. Such orders, assurances, or other similar documents will include specific action to be taken by the User to correct

- B. Standard Industrial Classification Number (SIC Code).
- C. The nature and concentrations of any pollutants or materials prohibited or regulated by this Ordinance, including the EPA's Priority Pollutant Listing for each pollutant or material.
- D. The time of day and duration of each discharge.
- E. The average daily and maximum daily flow rates including any daily, monthly, or seasonal variations.
- F. Site plans and details showing all plumbing including storm and sanitary sewers, sewer connections, manholes, sampling chambers, and the location and description of any pretreatment equipment.
- G. A description of facilities, activities, and plant processes including all materials which are or may be discharged to the public sewer.
- H. A list of all raw materials used at the facility including MSDS (Material Safety Data Sheets) for all chemicals that are used or stored at the facility.
- I. Compliance schedules, where applicable, which meet applicable requirements of the Federal Regulations.
- J. Any other information as may be deemed necessary by the Manager to evaluate the wastewater discharge permit application.

Incomplete or inaccurate applications will not be processed and will be returned to the User for revision. This could result in a delay in the issuance to the discharge permit.

4.6 Application Signatories and Certification

All wastewater discharge permit applications and User reports must be signed by an authorized representative of the User and contain the following certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best

of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Authorized representatives are defined by EPA Regulation 40 CFR 403 as follows:

- A. A responsible corporate officer, if the facility is a corporation, and includes the following:
 - (1) A president, secretary, treasurer, or vice-president of the corporation in charge of a major principle business function, or any other person who performs similar policy- or decision-making functions for the corporation.
 - (2) The manager or CEO of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if the authority to sign documents has been assigned or delegated to the manager or CEO in accordance with corporate procedures.
- B. A general partner or proprietor if the facility is a partnership or sole proprietorship respectively.
- C. A duly authorized representative of the individuals listed in items A or B above; if
 - (1) The authorization has been made in writing by any of the individuals listed in A or B above; and
 - (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the facility, such as a plant manager, superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters at the facility; and
 - (3) The written authorization has been submitted to Little Rock Wastewater Utility.

SECTION 5 - WASTEWATER DISCHARGE PERMIT ISSUANCE PROCESS

5.1 Wastewater Discharge Permit Duration

A wastewater discharge permit shall be issued for a specified time period, not to exceed two (2) years from the effective date of the permit. A wastewater discharge permit may be issued for a period less than two (2) years, at the discretion of the Manager. Each wastewater discharge permit will indicate a specific date upon which it will expire.

5.2 Wastewater Discharge Permit Contents

A wastewater discharge permit shall include such conditions as are deemed reasonably necessary by the Manager to prevent pass through or interference, protect the quality of the water body receiving the treatment plant's effluent, protect worker health and safety, facilitate sludge management and disposal, and protect against damage to the POTW.

A. Wastewater discharge permits shall contain:

- (1) A statement that indicates wastewater discharge permit duration, which in no event shall exceed two (2) years;
- (2) A statement that the wastewater discharge permit is nontransferable without prior notification to the Manager in accordance with Section 5.4 of this ordinance, and provisions for furnishing the new owner or operator with a copy of the existing wastewater discharge permit;
- (3) Effluent limits based on applicable pretreatment standards;
- (4) Self monitoring, sampling, reporting, notification, and record-keeping requirements. These requirements shall include an identification of pollutants to be monitored, sampling location, sampling frequency, and sample type based on Federal, State, and local law; and
- (5) A statement of applicable civil and criminal penalties for violation of pretreatment standards and requirements, and any applicable compliance schedule. Such schedule may not extend the time for compliance beyond that required by applicable Federal, State, or local law.

B. Wastewater discharge permits may contain, but need not be limited to, the following conditions:

- (1) Limits on the average and/or maximum rate of discharge, time of discharge, and/or requirements for flow regulation and equalization;
- (2) Requirements for the installation of pretreatment technology, pollution control, or construction of appropriate containment devices, designed to reduce, eliminate, or prevent the introduction of pollutants into the treatment works;
- (3) Requirements for the development and implementation of spill control plans or other special conditions including management practices necessary to adequately prevent accidental, unanticipated, or non-routine discharges;
- (4) Development and implementation of waste minimization plans to reduce the amount of pollutants discharged to the POTW;
- (5) The unit charge or schedule of User charges and fees for the management of the wastewater discharged to the POTW;
- (6) Requirements for installation and maintenance of inspection and sampling facilities and equipment;
- (7) A statement that compliance with the wastewater discharge permit does not relieve the permittee of responsibility for compliance with all applicable Federal and State pretreatment standards, including those which become effective during the term of the wastewater discharge permit; and
- (8) Other conditions as deemed appropriate by the Manager to ensure compliance with this Ordinance, and State and Federal laws, rules, and regulations.

5.3 Wastewater Discharge Permit Modification

The Manager may modify a wastewater discharge permit for good cause, including, but not limited to, the following reasons:

- A. To incorporate any new or revised Federal, State, or local pretreatment standards or requirements;
- B. To address significant alterations or additions to the User's operation, processes, or wastewater volume or

character since the time of wastewater discharge permit issuance;

- C. A change in the POTW that requires either a temporary or permanent reduction or elimination of the authorized discharge;
- D. Information indicating that the permitted discharge poses a threat to the POTW and/or it's personnel, or the receiving waters;
- E. Violation of any terms or conditions of the wastewater discharge permit;
- F. Misrepresentations or failure to fully disclose all relevant facts in the wastewater discharge permit application or in any required reporting;
- G. Revision of or a grant of variance from categorical pretreatment standards pursuant to 40 CFR 403.13;
- H. To correct typographical or other errors in the wastewater discharge permit; or
- I. To reflect a transfer of the facility ownership or operation to a new owner or operator.

5.4 Wastewater Discharge Permit Transfer

Wastewater discharge permits may be transferred to a new owner or operator only if the permittee gives at least sixty (60) days advance notice to the Manager and the Manager approves the wastewater discharge permit transfer. The notice to the Manager must include a written certification by the new owner or operator which:

- A. States that the new owner and/or operator has no immediate intent to change the facility's operations and processes;
- B. Identifies the specific date on which the transfer is to occur; and
- C. Acknowledges full responsibility for complying with the existing wastewater discharge permit.

Failure to provide advance notice of a transfer renders the wastewater discharge permit void as of the date of facility transfer.

5.5 Wastewater Discharge Permit Revocation

The Manager may revoke a wastewater discharge permit for good cause subject to following the procedure set forth in Section 10.4 hereinafter, including, but not limited to, the following reasons:

- A. Failure to notify the Manager of significant changes to the wastewater prior to the changed discharge;
- B. Failure to provide prior notification to the Manager of changed conditions pursuant to Section 6.6 of this ordinance;
- C. Misrepresentation or failure to fully disclose all relevant facts in the wastewater discharge permit application;
- D. Falsifying self-monitoring reports;
- E. Tampering with monitoring equipment;
- F. Refusing to allow the Manager timely access to the facility premises and records;
- G. Failure to meet effluent limitations;
- H. Failure to pay fines;
- I. Failure to pay sewer charges;
- J. Failure to meet compliance schedules;
- K. Failure to complete a wastewater survey or the wastewater discharge permit application;
- L. Failure to provide advance notice of the transfer of business ownership of a permitted facility; or
- M. Violation of any pretreatment standard or requirement, or any terms of the wastewater discharge permit or this Ordinance.

Wastewater discharge permits shall be voidable upon cessation of operations or transfer of business ownership. All wastewater discharge permits issued to a particular User are void upon the issuance of a new wastewater discharge permit to that User.

5.6 Wastewater Discharge Permit Reissuance

A User with an expiring wastewater discharge permit shall apply for wastewater discharge permit reissuance by submitting a complete permit application, in accordance with Section 4.5 of this ordinance, a minimum of sixty (60) days prior to the expiration of the User's existing wastewater discharge permit. The Manager will notify the User of his responsibility to reapply for reissuance of the permit at least ninety (90) days prior to the re-application date.

5.7 Regulation of Waste Received from Other Jurisdictions

- A. All dischargers to the City of Little Rock POTW, which are outside the jurisdiction and are not part of another incorporated city, shall be required to agree by written contract to abide by the conditions set forth in this Ordinance, subsequent revisions and amendments to this Ordinance, and any rules and/or regulations promulgated by the Sewer Committee of the City of Little Rock in accordance with Section 7.1(F) of this Ordinance.

- B. All incorporated cities which discharge to the City of Little Rock POTW shall agree by written contract to adopt an ordinance which meets the requirements of 40 CFR 403, General Pretreatment Regulations, and will be at least as stringent as the conditions set forth in this Ordinance. This agreement must also contain a provision that allows for the adoption of any and all rules and/or regulations promulgated by the Sewer Committee of the City of Little Rock in accordance with Section 7.1(F) of this Ordinance and shall delegate to the City of Little Rock the powers to enforce the provisions of all laws, rules, and/or regulations adopted in accordance with this Section.

SECTION 6 - REPORTING REQUIREMENTS

6.1 Baseline Monitoring Reports

- A. Within either one hundred eighty (180) days after the effective date of a categorical pretreatment standard, or the final administrative decision on a category determination under 40 CFR 403.6(a)(4), whichever is later, existing categorical Users currently discharging to or scheduled to discharge to the POTW shall submit to the Manager a report which contains the information listed in paragraph B, below. At least ninety (90) days prior to commencement of their discharge, new sources, and sources that become categorical Users subsequent to the promulgation

of an applicable categorical standard, shall submit to the Manager a report which contains the information listed in paragraph B, below. A new source shall report the method of pretreatment it intends to use to meet applicable categorical standards. A new source also shall give estimates of its anticipated flow and quantity of pollutants to be discharged.

B. Users described above shall submit the information set forth below:

- (1) Identifying Information. The name and address of the facility, including the name of the operator and owner.
- (2) Environmental Permits. A list of any environmental control permits held by or for the facility.
- (3) Description of Operations. A brief description of the nature, average rate of production, and standard industrial classifications of the operation(s) carried out by such User. This description should include a schematic process diagram which indicates points of discharge to the POTW from the regulated processes.
- (4) Flow Measurement. Information showing the measured average daily and maximum daily flow, in gallons per day, to the POTW from regulated process streams and other streams, as necessary, to allow use of the combined wastestream formula set out in 40 CFR 403.6(e).
- (5) Measurement of Pollutants.
 - (a) The categorical pretreatment standards applicable to each regulated process.
 - (b) The results of sampling and analysis identifying the nature and concentration, and/or mass, where required by the standard or by the Manager, of regulated pollutants in the discharge from each regulated process. Instantaneous, daily maximum, and long-term average concentrations, or mass, where required, shall be reported. The sample shall be representative of daily operations and shall be analyzed in accordance with procedures set out in Section 6.10 of this ordinance.
 - (c) Sampling must be performed in accordance with procedures set out in Section 6.11 of this ordinance.

- (6) Certification. A statement, reviewed by the User's authorized representative and certified by a qualified professional, indicating whether pretreatment standards are being met on a consistent basis, and, if not, whether additional operation and maintenance (O&M) and/or additional pretreatment is required to meet the pretreatment standards and requirements.
- (7) Compliance Schedule. If additional pretreatment and/or O&M will be required to meet the pretreatment standards, the shortest schedule by which the User will provide such additional pretreatment and/or O&M. The completion date in this schedule shall not be later than the compliance date established for the applicable pretreatment standard. A compliance schedule pursuant to this section must meet the requirements set out in Section 6.2 of this ordinance.
- (8) Signature and Certification. All baseline monitoring reports must be signed and certified in accordance with Section 4.6 of this ordinance.

6.2 Compliance Schedule Progress Reports

The following conditions shall apply to the compliance schedule required by Section 6.1(B)(7) of this ordinance and/or any compliance schedule issued by the Manager under Section 10.5 of this ordinance:

- A. The schedule shall contain progress increments in the form of dates for the commencement and completion of major events leading to the construction and operation of additional pretreatment required for the User to meet the applicable pretreatment standards. Such events include, but are not limited to, hiring an engineer, completing preliminary and final plans, executing contracts for major components, commencing and completing construction, and beginning and conducting routine operation;
- B. No increment referred to above shall exceed nine (9) months;
- C. The User shall submit a progress report to the Manager no later than fourteen (14) days following each date in the schedule and the final date of compliance including, as a minimum, whether or not it complied with the increment of progress, the reason for any delay, and, if appropriate, the steps being taken by the User to return to the established schedule; and

- D. In no event shall more than nine (9) months elapse between such progress reports to the Manager.

6.3 Reports on Compliance with Categorical Pretreatment Standard Deadline

Within ninety (90) days following the date for final compliance with applicable categorical pretreatment standards, or in the case of a new source following commencement of the introduction of wastewater into the POTW, any User subject to such pretreatment standards and requirements shall submit to the Manager a report containing the information described in Section 6.1(B)(4-6) of this ordinance. For Users subject to equivalent mass or concentration limits established in accordance with the procedures in 40 CFR 403.6(c), this report shall contain a reasonable measure of the User's long-term production rate. For all other Users subject to categorical pretreatment standards expressed in terms of allowable pollutant discharge per unit of production (or other measure of operation), this report shall include the User's actual production during the appropriate sampling period. All compliance reports must be signed and certified in accordance with Section 4.6 of this ordinance.

6.4 Periodic Compliance Reports

- A. All significant Industrial Users shall, at a frequency determined by the Manager, but in no case less than twice per year (in June and December), submit a report indicating the nature and concentration of pollutants in the discharge which are limited by pretreatment standards and the measured or estimated average and maximum daily flows for the reporting period. All periodic compliance reports must be signed and certified in accordance with Section 4.6 of this ordinance.
- B. When the Utility conducts the sampling and flow data collection for the significant Industrial User, the reporting requirements listed under 6.4.A. above shall be waived.
- C. All wastewater samples must be representative of the User's discharge. Wastewater monitoring and flow measurement facilities shall be properly operated, kept clean, and maintained in good working order at all times. The failure of a User to keep its monitoring facility in good working order shall not be grounds for the User to claim that sample results are unrepresentative of its discharge.
- D. If a User subject to the reporting requirement in this section monitors any pollutant more frequently than required

by the Manager, using the procedures prescribed in Section 6.11 of this ordinance, the results of this monitoring shall be included in the report.

- E. All significant Industrial Users required by the Manager to submit Periodic Compliance Reports shall use the form supplied by the Manager or other approved form.

6.5 Monthly Self-Monitoring Reports

- A. When required by the Manager, all Industrial Users subject to a National Categorical Pretreatment Standard shall submit a monthly self-monitoring report indicating the nature and concentration and/or mass of pollutants in the discharge which are limited by pretreatment standards and the measured or estimated average and maximum daily flows for the reporting period. All monthly self-monitoring reports must be signed and certified in accordance with Section 4.6 of this ordinance.
- B. All wastewater samples must be representative of the User's discharge. Wastewater monitoring and flow measurement facilities shall be properly operated, kept clean, and maintained in good working order at all times. The failure of a User to keep its monitoring facility in good working order shall not be grounds for the User to claim that sample results are unrepresentative of its discharge.
- C. If a User subject to the reporting requirement in this section monitors any pollutant more frequently than required by the Manager, using the procedures prescribed in Section 6.11 of this ordinance, the results of this monitoring shall be included in the report.
- D. All categorical Industrial Users required by the Manager to submit monthly self-monitoring reports shall use the form supplied by the Manager or other approved form.

6.6 Reports of Changed Conditions

Each User must notify the Manager of any planned significant changes to the User's operations or system which might alter the nature, quality, or volume of its wastewater at least sixty (60) days before the change.

- A. The Manager may require the User to submit such information as may be deemed necessary to evaluate the changed condition, including the submission of a wastewater discharge permit application under Section 4.5 of this ordinance.

- B. The Manager may issue a wastewater discharge permit under Section 4.5 of this Ordinance or modify an existing wastewater discharge permit under Section 5.4 of this Ordinance in response to changed conditions or anticipated changed conditions.
- C. For purposes of this requirement, significant changes include, but are not limited to, flow increases of twenty percent (20%) or greater, and the discharge of any previously unreported pollutants.
- D. No User shall implement the planned change condition(s) until and unless the Manager has responded to the Users notice.

6.7 Reports of Potential Problems

- A. In the case of any discharge, including, but not limited to, accidental discharges, discharges of a non-routine, episodic nature, a non-customary batch discharge, or a slug load, that may cause potential problems for the POTW, the User shall immediately telephone and notify the Manager of the incident. This notification shall include the location of the discharge, type of waste, concentration and volume, if known, and corrective actions taken by the User.
- B. Within five (5) days following such discharge, the User shall, unless waived by the Manager, submit a detailed written report describing the cause(s) of the discharge and the measures to be taken by the User to prevent similar future occurrences. Such notification shall not relieve the User of any expense, loss, damage, or other liability which may be incurred as a result of damage to the POTW, natural resources, or any other damage to person or property; nor shall such notification relieve the User of any fines, penalties, or other liability which may be imposed pursuant to this Ordinance.

6.8 Other Reports - Permitted and Unpermitted Users

All Users shall provide appropriate reports to the Manager as the Manager may require. Such reports may request, but are not limited to, the nature and characteristics of the Users wastewater (industrial waste survey). Failure to complete requested reports or survey shall be considered a violation of this Section and considered reasonable grounds for legal action as provided by this ordinance.

6.9 Notice of Violation/Repeat Sampling and Reporting

If sampling performed by a User indicates a violation, the User must notify the Manager within twenty-four (24) hours of becoming aware of the violation. The User shall also repeat the sampling and analysis and submit the results of the repeat analysis to the Manager within thirty (30) days after becoming aware of the violation. The User is not required to re-sample if the Manager monitors at the User's facility at least once a month, or if the Manager samples between the User's initial sampling and when the User receives the results of this sampling.

6.10 Notification of the Discharge of Hazardous Waste

- A. Any User who commences the discharge of hazardous waste shall notify the POTW, the EPA Regional Waste Management Division Director, and State hazardous waste authorities, in writing, of any discharge into the POTW of a substance which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261. Such notification must include the name of the hazardous waste as set forth in 40 CFR Part 261, the EPA hazardous waste number, and the type of discharge (continuous, batch, or other). If the User discharges more than one hundred (100) kilograms of such waste per calendar month to the POTW, the notification also shall contain the following information to the extent such information is known and readily available to the User: an identification of the hazardous constituents contained in the wastes, an estimation of the mass and concentration of such constituents in the wastestream discharged during that calendar month, and an estimation of the mass of constituents in the wastestream expected to be discharged during the following twelve (12) months. All notifications must take place no later than one hundred and eighty (180) days after the discharge commences. Any notification under this paragraph need be submitted only once for each hazardous waste discharged. However, notifications of changed conditions must be submitted under Section 6.5 of this Ordinance. The notification requirement in this section does not apply to pollutants already reported by Users subject to categorical pretreatment standards under the self-monitoring requirements of Sections 6.1, 6.3, 6.4, and 6.5 of this ordinance.
- B. Dischargers are exempt from the requirements of paragraph A, above, during a calendar month in which they discharge no more than fifteen (15) kilograms of hazardous wastes, unless the wastes are acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e). Discharge of more than fifteen (15) kilograms of non-acute hazardous wastes in a calendar

month, or of any quantity of acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e), requires a one-time notification. Subsequent months during which the User discharges more than such quantities of any hazardous waste do not require additional notification.

- C. In the case of any new regulations under Section 3001 of RCRA identifying additional characteristics of hazardous waste or listing any additional substance as a hazardous waste, the User must notify the Manager, the EPA Regional Waste Management Waste Division Director, and State hazardous waste authorities of the discharge of such substance within ninety (90) days of the effective date of such regulations.
- D. In the case of any notification made under this section, the User shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical.
- E. This provision does not create a right to discharge any substance not otherwise permitted to be discharged by this Ordinance, a permit issued thereunder, or any applicable Federal or State law.

6.11 Analytical Requirements

All pollutant analyses, including sampling techniques, to be submitted as part of a wastewater discharge permit application or report shall be performed in accordance with the techniques prescribed in 40 CFR Part 136, unless otherwise specified in an applicable categorical pretreatment standard. If 40 CFR Part 136 does not contain sampling or analytical techniques for the pollutant in question, sampling and analyses must be performed in accordance with procedures approved by EPA. All samples shall be collected at the secure sample point, control manhole, or process sampling point as designated by the Manager.

All independent laboratories performing analyses for Industrial Users, including, but not limited to self monitoring reports, Periodic Reports on Continuing Compliance, Baseline Monitoring Reports and/or split sample verification, shall be certified by the Arkansas Department of Environmental Quality Laboratory Certification Program for the specific analysis being performed. The Manager reserves the right to reject any analysis performed by an independent laboratory that is not duly certified for a particular analysis.

6.12 Sample Collection

- A. If as a result of any sampling and analyses authorized by the Manager, or due to the existence of any other information, the Manager may have sufficient reason to suspect the presence of toxic or prohibited substances as limited or prohibited by this ordinance to exist in the wastewater discharge of a facility, the Manager may direct the owner or operator of said facility to have a representative of that facility's wastewater subjected to the appropriate physical, chemical, and biological tests performed by a qualified laboratory acceptable to the Manager. The purpose of such tests shall be to determine the conformance of the wastewater characteristics to this Ordinance. A prompt report shall be made in writing to the Manager by the laboratory stating the results of the tests. The costs associated with the sampling and testing required by this section shall be borne by the owner or operator.
- B. Any sampling, testing, and/or sample delivery associated with duplicate sample analysis in excess of the regularly scheduled sampling and analysis performed by the Utility that is requested by an industrial customer for the purpose of assessing a surcharge or enforcement of this ordinance will be borne by the owner or operator of the facility. The owner or operator of the facility which has a duplicate analysis performed by an independent laboratory will submit a prompt report in writing from the laboratory giving the results of the analyses and all quality assurance information relative to the analyses.
- C. Except as indicated in Section D, below, the User must collect wastewater samples using flow proportional composite collection techniques. In the event flow proportional sampling is not feasible, the Manager may authorize the use of time proportional sampling or a minimum of four (4) grab samples where the User demonstrates that this will provide a representative sample of the effluent being discharged. In addition, grab samples may be required to show compliance with instantaneous discharge limits.
- D. Samples for oil and grease, temperature, pH, cyanide, phenols, sulfides, and volatile organic compounds must be obtained using grab sample collection techniques.
- E. Sampling and testing shall be performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto. The sampling methods performed shall include at a minimum procedures for sample chain of custody, preservation techniques, and holding times.

6.13 Timing

Written reports will be deemed to have been submitted on the date they are received by the Manager.

6.14 Record Keeping

Users subject to the reporting requirements of this Ordinance shall retain, and make available for inspection and copying, all records of information obtained pursuant to any monitoring activities required by this Ordinance and any additional records of information obtained pursuant to monitoring activities undertaken by the User independent of such requirements. Records shall include the date, exact place, method, and time of sampling, and the name of the person(s) taking the samples; the dates analyses were performed; who performed the analyses; the analytical techniques or methods used; and the results of such analyses. These records shall remain available for a period of at least three (3) years. This period shall be automatically extended for the duration of any litigation concerning the User or the City, or where the User has been specifically notified of a longer retention period by the Manager.

SECTION 7 - POWER AND AUTHORITY OF INSPECTORS

7.1 Right of Entry: Inspection and Sampling

The Manager shall have the right to enter the premises of any User to determine whether the User is complying with all requirements of this Ordinance and any wastewater discharge permit or order issued hereunder. Users shall allow the Manager ready access to all parts of the premises for the purposes of inspection, sampling, records examination and copying, and the performance of any additional duties. The Manager shall conduct inspection and sampling tasks at a minimum of once a year for every User.

- A. Where a User has security measures in force which require proper identification and clearance before entry into its premises, the User shall make necessary arrangements with its security guards so that, upon presentation of suitable identification, the Manager will be permitted to enter without delay for the purposes of performing specific responsibilities.
- B. The Manager shall have the right to set up on the User's property, or require installation of, such devices as are

necessary to conduct sampling and/or metering of the User's operations.

- C. The Manager may require the User to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the User at its own expense. All devices used to measure wastewater flow and quality shall be calibrated at least annually to ensure their accuracy.
- D. Any temporary or permanent obstruction to safe and easy access to the facility to be inspected or sampled shall be promptly removed by the User at the written or verbal request of the Manager and shall not be replaced. The costs of clearing such access shall be born by the User.
- E. Unreasonable delays and/or refusals in allowing the Manager access to the User's premises for the purpose of making an inspection authorized by this section shall be a violation of this Ordinance.
- F. In addition to the provisions of this Ordinance, the Sewer Committee of the City of Little Rock is specifically authorized to make such other reasonable rules and regulations in regard to the construction, use, and operation of sanitary sewers to be connected to, or connecting into, the mains of the Little Rock Wastewater Utility system. Such rules and regulations so made and adopted at a regular meeting of the Sewer Committee shall become effective as follows:
 - (1) A public notice of intent to enact and intention of proposed rules and regulations shall be placed in a daily newspaper in the City of Little Rock, Arkansas, one (1) day for each of two (2) successive weeks with a brief summary of the proposed rules and regulations.
 - (2) The proposed rules and regulations shall be available for public inspection and reproduction at the office of the Manager of Little Rock Wastewater Utility for thirty (30) days following the first publication of the public notice.
 - (3) A correct copy of those rules and regulations shall be filed for permanent record with the City Clerk of the City of Little Rock together with any written objections to the proposed rules and regulations at the end of the thirty (30) day public review period.

- (4) Said rules and regulations shall become effective on the filing of said copy for permanent record with the City Clerk.

7.2 Search Warrants

If the Manager has been refused access to a building, structure, or property, or any part thereof, and if the Manager is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program of the Utility designed to verify compliance with this Ordinance or any permit or order issued hereunder, or to protect the overall public health, safety and welfare of the community, then upon application and affidavit by the Little Rock Sanitary Sewer Committee by its attorney, the appropriate Municipal Court Judge of the City of Little Rock, Arkansas, may issue a search and/or seizure warrant describing therein the specific location subject to the warrant. The warrant shall specify what, if anything, may be searched and/or seized on the property described. Such warrant shall be served at reasonable hours by the Manager or the Little Rock Sanitary Sewer Committee attorney in the company of a uniformed police officer of the City of Little Rock, Arkansas. In the event of an emergency affecting public health and safety, inspections shall be made without the issuance of a warrant.

SECTION 8 - CONFIDENTIAL INFORMATION

Information and data on a User obtained from reports, surveys, wastewater discharge permit applications, wastewater discharge permits, and monitoring programs, and from the Managers inspection and sampling activities, shall be available to the public without restriction, unless the User specifically requests, and is able to demonstrate to the satisfaction of the Manager, that the release of such information would divulge information, processes, or methods of production entitled to protection as trade secrets under applicable State law. Any such request must be asserted at the time of submission of the information or data. When requested and demonstrated by the User furnishing a report that such information should be held confidential, the portions of a report which might disclose trade secrets, secret processes, or proprietary information shall not be made available for inspection by the public, but shall be made available immediately upon request to governmental agencies for uses related to the NPDES program or pretreatment program, and in enforcement proceedings involving the person furnishing the report subject to the provisions of the Arkansas Freedom of Information Act, A.C.A. § 25-19-101 et seq. Wastewater constituents and characteristics and other "effluent data" as

defined by 40 CFR 2.302 will not be recognized as confidential information and will be available to the public without restriction.

SECTION 9 - PUBLICATION OF USERS IN SIGNIFICANT NON-COMPLIANCE

The Manager shall publish annually, in the largest daily newspaper published in the City of Little Rock, a list of the Users which, during the previous twelve (12) months, were in significant non-compliance with applicable pretreatment standards and requirements. The term significant non-compliance shall mean:

- A. Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent (66%) or more of wastewater measurements taken during a six (6) month period exceed the daily maximum limit or average limit for the same pollutant parameter by any amount;
- B. Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent (33%) or more of wastewater measurements taken for each pollutant parameter during a six (6) month period equals or exceeds the product of the daily maximum limit or the average limit multiplied by the applicable criteria (1.4 for BOD, TSS, oil and grease, and 1.2 for all other pollutants except pH);
- C. Any other discharge violation that the Manager believes has caused, alone or in combination with other discharges, interference or pass through, including endangering the health of POTW personnel or the general public;
- D. Any discharge of pollutants that has caused imminent endangerment to the public or to the environment, or has resulted in the Manager's exercise of its emergency authority to halt or prevent such a discharge;
- E. Failure to meet, within ninety (90) days of the scheduled date, a compliance schedule milestone contained in a wastewater discharge permit or enforcement order for starting construction, completing construction, or attaining final compliance;
- F. Failure to provide within thirty (30) days after the due date, any required reports, including baseline monitoring reports, reports on compliance with categorical pretreatment standard deadlines, periodic self-monitoring reports, monthly self-monitoring reports, and reports on compliance with compliance schedules;

- G. Failure to accurately report non-compliance; or
- H. Any other violation(s) which the Manager determines will adversely affect the operation or implementation of the local pretreatment program.

SECTION 10 - ADMINISTRATIVE ENFORCEMENT REMEDIES

10.1 Non-compliance Incident

Whenever the Manager or his designated agent finds that any User has violated or is violating this Ordinance, a wastewater discharge permit or order issued hereunder, or any other requirement, the Manager or his agent may notify the User of non-compliance. This notification may be oral or written. Within thirty (30) days of the receipt of the notice of non-compliance incident, the User must notify the Utility of the reason for the non-compliance and the steps taken to prevent any recurrence. Submission of this information in no way relieves the User of liability for any violation occurring before or after receipt of the notice of the non-compliance incident. Nothing in this section shall limit the authority of the Utility to take any action, including emergency actions or any other enforcement action, without first issuing a notice of a non-compliance incident.

10.2 Notice of Violation

When the Manager finds that a User has violated, or continues to violate, any provision of this Ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the Manager shall serve upon that User a written Notice of Violation. Within thirty (30) days of the receipt of this notice, an explanation of the violation and a plan for the satisfactory correction and prevention thereof, to include specific required actions, shall be submitted by the User to the Manager. Submission of this plan in no way relieves the User of liability for any violations occurring before or after receipt of the Notice of Violation. Nothing in this section shall limit the authority of the Manager to take any action, including emergency actions or any other enforcement action, without first issuing a Notice of Violation.

10.3 Consent Orders

The Manager is authorized to enter into consent orders, assurances of voluntary compliance, or other similar documents establishing an agreement with any User responsible for non-compliance. Such orders, assurances, or other similar documents will include specific action to be taken by the User to correct

the non-compliance within a time period specified by the document. Such order, assurances, or other similar documents shall have the same force and effect as the administrative orders issued pursuant to Sections 10.4 and 10.5 of this ordinance and shall be judicially enforceable.

10.4 Show Cause Hearing

- A. The Manager may order any User which causes or contributes to violation(s) of this Ordinance, wastewater discharge permits, or orders issued hereunder, or any other pretreatment standard or requirement, to appear before the Sewer Committee and show cause why a proposed enforcement action should not be taken. Notice shall be served on the User specifying the time and place for the hearing, the proposed enforcement action, the reasons for such action, and a request that the User show cause why this proposed enforcement action should not be taken. The notice of the meeting shall be served personally or certified mail (return receipt requested) at least ten (10) days prior to the hearing. Such notice may be served on any authorized representative of the User. Whether or not the User appears as ordered, immediate enforcement action may be pursued following the hearing date. A show cause hearing shall not be a prerequisite for taking any other enforcement action.
- B. The Sewer Committee may itself conduct the show cause hearing and take the evidence or the Sewer Committee or its Chairman may designate the Manager to:
- (1) Issue in the name of the Sewer Committee notices of hearings requiring attendance, testimony of witnesses and the production of evidence relevant to any matter involved in such hearings;
 - (2) Take the evidence; and
 - (3) Transmit a report of the evidence and hearing, including transcripts and other evidence together with recommendations to the Sewer Committee for action thereon.
- C. At any hearing held pursuant to this Ordinance, any testimony taken must be under oath and be recorded by cassette tape. Any party desiring stenographic recording may provide the same at its own expense. A copy of a cassette tape or of the stenographic recorded transcript will be made available to any member of the public or any party to the hearing upon payment of the usual charges thereof (such as postage, printing, copying expense, etc.). Any decision made as a consequence of any hearing held

pursuant to this Ordinance shall be subject to review by appeal to the Circuit Court of Pulaski County, in accordance with the law of Arkansas.

- D. Following the show cause hearing, the hearing officer, if other than the Sewer Committee, shall within ten (10) days after the hearing submit his findings and recommendations to the members of the Sewer Committee. Following receipt of the recommendations, the Sewer Committee shall consider the findings and recommendations at its next regularly scheduled meeting or at any special meeting called for that purpose at which meeting the Sewer Committee shall take such action as it deems necessary. Within fifteen (15) days after consideration of the matter, the Sewer Committee shall have served on all parties the action recommended. If the Sewer Committee finds that legal action should be brought against the User for the violation(s), the Sewer Committee may institute such action to seek such civil and/or equitable relief including but not limited to injunctive relief, as may be appropriate; provided, however, that no suit to collect civil or criminal penalties may be initiated until after such time that a resolution authorizing such suit is duly adopted by the Sewer Committee pursuant to A.C.A. § 8-4-103 (g) (1) & (2).

Additionally, the Sewer Committee, through the Manager, may issue to any User in violation, notice that following a specified period of time, the sewer service will be discontinued unless its pretreatment facility shall have installed adequate devices or other related appurtenances are properly operated. Other orders and directives as necessary and appropriate may be issued.

An order directing the cessation of sewer service shall not preclude legal or equitable action as the Sewer Committee may deem appropriate under the circumstances.

10.5 Compliance Orders and Schedules

When the Manager finds that a User has violated, or continues to violate, any provision of this Ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the Manager may issue an order or schedule to the User responsible for the discharge directing that the User come into compliance within a specified time. If the User does not come into compliance within the time provided, sewer service may be discontinued subject to notice and right to a hearing as provided herein unless adequate treatment facilities, devices, or other related appurtenances are installed and properly operated. Compliance orders also may contain other

requirements to address the non-compliance, including additional self-monitoring and management practices designed to minimize the amount of pollutants discharged to the sewer. A compliance order may not extend the deadline for compliance established for a pretreatment standard or requirement, nor does a compliance order relieve the User of liability for any violation, including any continuing violation. Issuance of a compliance order shall not be a bar against, or a prerequisite for, taking any other action against the User.

10.6 Cease and Desist Orders

When the Manager finds that a User has violated, or continues to violate, any provision of this Ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, or that the User's past violations are likely to recur, the Manager may issue an order to the User directing it to cease and desist all such violations and directing the User to:

- A. Immediately comply with all requirements; and,
- B. Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and/or terminating the discharge.

Issuance of a cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the User.

10.7 Administrative Fines

- A. When the Manager finds that a User has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the Manager may fine such User in an amount not to exceed \$1,000.00. Such fines shall be assessed on a per violation basis. In the case of monthly or other long term average discharge limits, fines shall be assessed for each day during the period of violation. Each day of a continuing violation shall be deemed a separate violation.
- B. Users desiring to dispute such fines must file a written request for the Manager to reconsider the fine along with full payment of the fine amount within ten (10) days of being notified of the fine. Where a request has merit, the Manager may convene a hearing on the matter. In the event the User's request is granted, the payment shall be returned

to the User. Collection of a fine can only be effected in a court of competent jurisdiction.

- C. Issuance or pursuit of an administrative fine shall not be a bar against, or a prerequisite for, taking any other action against the User, and in no event shall legal proceedings be initiated to collect said fine or penalty without a resolution of the Sewer Committee authorizing such court action.

10.8 Emergency Suspensions

The Manager may immediately suspend a User's discharge, after notice to the User and a hearing within five (5) days of the suspension, whenever such suspension is necessary to stop an actual or threatened discharge which reasonably appears to present or cause an imminent or substantial endangerment to the health or welfare of persons. The Manager may also immediately suspend a User's discharge, after notice and opportunity to respond, that threatens to interfere with the operation of the POTW, or which presents, or may present, an endangerment to the environment.

- A. Any User notified of a suspension of its discharge shall immediately stop or eliminate its contribution. In the event of a User's failure to immediately comply voluntarily with the suspension order, the Manager may take such steps as deemed necessary, including immediate severance of the sewer connection, to prevent or minimize damage to the POTW, its receiving stream, or endangerment to any individuals. The Manager may allow the User to recommence its discharge when the User has demonstrated to the satisfaction of the Manager that the period of endangerment has passed, unless the termination proceedings in Section 10.8 of this Ordinance are initiated against the User.
- B. A User who is responsible, in whole or in part, for any discharge presenting imminent endangerment shall submit a detailed written statement, describing the causes of the harmful contribution and the measures taken to prevent any future occurrence, to the Manager prior to the date of any show cause or termination hearing under Sections 10.8 or 10.9 of this ordinance.

Nothing in this section shall be interpreted as requiring a hearing prior to any emergency suspension under this section.

10.9 Termination of Discharge

In addition to the provisions in Section 5.5 of this ordinance, any User who violates the following conditions of this Ordinance, wastewater discharge permits, or orders issued pursuant to any provision of this Ordinance may be subject to discharge permit termination:

- A. Violation of wastewater discharge permit conditions;
- B. Failure to accurately report the wastewater constituents and characteristics of its discharge;
- C. Failure to report significant changes in operations or wastewater volume, constituents, and characteristics prior to discharge;
- D. Refusal of reasonable access to the User's premises for the purpose of inspection, monitoring, or sampling; or
- E. Violation of the pretreatment standards in Section 2 of this ordinance. Such User will be notified of the proposed termination of its discharge and be offered an opportunity to show cause under Section 10.4 of this ordinance why the proposed action should not be taken. Exercise of this option by the Manager shall not be a bar to, or a prerequisite for, taking any other action against the User.

SECTION 11 - JUDICIAL ENFORCEMENT REMEDIES

11.1 Injunctive Relief

When the Manager finds that a User has violated, or continues to violate, any provision of this Ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, the Sewer Committee may commence proceedings for the issuance of a temporary or permanent injunction, as appropriate, which restrains or compels the specific performance of the wastewater discharge permit, order, or other requirement imposed by this ordinance on activities of the User. The Sewer Committee may also seek such other action as is appropriate for legal and/or equitable relief, including a requirement for the User to conduct environmental remediation. A complaint for injunctive relief shall not be a bar against, or a prerequisite for, taking any other action against a User.

11.2 Civil Penalties

- A. A User who has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement shall be liable to the Utility for a maximum civil penalty of \$1,000.00 per violation. In the case of a monthly or other long-term average discharge limit, penalties shall accrue for each day during the period of the violation; and, each day of a continuing violation may be deemed a separate violation.
- B. The Manager may recover all costs recoverable under the law of Arkansas, and other expenses associated with enforcement activities, including sampling and monitoring expenses, and the cost of any actual damages incurred by the Utility.
- C. In determining the amount of civil liability, a Court of competent jurisdiction may take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration of the violation, any economic benefit gained through the User's violation, corrective actions by the User, the compliance history of the User, and any other factor as justice requires.
- D. Filing a suit for civil or criminal penalties shall not be a bar against, or a prerequisite for, taking any other action against a User, provided, that no such suit to collect civil or criminal penalties shall be commenced without a resolution of the Sewer Committee authorizing such court action.
 - (1) For Users with properties located within the corporate limits of the City of Little Rock, no suit to collect civil or criminal penalties or fines may be initiated until after such time that a resolution authorizing the suit is duly adopted by the Sewer Committee, as the governing body pursuant to Ark. Code Ann § 8-4-103.
 - (2) For Users with properties located outside the corporate limits of the City of Little Rock, the Board of Directors of the City of Little Rock hereby delegates authority to the Sewer Committee to be the governing body to authorize, by resolution, legal actions to collect civil or criminal penalties or fines.

11.3 Criminal Prosecution

- A. A User who willfully or negligently violates any provision of this Ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement shall, upon conviction, be guilty of a misdemeanor, punishable by a fine of not more than \$1,000.00 per violation or imprisonment for such term as allowed by law or both; provided that no criminal prosecution may be commenced without a prior resolution of the Sewer Committee authorizing such prosecution.

- B. A User who willfully or negligently introduces any substance into the POTW which causes personal injury or property damage shall, upon conviction, be guilty of a misdemeanor and be subject to a penalty of at least one hundred dollars (\$100.00) but not more than five hundred dollars (\$500.00) for any one (1) specified offense or violation thereof, and not less than one hundred dollars (\$100.00) but not more than one thousand dollars (\$1,000.00) for each repetition of such event or violation, or be subject to imprisonment for such term as allowed by law, or both. This penalty shall be in addition to any other cause of action for personal injury or property damage available under State law.

- C. A User who knowingly makes any false statements, representations, or certifications in any application, record, report, plan, or other documentation filed, or required to be maintained, pursuant to this ordinance, wastewater discharge permit, or order issued hereunder, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this ordinance shall, upon conviction, be punished by a fine of at least one hundred dollars (\$100.00) but not more than five hundred dollars (\$500.00) for any one (1) specified offense or violation thereof, and not less than one hundred dollars (\$100.00) but not more than one thousand dollars (\$1,000.00) for each repetition of such event or violation, or be subject to imprisonment for such term as allowed by law, or both. This penalty shall be in addition to any other cause of action for personal injury or property damage available under State law.

11.4 Remedies Nonexclusive

The remedies provided for in this ordinance are not exclusive. The Manager may take any, all, or any combination of these actions against a non-compliant User. Enforcement of pretreatment violations will generally be in accordance with the Utility's enforcement response plan. However, the Manager may

take other action against any User when the circumstances warrant. Further, the Manager is empowered to take more than one enforcement action against any non-compliant User.

SECTION 12 - SUPPLEMENTAL ENFORCEMENT ACTION

12.1 Performance Bonds

The Manager may decline to issue or reissue a wastewater discharge permit to any User who has failed to comply with any provision of this ordinance, a previous wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, unless such User first files a satisfactory bond, payable to the Sewer Committee, in a sum not to exceed a value determined by the Manager to be necessary to achieve consistent compliance.

12.2 Liability Insurance

The Manager may decline to issue or reissue a wastewater discharge permit to any User who has failed to comply with any provision of this ordinance, a previous wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, unless the User first submits proof that it has obtained financial assurances sufficient to restore or repair damage to the POTW caused by its discharge.

12.3 Public Nuisances

A violation of any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement is hereby declared a public nuisance and shall be corrected or abated as directed by the Manager. Any person(s) creating a public nuisance shall be subject to the provisions of the City Code for the City of Little Rock governing such nuisances, including reimbursing the City and/or the Sewer Committee for any costs incurred in removing, abating, or remedying said nuisance.

SECTION 13 - AFFIRMATIVE DEFENSES TO DISCHARGE VIOLATIONS

13.1 Upset

A. For the purposes of this section, "upset" means an exceptional incident in which there is unintentional and temporary non-compliance with categorical pretreatment standards because of forces beyond the reasonable control of the User. An upset does not include non-compliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack

of preventive maintenance, or careless or improper operation.

B. An upset shall constitute an affirmative defense to an action brought for non-compliance with categorical pretreatment standards if the requirements of paragraph (C), below, are met.

C. A User who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and the User can identify the cause(s) of the upset;

(2) The facility was at the time being operated in a prudent and workman-like manner and in compliance with applicable operation and maintenance procedures; and

(3) The User has submitted the following information to the Manager within twenty-four (24) hours of becoming aware of the upset. If this information is provided orally, a written submission must be provided within five (5) days:

(a) A description of the indirect discharge and cause of non-compliance;

(b) The period of non-compliance, including exact dates and times or, if not corrected, the anticipated time the non-compliance is expected to continue; and

(c) Steps being taken and/or planned to reduce, eliminate, and prevent recurrence of the non-compliance.

D. In any enforcement proceeding, the User seeking to establish the occurrence of an upset shall have the burden of proof.

E. Users will have the opportunity for a judicial determination on any claim of upset only in an enforcement action brought for non-compliance with categorical pretreatment standards.

F. Users shall control production of all discharges to the extent necessary to maintain compliance with categorical pretreatment standards upon reduction, loss, or failure of its treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other

things, the primary source of power of the treatment facility is reduced, lost, or fails.

13.2 Prohibited Discharge Standards

A User shall have an affirmative defense to an enforcement action brought against it for non-compliance with the general prohibitions in Section 2.1(A) of this ordinance or the specific prohibitions in Sections 2.1(B)(3) through (17) of this Ordinance if it can prove that it did not know, or have reason to know, that its discharge, alone or in conjunction with discharges from other sources, would cause pass through or interference and that either:

- A. A local limit exists for each pollutant discharged and the User was in compliance with each limit directly prior to, and during, the pass through or interference; or
- B. No local limit exists, but the discharge did not change substantially in nature or constituents from the User's prior discharge when the Utility was regularly in compliance with its NPDES permit, and in the case of interference, was in compliance with applicable sludge use or disposal requirements.

13.3 Bypass

- A. For the purposes of this section,
 - (1) "Bypass" means the intentional diversion of wastestreams from any portion of a User's treatment facility.
 - (2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- B. A User may allow any bypass to occur which does not cause pretreatment standards or requirements to be violated, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of paragraphs (C) and (D) of this section.
- C. (1) If a User knows in advance of the need for a bypass, it shall submit prior notice to the Manager at least ten (10) days before the date of the bypass, if possible.

- (2) A User shall submit oral notice to the Manager of an unanticipated bypass that exceeds applicable pretreatment standards within twenty-four (24) hours from the time it becomes aware of the bypass. A written submission shall also be provided within five (5) days of the time the User becomes aware of the bypass. The written submission shall contain a description of the bypass and its cause; the duration of the bypass, including exact dates and times, and, if the bypass has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass. The Manager may waive the written report on a case-by-case basis if the oral report has been received within twenty-four (24) hours.
- D. (1) Bypass is prohibited, and the Manager may take an enforcement action against a User for a bypass, unless
- (a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - (b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - (c) The User submitted notices as required under paragraph (C) of this section.
- (2) The Manager may approve an anticipated bypass, after considering its adverse effects, if the Manager determines that it will meet the three conditions listed in paragraph (D)(1) of this section.

SECTION 14 - EXTRA STRENGTH SURCHARGE RATES

14.1 General

The Manager may at any time collect appropriate samples from any Industrial or Commercial User's discharge and conduct analyses to determine the concentrations of BOD, TSS, and Oil and Grease (O&G). If the sampling and analyses performed by the Manager or his designated assistant indicates concentrations of

BOD, TSS, and O&G exceeding the limits set forth in 14.2 below, he shall compute an extra strength surcharge as set by the existing Sewer Rate Ordinance, and the owner shall be liable for payment of the amount thereof. The collection of an extra strength surcharge is not a penalty, but rather allows the Utility to defray the costs of treating industrial wastewater concentrations that are above average domestic wastewater concentrations. The surcharge shall be considered a sewer charge for which the owner shall be liable in accordance with the applicable law of the State of Arkansas, as amended and upon default in such payment, the Utility shall be entitled to those remedies set forth in said statute.

14.2 Computations

The extra strength surcharge shall be calculated in accordance with the provisions of the applicable rate ordinance (the same being incorporated by reference) using the following limits and calculations:

- 1) BOD in excess of 300 mg/L
- 2) TSS in excess of 300 mg/L
- 3) O&G in excess of 100 mg/L

$$\text{SURCHARGE} = [(BOD_x - 300 \text{ mg/L}) (8.34) (V) (A)] + [(TSS_x - 300 \text{ mg/L}) (8.34) (V) (B)] + [(O\&G_x - 100 \text{ mg/L}) (8.34) (V) (C)]$$

Where:

BOD _x	=	concentration of BOD in mg/L
TSS _x	=	concentration of TSS in mg/L
O&G _x	=	concentration of O&G in mg/L
8.34	=	weight of one gallon of water, pounds
V	=	flow in million gallons per month
A	=	unit charge for BOD
B	=	unit charge for TSS
C	=	unit charge for O&G

SECTION 15 - MISCELLANEOUS PROVISIONS

15.1 Pretreatment Charges and Fees

The Manager may adopt fees for reimbursement of costs of setting up and operating the Utility's Pretreatment Program which may include, but is not limited to the following:

- A. Fees for wastewater discharge permit applications including the cost of processing such applications;

- B. Fees for monitoring, inspection, and surveillance procedures including the cost of sample collection and analyzing a User's discharge, and reviewing monitoring reports submitted by Users;
- C. Fees for reviewing and responding to accidental discharge, including reasonable costs incurred for labor, materials, and proper disposal of incompatible wastes not subject to treatment by the POTW Treatment Plant;
- D. Fees for reviewing written requests for discharge of special wastes;
- E. Fees for filing appeals; and
- F. Other fees as the Manager may deem necessary to carry out the requirements contained herein. These fees relate solely to the matters covered by this ordinance and are separate from all other fees, fines, and penalties chargeable by the City.

SECTION 16 - SEVERABILITY

The provisions of this Ordinance are severable, and if any provision, paragraph, word, section, or article of this Ordinance is invalidated by any court of competent jurisdiction, it shall not affect the remainder of this Ordinance and the remaining provisions, paragraphs, words, sections, and articles shall not be affected and shall continue in full force and effect.

SECTION 17 - REPEAL OF PRIOR ORDINANCE

All Ordinances and parts of ordinances inconsistent or conflicting with any part of this Ordinance are hereby repealed to the extent of such inconsistency or conflict, including Articles VI, VII, VIII, and IX of Ordinance No. 15,344 passed on September 1, 1987.

SECTION 18 - AUTHORITY OF LITTLE ROCK SANITARY SEWER COMMITTEE, EFFECTIVE DATE, DECLARING AN EMERGENCY

The City Board of Directors of the City of Little Rock has determined that it is essential that the Little Rock Sanitary Sewer Committee should have the authority to regulate the use of public and private sewers in accordance with the provisions contained in this Ordinance in order to accomplish the purposes thereof. Therefore, an emergency is hereby declared to exist, and this Ordinance, being necessary for the immediate preservation of the public health, safety, welfare and safety,

shall be in full force and effect immediately after its passage and approval.

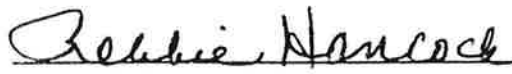
PASSED: **March 16, 1999**

APPROVED:



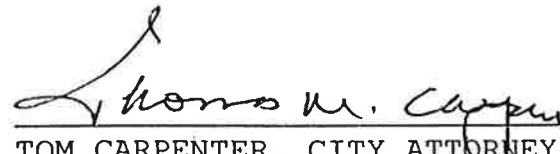
MAYOR **JIM DAILEY**

ATTEST:



CITY CLERK **ROBBIE HANCOCK**

APPROVED:



TOM CARPENTER, CITY ATTORNEY

PREPARED BY:

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Little Rock Wastewater Utility
221 E. Capitol
Little Rock, AR 72202
Ark. Sup. Ct. #63022
(501) 688-1403

C E R T I F I C A T E

**STATE OF ARKANSAS)
COUNTY OF PULASKI) SS
CITY OF LITTLE ROCK)**

I, Robbie Hancock, City Clerk within and for the City aforesaid, do hereby certify that the foregoing is a true and correct copy of Ordinance No. 17,966 of the Ordinances of the City of Little Rock, Arkansas, entitled: "AN ORDINANCE REGULATING THE DISCHARGE OF INDUSTRIAL WASTEWATER TO THE PUBLIC SEWER SYSTEM, PROVIDING PENALTIES FOR THE VIOLATION THEREOF; REPEALING ALL ORDINANCES OR PARTS THEREOF IN CONFLICT THEREWITH CONSISTING OF ARTICLES VI, VII, VIII, AND IX OF ORDINANCE NO. 15,344, PASSED ON SEPTEMBER 1, 1987; AND FOR OTHER PURPOSES, ALL PERTAINING TO THE SEWER LINES AND SYSTEM WITHIN THE JURISDICTION OF THE CITY OF LITTLE ROCK, ARKANSAS, AND DECLARING AN EMERGENCY"; passed by the Board of Directors of said City on March 16, 1999, said Ordinance now appearing of record in this office.

IN WITNESS WHEREOF, I have hereunto set my hand and seal of office on this 5th day of April, 1999.



Robbie Hancock
City Clerk
City of Little Rock, Arkansas

Sec. 35-156. Notification of rate and user charges.

Each user of the sewer system shall be notified, at least annually by publication in a newspaper having wide circulation in Pulaski County, Arkansas, in conjunction with a regular bill, of the rate and the portion of the user charges which are attributable to waste water treatment services, in compliance with 40 C.F.R. §35.929-2(f). (Ord. No. 18,232, § 4, 3-21-00)

Secs. 35-157—35-160. Reserved.

ARTICLE IV. PRETREATMENT

DIVISION 1. GENERALLY

Sec. 35-161. Title, purpose and policy.

This article shall be known as "the Pretreatment Ordinance" and sets forth uniform requirements for users of the publicly owned treatment works for the City of Little Rock and enables the Little Rock Wastewater Utility, hereafter utility, to comply with all applicable state and federal laws, including the Clean Water Act (33 United States Code § 1251 *et seq.*) and the General Pretreatment Regulations (40 Code of Federal Regulations Part 403). The objectives of this article are:

- (a) To prevent the introduction of pollutants into the publicly owned treatment works that will interfere with its operation, contaminate the resulting biosolids, or interfere with the use and disposal of wastewater or biosolids in compliance with applicable statutes and regulations;
- (b) To prevent the introduction of pollutants into the publicly owned treatment works that will pass through the publicly owned treatment works, inadequately treated, into receiving waters, or otherwise be incompatible with the publicly owned treatment works;
- (c) To protect both publicly owned treatment works personnel who may be affected by

wastewater and sludge in the course of their employment and the general public;

- (d) To promote re-use and recycling of wastewater and biosolids from the publicly owned treatment works;
- (e) To enable the utility to comply with its National Pollutant Discharge Elimination System permit conditions, biosolids use and disposal requirements, and any other federal or state laws to which the utility is subject.
- (f) It is in the best interest of the utility to clarify and update the provisions of the existing Sewer Use Ordinance (Ord. No. 15,344) to achieve compliance with the Clean Water Act and regulations pursuant to 40 CFR 403 (General Pretreatment Regulations) as amended July 24, 1990.
- (g) To promote and encourage pollution prevention and waste minimization and waste reduction at Industrial Users prior to their recycling, treatment, or disposal options.

This article shall apply to all users of the publicly owned treatment works. The article authorizes the issuance of wastewater discharge permits; provides for monitoring, compliance, and enforcement activities; establishes administrative review procedures; requires user reporting; and provides for the setting of such fees as necessary for the equitable distribution of costs resulting from the program established herein.

(Ord. No. 17,966, § 1.1, 3-16-99)

Sec. 35-162. Administration.

Except as otherwise provided herein, the manager shall administer, implement, and enforce the provisions of this article. Any powers granted to or duties imposed upon the manager may be delegated by the manager to other utility personnel.

(Ord. No. 17,966, § 1.2, 3-16-99)

Sec. 35-163. Abbreviations.

The following abbreviations, when used in this article, shall have the designated meanings:

BOD - Biochemical Oxygen Demand

BTEX	-	Benzene, Toluene, Ethylbenzene, Xylene
CFR	-	Code of Federal Regulations
COD	-	Chemical Oxygen Demand
EPA	-	U.S. Environmental Protection Agency
gpd	-	gallons per day
mg/l	-	milligrams per liter
NPDES	-	National Pollutant Discharge Elim- ination System
O&G	-	Oil and Grease
POTW	-	Publicly Owned Treatment Works
RCRA	-	Resource Conservation and Recov- ery Act
SIC	-	Standard Industrial Classification
TSS	-	Total Suspended Solids
U.S.C.	-	United States Code (Ord. No. 17,966, § 1.3, 3-16-99)

Sec. 35-164. Definitions.

Unless a provision explicitly states otherwise, the following terms and phrases, as used in this article, shall have the meanings hereinafter designated:

Act or the Act means the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. § 1251 et seq.

And/or shall mean one item or the other or a combination of both or all.

Approval authority means the Arkansas Department of Environmental Quality.

Authorized representative of the user:

- (1) If the user is a corporation:
 - a. The president, secretary, treasurer, or a vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - b. The manager or chief executive officer ("CEO") of one or more manufacturing, production, or operation facilities employing more than two hundred fifty (250) persons or having gross annual sales or expenditures exceeding twenty-five million dollars (\$25,000,000.00) (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager or CEO in accordance with corporate procedures.
- (2) If the user is a partnership or sole proprietorship: a general partner or proprietor, respectively.
- (3) If the user is a federal, state, or local governmental facility: a director or highest official appointed or designated to oversee the operation and performance of the activities of the government facility, or their designee.
- (4) The individuals described in paragraphs (1) through (3), above, may designate another authorized representative if the authorization is in writing, the authorization specifies the individual or position responsible for the overall operation of the facility from which the discharge originates or having overall responsibility for environmental matters for the company, and the written authorization is submitted to the manager or CEO.

Batch discharge means the discharge of wastewater to a POTW on an intermittent basis.

Biochemical oxygen demand or *BOD* means the relative oxygen requirements of water and wastewater as determined by generally accepted standard laboratory procedures. The test measures the quantity of oxygen utilized in the biochemical oxidation of organic matter and inorganic matter such as sulfides, ferrous iron, and reduced forms of nitrogen. The test is conducted under standard laboratory procedures for five (5) days at twenty (20) degrees centigrade, usually expressed as a concentration (e.g., mg/l).

BTEX means the sum of the milligram per liter concentrations of benzene, toluene, ethylbenzene, and xylene.

BTEX waters mean those waters associated with underground petroleum storage tanks. This may include water inside the tanks, water within the excavation pit upon removal of such tanks, or contaminated groundwater in the immediate vicinity of such a tank.

Categorical pretreatment standard or *categorical standard* means any regulation containing pollutant discharge limits promulgated by EPA in accordance with Sections 307(b) and (c) of the Act (33 U.S.C. § 1317) which apply to a specific category of users and which appear in 40 CFR Chapter I, Subchapter N, Parts 405-471.

City means the City of Little Rock, Arkansas.

Composite sample means a series of individual grab samples collected over a known period of time or proportional to flow and combined to make one sample.

Control authority means the City of Little Rock Wastewater Utility.

Control manhole means the manhole through which or into which the majority of the significant industrial wastestreams from a discharger flows and which is suitable for obtaining a representative sample of the discharge.

Environmental Protection Agency or *EPA* means the U.S. Environmental Protection Agency or,

where appropriate, the regional water management division director, or other duly authorized official of said agency.

Existing source means any source of discharge, the construction or operation of which commenced prior to the publication by EPA of proposed categorical pretreatment standards, which will be applicable to such source if the standard is thereafter promulgated in accordance with Section 307 of the Act.

Extra strength surcharge or surcharge means the additional monthly sewer charge assessed to persons discharging wastewater exceeding the average domestic concentrations for BOD, TSS, and/or oil and grease. The surcharge is based on the pounds of pollutant discharged and reflects the additional cost of treating high strength discharges.

Garbage means the solid wastes from the domestic and commercial preparation, cooking and disposing of food, and from the handling, storage, and sale of produce.

Grab sample means a sample which is taken from a wastestream without regard to the flow in the wastestream and over a period of time not to exceed fifteen (15) minutes.

Indirect discharge or discharge means the introduction of pollutants into the POTW from any non-domestic source regulated under Section 307(b), (c), or (d) of the Act.

Industrial user or user means a source of indirect discharge.

Interference means a discharge, which alone or in conjunction with a discharge or discharges from other sources, inhibits or disrupts the POTW, its treatment processes or operations or its biosolids processes, use or disposal; and therefore, is a cause of a violation of the POTW's NPDES permit or of the prevention of biosolids use or disposal in compliance with any of the following statutory/regulatory provisions or permits issued thereunder, or any more stringent state or local regulations: Section 405 of the Act; the Solid Waste Disposal Act, including Title II commonly referred to as the Resource Conservation and Recovery Act (RCRA); any state regulations contained in any

state biosolids management plan prepared pursuant to Subtitle D of the Solid Waste Disposal Act; the Clean Air Act; the Toxic Substances Control Act; and the Marine Protection, Research, and Sanctuaries Act.

Landfill leachate means those waters collected from the under drainage collection system of a sanitary landfill.

Medical waste means isolation wastes, infectious agents, human blood and blood products, pathological wastes, sharps, body parts, contaminated bedding, surgical wastes, potentially contaminated laboratory wastes, dialysis wastes, and wastes containing radioactive isotopes.

Manager means the manager of the Little Rock Wastewater Utility, or his duly authorized deputy, agent, or representative.

Maximum allowable discharge limit means the maximum amount of a pollutant (either in concentration or mass) that is allowed to be discharged to the POTW.

NPDES means the National Pollutant Discharge Elimination System.

New source means:

- (1) Any building, structure, facility, or installation from which there is (or may be) a discharge of pollutants, the construction of which commenced after the publication of proposed pretreatment standards under Section 307(c) of the Act which will be applicable to such source if such standards are thereafter promulgated in accordance with that section, provided that:
 - a. The building, structure, facility, or installation is constructed at a site at which no other source is located; or
 - b. The building, structure, facility, or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or
 - c. The production or wastewater generating processes of the building, structure, facility, or installation are

substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source, should be considered.

- (2) Construction on a site at which an existing source is located results in a modification rather than a new source if the construction does not create a new building, structure, facility, or installation meeting the criteria of subsection (1)b. or c. above but otherwise alters, replaces, or adds to existing process or production equipment.
- (3) Construction of a new source as defined under this paragraph has commenced if the owner or operator has:
 - a. Begun, or caused to begin, as part of a continuous on-site construction program,
 1. Any placement, assembly, or installation of facilities or equipment; or
 2. Significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or
 - b. Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.

Non-contact cooling water means water used for cooling which does not come into direct contact with any raw material, intermediate product, waste product, or finished product.

Oil and grease or *O&G* means a group of substances with similar physical characteristics are determined quantitatively on the basis of their common solubility in an organic extracting solvent. These substances including fats, waxes, free fatty acids, calcium and magnesium soaps, mineral oils, and certain other non-fatty materials. It includes other materials recovered by the solvent from an acidified sample (such as sulfur compounds, certain organic dyes, and chlorophyll) and not volatilized during the test. At the discretion of the manager, the oil and grease test may be determined by the Partition-Gravimetric Method as outlined in the latest approved listing in 40 Code of Federal Regulation, Part 136 or the Soxhlet Method contained in the latest approved edition of "Standard Methods for the Examination of Water and Wastes". Further, the solvent used may either be Trichlorotrifluoroethane (1,1,2-trichloro-1,2,2-trifluoro-ethane) or a mixture of eighty (80) percent n-hexane and twenty (20) percent methyl-tert-butyl ether.

Pass through means a discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit, including an increase in the magnitude or duration of a violation.

Person means any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity, or any other legal entity; or their legal representatives, agents, or assigns. This definition includes all federal, state, and local governmental entities.

pH means a measure of the hydrogen-ion concentration in a solution, expressed as the logarithm (base ten) of the reciprocal of the hydrogen-ion concentration in gram moles per liter (g/mole/L). On the pH scale (0 to 14), a value of 7 at 25°C (77°F) represents a neutral condition. Decreasing

values indicate increasing hydrogen-ion concentration (acidity); increasing values indicate decreasing hydrogen-ion concentration (alkalinity).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, medical wastes, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, municipal, agricultural and industrial wastes, and certain characteristics of wastewater (e.g., TSS, turbidity, color, BOD, COD, cyanide, oil & grease, heavy metals, toxicity, or odor).

POTW treatment plant means that portion of the publicly owned treatment works (POTW) designed to provide treatment to wastewater.

Pretreatment means the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to, or in lieu of, introducing such pollutants into the POTW. This reduction or alteration can be obtained by physical, chemical, or biological processes; by process changes; or by other means, except by diluting the concentration of the pollutants unless allowed by an applicable pretreatment standard.

Pretreatment program means the utility's EPA and/or Arkansas Department of Environmental Quality approved program to administer the requirements of 40 CFR 403, the General Pretreatment Regulations, and associated National Categorical Standards as adopted into Section 4 of Regulation No. 6: Regulations for State Administration of the National Pollutant Discharge Elimination System.

Pretreatment requirement means any substantive or procedural requirement related to pretreatment, other than a National Pretreatment Standard, imposed on an industrial user.

Pretreatment standards or standards shall mean prohibited discharge standards, categorical pretreatment standards, and local limits.

Prohibited discharge standards or prohibited discharges means absolute prohibitions against the discharge of certain substances; these prohibitions appear in section 35-165 of this article.

Publicly owned treatment works or POTW means a "treatment works," as defined by Section 212 of the Act (33 U.S.C. §1292) which is owned by the City of Little Rock. This definition includes any devices or systems used in the collection, storage, treatment, recycling, and reclamation of sewage or industrial wastes of a liquid nature and any conveyances which convey wastewater to a treatment plant.

Sanitary sewer means a sewer in which sewage is carried, and to which storm, surface, and ground water are not intentionally admitted.

Secure sample point means any access point to a building sewer which is used for the purpose of collecting a wastewater sample where the utility is required to maintain custody of the sample.

Septic tank waste means any domestic sewage from holding tanks such as vessels, campers, trailers, and septic tanks.

Sewage means the spent or used water of a community or industry containing dissolved and suspended matter.

Sewer means a pipe or conduit for carrying sewage.

Sewer committee means the sanitary sewer committee of the City of Little Rock Wastewater Utility.

Shall is mandatory; *may* is permissive.

Significant industrial user means:

- (1) A user subject to categorical pretreatment standards; or
- (2) A user that:
 - a. Discharges an average of twenty-five thousand (25,000) gpd or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow down wastewater);
 - b. Contributes a process wastestream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or

- c. Is designated as such by the manager on the basis that it has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.

Slug load or slug means any discharge at a flow rate or pollutant concentration which could cause a violation of the prohibited discharge standards in section 35-165 of this article.

Standard Industrial Classification (SIC) Code means a classification pursuant to the *North American Industry Classification System United States, (1997)* issued by the United States Office of Management and Budget's Economic Classification Policy Committee.

State means the State of Arkansas.

Storm water means any flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snow melt.

Total suspended solids or TSS means wastewater residues removed by laboratory filtering and retained on a standard glass-fiber filter with a nominal pore size of 2.0 um (or smaller) and dried to a constant weight at a temperature of 103° 105° centigrade.

Toxic pollutant means any pollutant or combination of pollutants listed as toxic in regulations promulgated by the administrator of the Environmental Protection Agency under the provisions of the Clean Water Act 307(a) or other acts.

Upset means an exceptional incident in which a discharger unintentionally and temporarily is in a state of noncompliance with the standards set forth in this article or the discharger's industrial wastewater discharge permit, due to forces beyond the reasonable control of the discharger, and excluding noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation thereof.

User or industrial user means a source of indirect discharge.

Utility means the City of Little Rock Wastewater Utility, including the POTW, personnel, and all authorized representatives.

Wastewater means liquid and water-carried industrial wastes and sewage from residential dwellings, commercial buildings, industrial and manufacturing facilities, and institutions, whether treated or untreated, which are contributed to the POTW.

(Ord. No. 17,966, § 1.4, 3-16-99)

DIVISION 2. SEWER USE REQUIREMENTS

Sec. 35-165. Prohibited discharge standards.

(a) *General prohibitions.* No user shall introduce or cause to be introduced into the POTW any pollutant or wastewater which causes pass through or interference or in any way contaminates the POTW biosolids, scum, or residues to such a level as to render them unacceptable for economical reuse or reclamation. These general prohibitions apply to all Users of the POTW whether or not they are subject to categorical pretreatment standards or any other national, state, or local pretreatment standards or requirements.

(b) *Specific prohibitions.* No user shall introduce or cause to be introduced into the POTW the following pollutants, substances, or wastewater:

- (1) Liquids, solids, or gases which by reason of their nature and quantity are, or may be, sufficient either alone or by interaction with other substances to cause a fire or explosion hazard or be injurious in any other way to the POTW or the operation of the POTW. Such materials include, but are not limited to, gasoline, diesel, benzene, naphtha, fuel oils, kerosene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, or sulfides, or any wastestream with a closed cup flash point of less than 140 degrees Fahrenheit or 60 degrees centigrade using the test methods specified in 40 CFR 261.21;
- (2) Water or wastes having a pH lower than 5.0 S.U. or greater than 12.0 S.U. or

- having any other corrosive property capable of causing damage or a hazard to the structures, equipment, and personnel of the POTW. In no case shall waters or wastes be discharged at such a flow rate and/or pH which will cause the influent at the POTW treatment plant to be lower than 6.0 S.U. or greater than 9.0 S.U.;
- (3) Solid or viscous substances in quantities or of such size capable of creating a stoppage, plugging, breakage, or any reduction in sewer capacity or any other damage to the POTW such as, but not limited to, ashes, cinders, sand, plastic, wood, unground garbage, whole blood, hair and fleshings, entrails, and paper dishes, cups, milk containers, etc. Any additional sewer or sewerage maintenance expenses caused by such a discharge, or any other expenses attributable thereto will be charged to the user by the utility. Any refusal to pay the additional maintenance expense duly authorized by the manager shall constitute a violation of the provisions contained herein;
 - (4) Pollutants, including oxygen-demanding pollutants (BOD, COD, etc.), released in a discharge at a flow rate and/or pollutant concentration which, either singly or by interaction with other pollutants, will cause interference, upset, or loss of efficiency at POTW. In no case shall a slug load have a flow rate or contain a concentration or quantity of pollutants that exceed for any time period longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration, quantity, or flow during normal operation of the discharger;
 - (5) Waters, wastes, or vapors discharged at such a volume or temperature which will inhibit biological activity in the treatment plant resulting in interference, but in no case any such waters or wastes which will cause the POTW influent or pumping station wetwell temperature to exceed 104°F (40.0°C). Any liquid or vapor having a temperature higher than 130° F (54.4° C) at the point of discharge;
 - (6) Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin, in amounts that will cause interference or pass through;
 - (7) Waters or wastes containing toxic or poisonous solids, liquids, or gases, or oxygen demanding wastes, in sufficient quantity, either singly or by interaction with other wastes to injure or cause interference with any sewage treatment process, to contaminate the POTW sludges, scum, or residue to such a level to render them unacceptable for economical reuse or reclamation, to pass through the POTW and cause a violation of the POTW's NPDES Permit or create a toxic effect in the receiving stream, to cause a public nuisance, or to constitute a hazard or an acute health or safety problem to the POTW workers or the public;
 - (8) Noxious or malodorous liquids, gases, solids, or other wastewater which, either singly or by interaction with other wastes, are sufficient to create a public nuisance or a hazard to life, or to prevent entry into the sewers for maintenance or repair;
 - (9) Wastewater which imparts color which cannot be removed by the treatment process, such as, but not limited to, dye wastes and vegetable tanning solutions, which consequently imparts color to the treatment plant's effluent, thereby violating the utility's NPDES permit;
 - (10) Unusual concentrations of inert suspended solids such as, but not limited to, Fuller earth, lime slurries and lime residues, or dissolved solids such as, but not limited to, sodium chloride and sodium sulfate.
 - (11) Wastewater containing any radioactive wastes or isotopes except in compliance with applicable State or Federal regulations;
 - (12) Storm water, surface water, ground water, artesian well water, roof runoff, subsurface drainage, swimming pool drainage, condensate, de-ionized water, noncontact cooling water, and unpolluted wastewater, unless specifically authorized by the manager;

- (13) Sludges, screenings, or other residues from the pretreatment of industrial wastes;
- (14) Medical wastes, except as specifically authorized by the manager in a wastewater discharge permit;
- (15) Wastewater causing, alone or in conjunction with other sources, the treatment plant's effluent to fail a toxicity test;
- (16) Detergents, surfactant, or other substances which may cause excessive foaming in the POTW; or
- (17) Wastewater causing two successive readings on an explosion hazard meter at the point of discharge into the POTW, or at any point in the POTW, of more than ten (10) percent or any single reading over twenty (20) percent of the lower explosive limit of the meter.
- (18) Hauled or trucked liquid wastes, except at the specific discharge point(s) designated by the utility;

Pollutants, substances, or wastewater prohibited by this section shall not be processed or stored in such a manner that they could be discharged to the POTW.

(Ord. No. 17,966, § 2.1, 3-16-99)

Sec. 35-166. National categorical pretreatment standards.

The categorical pretreatment standards found at 40 CFR Chapter I, Subchapter N, Parts 405-471 are hereby incorporated. Those standards, if more stringent than the limitations imposed by the latest approved "Technically Based Local Limits Development Document" for sources in that subcategory, shall supersede the limitations imposed by the local limits.

- (a) Where a categorical pretreatment standard is expressed only in terms of either the mass or the concentration of a pollutant in wastewater, the manager may impose equivalent concentration or mass limits in accordance with 40 CFR 403.6(c).
- (b) When wastewater subject to a categorical pretreatment standard is mixed with wastewater not regulated by the same

standard, the manager shall impose an alternate limit using the combined wastewater formula in 40 CFR 403.6(e).

(Ord. No. 17,966, § 2.2, 3-16-99)

Sec. 35-167. State pretreatment standards.

State pretreatment standards located in Section 4 of Regulation No. 6: Regulations for State Administration of the National Pollutant Discharge Elimination System for a particular industrial subcategory, if more stringent than the requirements of this article shall supersede the requirements of this article, are hereby incorporated by reference and will be imposed where applicable and shall include, but is not limited to, discharge limitations and reporting requirements. This shall include those regulations currently promulgated or which will be promulgated in the future including any amendments, and shall be recognized as part of this article.

(Ord. No. 17,966, § 2.3, 3-16-99)

Sec. 35-168. Local limits.

No person shall discharge any waters or wastes at a concentration that would exceed the concentration of pollutants, including but not limited to, those identified in the "Technically Based Local Limits Development Document," and adopted by the manager of the Little Rock Wastewater Utility and approved by the Arkansas Department of Environmental Quality and the Little Rock Sanitary Sewer Committee.

The utility will develop and assign specific discharge permit limitations for pollutants for permitted users based on criteria approved by the manager. The specific permit limits shall ensure that local limit pollutant concentrations will protect the wastewater treatment plant from upset. The local limits shall apply to the total flow or total discharge from the industrial users. In developing specific permit limits, the manager may impose mass limitations in addition to, or in place of, specific concentration-based limits. In addition, the utility may develop specific discharge limitations for any other toxic pollutants which the manager of the utility may determine to be of sufficient quantity to cause POTW interference and/or pass through, endanger the health and

safety of the POTW personnel or the public health, cause a POTW permit violation or render the POTW sludges unacceptable for economic reuse or reclamation.

(Ord. No. 17,966, § 2.4, 3-16-99)

Sec. 35-169. Right of revision.

The utility shall at all times have the right to establish, by ordinance or in wastewater discharge permits, more stringent standards or requirements on discharges to the POTW than may be specified in this article or the "Technically Based Local Limits Document."

(Ord. No. 17,966, § 2.5, 3-16-99)

Sec. 35-170. Dilution.

No user shall ever increase the use of process water, or in any way attempt to dilute a discharge, as a partial or complete substitute for adequate treatment to achieve compliance with a discharge limitation unless expressly authorized by an applicable pretreatment standard or requirement. The manager may impose mass limitations on users who are using dilution to meet applicable pretreatment standards or requirements, or in other cases when the imposition of mass limitations is appropriate.

(Ord. No. 17,966, § 2.6, 3-16-99)

DIVISION 3. WASTEWATER

Sec. 35-171. Pretreatment.

(1) *Facilities.* Users shall provide wastewater treatment as necessary to comply with this article and shall achieve compliance with all categorical pretreatment standards, local limits, and the prohibitions set out in section 35-165 of this article within the time limitations specified by EPA, the state, or the manager, whichever is more stringent. Any facilities necessary for compliance shall be provided, operated, and maintained at the user's expense. Detailed plans describing such facilities and operating procedures shall be submitted to the manager for review, and shall be acceptable to the manager before such facilities are constructed. The review of such plans and operating procedures shall in no way relieve the user from the responsibility of modifying such

facilities as necessary to produce a discharge acceptable to the utility under the provisions of this article.

(2) *Additional pretreatment measures.*

- (a) If any waters or wastes which are discharged or which are to be discharged into the public sewers contain or possess any of the characteristics enumerated in sections 35-165(a), 35-165(b), 35-168, and/or 35-182 of this article and in the judgment of the manager, may have a deleterious effect upon the sewage works, processes, equipment, sludges, or receiving waters, or which otherwise creates a hazard to life or constitutes a public nuisance, the manager may (a) reject the wastes, (b) require pretreatment to an acceptable condition for discharge to the public sewer, and/or (c) require control over the quantities and rate of discharge.

If the manager requires the pretreatment or equalization of waste flows, the design and installation of the plants and equipment shall be subject to the review and approval of the manager and subject to all applicable codes, ordinances, and laws. Where pretreatment or flow equalization facilities are provided for any waters or wastes, they shall be continuously maintained in satisfactory and effective operation by the owner or occupant at his own expense.

- (b) Whenever deemed necessary, the manager may require users to restrict their discharge during peak flow periods, designate that certain wastewater be discharged only into specific sewers, relocate and/or consolidate points of discharge, separate sewage wastestreams from industrial wastestreams, and such other conditions as may be necessary to protect the POTW and determine the user's compliance with the requirements of this article.
- (c) The manager may require any person discharging into the POTW to install and maintain, on their property and at their expense, a suitable storage and flow-

- control facility to ensure equalization of flow. A wastewater discharge permit may be issued solely for flow equalization.
- (d) Grease, oil, and sand interceptors shall be provided when, in the opinion of the manager, they are necessary for the proper handling of wastewater containing excessive amounts of grease and oil, any flammable wastes, or sand; except that such interceptors shall not be required for residential users. All interception units shall be of type and capacity approved by the manager and shall be so located to be easily accessible for cleaning and inspection. Such interceptors shall be inspected, cleaned, and repaired regularly, as needed, by the user at their expense. Storage, handling, transportation, and disposal of all wastes generated from such interceptors shall be performed in accordance with all applicable federal, state, and local regulations that pertain to that type and/or class of waste.
- (e) Users with the potential to discharge flammable substances may be required to install and maintain an approved combustible gas detection meter.
- (f) When required by the manager, the owner of any property serviced by a building sewer carrying industrial waste shall provide a secure sample point or control manhole which is constructed in accordance with the latest revision of the Little Rock Wastewater Utility's Specification Requirements for Sanitary Sewers. The secure sample point or control manhole shall be safely located and accessible to duly authorized employees and/or representatives of the utility at all times. When deemed necessary by the manager, the secure sample point or control manhole shall be provided with meters or other appurtenances to facilitate the monitoring of the wastewater. The cost of the installation and maintenance of a secure sample point or control manhole shall be borne by the owner. Any construction and/or alteration of a secure sample point or control manhole shall be approved by the manager before any construction has begun.
- Any secure sample point or control manhole located in a parking lot or other area where any vehicles may reasonably be expected to be parked must be protected by a permanent barrier, railing, or other means if it is determined necessary by the manager to ensure continued and uninterrupted access to the secure sample point or control manhole by utility personnel.
- (g) Whenever deemed necessary, the manager may require the pretreatment system operator(s) to be licensed in accordance with the State of Arkansas' Regulation Number 3, including all amendments thereto, for the operation of industrial wastewater treatment systems.
- (3) *Accidental discharge / slug control plans.* At least once every two (2) years, the manager shall evaluate whether each significant industrial user needs an accidental discharge/slug control plan. The manager may require any user to develop, submit for approval, and implement such a plan. Alternatively, the manager may develop such a plan for any user. An accidental discharge/slug control plan shall address, at a minimum, the following:
- (a) Description of discharge practices, including nonroutine batch discharges;
 - (b) Description of stored chemicals;
 - (c) Procedures for immediately notifying the manager of any accidental or slug discharge, as required by section 35-174(6) of this article; and
 - (d) Procedures to prevent adverse impact from any accidental or slug discharge. Such procedures include, but are not limited to, inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site runoff, worker training, building of containment structures or equipment, measures for containing toxic or

ganic pollutants, including solvents, and/or measures and equipment for emergency response.

(4) *Hauled wastewater.*

- (a) Septic tank waste originating from domestic sources may be introduced into the POTW only at locations designated by the manager, and at such times as are established by the manager. Such waste shall not violate division 2 of this article or any other requirements established by the manager. The manager may require septic tank waste haulers to obtain wastewater discharge permits.
- (b) Other hauled liquid wastes may be introduced into the POTW also, with prior approval of the manager. These other wastes may include, but are not limited to, landfill leachate and waters associated with the removal of underground petroleum storage tanks (BTEX waters). The acceptance of such waters for introduction to the POTW shall comply with Little Rock Wastewater Utility current policies on the acceptance of landfill leachate and BTEX.
- (c) The manager shall require all haulers of liquid wastes discharged into the POTW to use the utility manifest system for each load of hauled liquid waste. This form must contain, at a minimum, the name and address of the waste hauler, permit number, truck identification, names and addresses of sources of waste, and volume and characteristics of waste. The form shall identify the type of waste and state whether any wastes are RCRA hazardous wastes.

(Ord. No. 17,966, §§ 3.1—3.4, 3-16-99)

Sec. 35-172. Wastewater discharge permits.

(1) *Wastewater survey.* When requested by the manager, all industrial users must submit information on the nature and characteristics of their wastewater by completing a wastewater survey prior to commencing their discharge. The manager is authorized to prepare a form for this

purpose and may periodically require industrial users to update the survey. Failure to complete this survey shall be reasonable grounds for terminating service to the industrial user and shall be considered a violation of this article.

(2) *Permit requirements.*

- (a) All significant industrial dischargers are required to have a valid Class "C" or Class "S" industrial wastewater discharge permit. A Class "C" industrial wastewater discharge permit will be issued to any industrial discharger subject to a categorical pretreatment standard and a Class "S" industrial discharge permit will be issued to all other significant industrial dischargers. A Class "N" industrial wastewater discharge permit may be issued to any nonsignificant industrial or commercial customer when it is deemed necessary by the manager. All industrial wastewater discharge permits issued by the manager to industrial users or dischargers will have a specific discharge permit number corresponding to the type of permit issued, e.g., C-04, S-32, N-15.
- (b) The manager may also require any other users to obtain wastewater discharge permits as necessary to carry out the purposes of this article.
- (c) Any violation of the terms and conditions of a wastewater discharge permit shall be deemed a violation of this article and subjects the wastewater discharge permittee to the sanctions set out in sections 35-178 through 35-180 of this article. Obtaining a wastewater discharge permit does not relieve a permittee of its obligation to comply with all federal and state pretreatment standards or requirements or with any other requirements of federal, state, and local law.

(3) *Permitting existing connections.* Any existing industrial user identified by the utility and required by the manager to obtain an industrial wastewater discharge permit shall be notified by the manager in writing and shall complete and return an industrial wastewater discharge permit

application within the time established by the manager. The manager may deny or condition the contribution of pollutants by such user in the industrial wastewater discharge permit.

(4) *Permit new connections.* Any user required by the manager to obtain a wastewater discharge permit who proposes to begin or recommence discharging industrial wastes into the POTW must obtain a discharge permit prior to the beginning or recommencing of such discharge. An application for this wastewater discharge permit must be filed at least ninety (90) days prior to the date upon which any discharge will begin or recommence. The manager may deny or condition the contribution of pollutants by such user in the industrial wastewater discharge permit.

(5) *Application contents.* All users required by the manager shall submit an industrial wastewater discharge permit application to the utility, the form for which shall be provided by the utility. The information required in the permit application shall, where requested or appropriate, include, but is not limited to:

- (a) Name, address, and location of the industrial user or discharger.
- (b) Standard industrial classification number (SIC Code).
- (c) The nature and concentrations of any pollutants or materials prohibited or regulated by this article, including the EPA's priority pollutant listing for each pollutant or material.
- (d) The time of day and duration of each discharge.
- (e) The average daily and maximum daily flow rates including any daily, monthly, or seasonal variations.
- (f) Site plans and details showing all plumbing including storm and sanitary sewers, sewer connections, manholes, sampling chambers, and the location and description of any pretreatment equipment.
- (g) A description of facilities, activities, and plant processes including all materials which are or may be discharged to the public sewer.

- (h) A list of all raw materials used at the facility including MSDS (material safety data sheets) for all chemicals that are used or stored at the facility.
- (i) Compliance schedules, where applicable, which meet applicable requirements of the federal regulations.
- (j) Any other information as may be deemed necessary by the manager to evaluate the wastewater discharge permit application.

Incomplete or inaccurate applications will not be processed and will be returned to the user for revision. This could result in a delay in the issuance to the discharge permit.

(6) *Application signatories and certification.* All wastewater discharge permit applications and user reports must be signed by an authorized representative of the user and contain the following certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Authorized representatives are defined by EPA Regulation 40 CFR 403 as follows:

- (a) A responsible corporate officer, if the facility is a corporation, and includes the following:
 1. A president, secretary, treasurer, or vice-president of the corporation in charge of a major principle business function, or any other person who performs similar policy or decision-making functions for the corporation.

2. The manager or CEO of one or more manufacturing, production, or operation facilities employing more than two hundred (250) persons or having gross annual sales or expenditures exceeding twenty-five million dollars (\$25,000,000.00) (in second-quarter 1980 dollars), if the authority to sign documents has been assigned or delegated to the manager or CEO in accordance with corporate procedures.

(b) A general partner or proprietor if the facility is a partnership or sole proprietorship respectively.

(c) A duly authorized representative of the individuals listed in items (a) or (b) above; if

1. The authorization has been made in writing by any of the individuals listed in (a) or (b) above; and

2. The authorization specifies either an individual or a position having responsibility for the overall operation of the facility, such as a plant manager, superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters at the facility; and

3. The written authorization has been submitted to the Little Rock Wastewater Utility.

(Ord. No. 17,966, §§ 4.1—4.6, 3-16-99)

Sec. 35-173. Discharge permit issuance process.

(1) *Duration.* A wastewater discharge permit shall be issued for a specified time period, not to exceed two (2) years from the effective date of the permit. A wastewater discharge permit may be issued for a period less than two (2) years, at the discretion of the manager. Each wastewater discharge permit will indicate a specific date upon which it will expire.

(2) *Contents.* A wastewater discharge permit shall include such conditions as are deemed reasonably necessary by the manager to prevent pass

through or interference, protect the quality of the water body receiving the treatment plant's effluent, protect worker health and safety, facilitate sludge management and disposal, and protect against damage to the POTW.

(a) Wastewater discharge permits shall contain:

1. A statement that indicates wastewater discharge permit duration, which in no event shall exceed two (2) years;

2. A statement that the wastewater discharge permit is nontransferable without prior notification to the manager in accordance with subsection (4) of this section, and provisions for furnishing the new owner or operator with a copy of the existing wastewater discharge permit;

3. Effluent limits based on applicable pretreatment standards;

4. Self monitoring, sampling, reporting, notification, and record-keeping requirements. These requirements shall include an identification of pollutants to be monitored, sampling location, sampling frequency, and sample type based on federal, state, and local law; and

5. A statement of applicable civil and criminal penalties for violation of pretreatment standards and requirements, and any applicable compliance schedule. Such schedule may not extend the time for compliance beyond that required by applicable federal, state, or local law.

(b) Wastewater discharge permits may contain, but need not be limited to, the following conditions:

1. Limits on the average and/or maximum rate of discharge, time of discharge, and/or requirements for flow regulation and equalization;

2. Requirements for the installation of pretreatment technology, pollution control, or construction of appropri-

- ate containment devices, designed to reduce, eliminate, or prevent the introduction of pollutants into the treatment works;
3. Requirements for the development and implementation of spill control plans or other special conditions including management practices necessary to adequately prevent accidental, unanticipated, or nonroutine discharges;
 4. Development and implementation of waste minimization plans to reduce the amount of pollutants discharged to the POTW;
 5. The unit charge or schedule of user charges and fees for the management of the wastewater discharged to the POTW;
 6. Requirements for installation and maintenance of inspection and sampling facilities and equipment;
 7. A statement that compliance with the wastewater discharge permit does not relieve the permittee of responsibility for compliance with all applicable federal and state pretreatment standards, including those which become effective during the term of the wastewater discharge permit; and
 8. Other conditions as deemed appropriate by the manager to ensure compliance with this article, and state and federal laws, rules, and regulations.

(3) *Modification.* The manager may modify a wastewater discharge permit for good cause, including, but not limited to, the following reasons:

- (a) To incorporate any new or revised federal, state, or local pretreatment standards or requirements;
- (b) To address significant alterations or additions to the user's operation, processes, or wastewater volume or character since the time of wastewater discharge permit issuance;

- (c) A change in the POTW that requires either a temporary or permanent reduction or elimination of the authorized discharge;
- (d) Information indicating that the permitted discharge poses a threat to the POTW and/or its personnel, or the receiving waters;
- (e) Violation of any terms or conditions of the wastewater discharge permit;
- (f) Misrepresentations or failure to fully disclose all relevant facts in the wastewater discharge permit application or in any required reporting;
- (g) Revision of or a grant of variance from categorical pretreatment standards pursuant to 40 CFR 403.13;
- (h) To correct typographical or other errors in the wastewater discharge permit; or
- (i) To reflect a transfer of the facility ownership or operation to a new owner or operator.

(4) *Transfer.* Wastewater discharge permits may be transferred to a new owner or operator only if the permittee gives at least sixty (60) days advance notice to the manager and the manager approves the wastewater discharge permit transfer. The notice to the manager must include a written certification by the new owner or operator which:

- (a) States that the new owner and/or operator has no immediate intent to change the facility's operations and processes;
- (b) Identifies the specific date on which the transfer is to occur; and
- (c) Acknowledges full responsibility for complying with the existing wastewater discharge permit.

Failure to provide advance notice of a transfer renders the wastewater discharge permit void as of the date of facility transfer.

(5) *Revocation.* The manager may revoke a wastewater discharge permit for good cause subject to following the procedure set forth in section 35-178(4) hereinafter, including, but not limited to, the following reasons:

- (a) Failure to notify the manager of significant changes to the wastewater prior to the changed discharge;
- (b) Failure to provide prior notification to the manager of changed conditions pursuant to section 35-174(6) of this article;
- (c) Misrepresentation or failure to fully disclose all relevant facts in the wastewater discharge permit application;
- (d) Falsifying self-monitoring reports;
- (e) Tampering with monitoring equipment;
- (f) Refusing to allow the manager timely access to the facility premises and records;
- (g) Failure to meet effluent limitations;
- (h) Failure to pay fines;
- (i) Failure to pay sewer charges;
- (j) Failure to meet compliance schedules;
- (k) Failure to complete a wastewater survey or the wastewater discharge permit application;
- (l) Failure to provide advance notice of the transfer of business ownership of a permitted facility; or
- (m) Violation of any pretreatment standard or requirement, or any terms of the wastewater discharge permit or this article.

Wastewater discharge permits shall be voidable upon cessation of operations or transfer of business ownership. All wastewater discharge permits issued to a particular user are void upon the issuance of a new wastewater discharge permit to that user.

(6) *Reissuance.* A user with an expiring wastewater discharge permit shall apply for wastewater discharge permit reissuance by submitting a complete permit application, in accordance with section 35-172(5) of this article, a minimum of sixty (60) days prior to the expiration of the user's

existing wastewater discharge permit. The manager will notify the user of his responsibility to reapply for reissuance of the permit at least ninety (90) days prior to the re-application date.

(7) *Regulation of waste received from other jurisdictions.*

- (a) All dischargers to the City of Little Rock POTW, which are outside the jurisdiction and are not part of another incorporated city, shall be required to agree by written contract to abide by the conditions set forth in this article, subsequent revisions and amendments to this article, and any rules and/or regulations promulgated by the sewer committee of the City of Little Rock in accordance with section 35-175(1)(f) of this article.
- (b) All incorporated cities which discharge to the City of Little Rock POTW shall agree by written contract to adopt an ordinance which meets the requirements of 40 CFR 403, General Pretreatment Regulations, and will be at least as stringent as the conditions set forth in this article. This agreement must also contain a provision that allows for the adoption of any and all rules and/or regulations promulgated by the sewer committee of the City of Little Rock in accordance with section 35-175(1)(f) of this article and shall delegate to the City of Little Rock the powers to enforce the provisions of all laws, rules, and/or regulations adopted in accordance with this section.

(Ord. No. 17,966, §§ 5.1—5.7, 3-16-99)

DIVISION 4. GENERAL PROVISIONS

Sec. 35-174. Reporting requirements.

- (1) *Baseline monitoring reports.*
 - (a) Within either one hundred eighty (180) days after the effective date of a categorical pretreatment standard, or the final administrative decision on a category determination under 40 CFR 403.6(a)(4), whichever is later, existing categorical users currently discharging to or sched-

uled to discharge to the POTW shall submit to the manager a report which contains the information listed in paragraph (b), below. At least ninety (90) days prior to commencement of their discharge, new sources, and sources that become categorical users subsequent to the promulgation of an applicable categorical standard, shall submit to the manager a report which contains the information listed in paragraph (b), below. A new source shall report the method of pretreatment it intends to use to meet applicable categorical standards. A new source also shall give estimates of its anticipated flow and quantity of pollutants to be discharged.

(b) Users described above shall submit the information set forth below:

1. *Identifying information.* The name and address of the facility, including the name of the operator and owner.
2. *Environmental permits.* A list of any environmental control permits held by or for the facility.
3. *Description of operations.* A brief description of the nature, average rate of production, and standard industrial classifications of the operation(s) carried out by such user. This description should include a schematic process diagram which indicates points of discharge to the POTW from the regulated processes.
4. *Flow measurement.* Information showing the measured average daily and maximum daily flow, in gallons per day, to the POTW from regulated process streams and other streams, as necessary, to allow use of the combined wastestream formula set out in 40 CFR 403.6(e).
5. *Measurement of pollutants.*
 - a. The categorical pretreatment standards applicable to each regulated process.
 - b. The results of sampling and analysis identifying the nature

and concentration, and/or mass, where required by the standard or by the manager, of regulated pollutants in the discharge from each regulated process. Instantaneous, daily maximum, and long-term average concentrations, or mass, where required, shall be reported. The sample shall be representative of daily operations and shall be analyzed in accordance with procedures set out in subsection (10) of this section.

c. Sampling must be performed in accordance with procedures set out in subsection (11) of this section.

6. *Certification.* A statement, reviewed by the user's authorized representative and certified by a qualified professional, indicating whether pretreatment standards are being met on a consistent basis, and, if not, whether additional operation and maintenance (O&M) and/or additional pretreatment is required to meet the pretreatment standards and requirements.
7. *Compliance schedule.* If additional pretreatment and/or O&M will be required to meet the pretreatment standards, the shortest schedule by which the user will provide such additional pretreatment and/or O&M. The completion date in this schedule shall not be later than the compliance date established for the applicable pretreatment standard. A compliance schedule pursuant to this section must meet the requirements set out in subsection (2) of this section.
8. *Signature and certification.* All baseline monitoring reports must be signed and certified in accordance with section 35-172(6) of this article.

(2) *Compliance schedule progress reports.* The following conditions shall apply to the compliance schedule required by subsection (1)(b)7. of this section and/or any compliance schedule issued by the manager under section 35-178(5) of this article:

- (a) The schedule shall contain progress increments in the form of dates for the commencement and completion of major events leading to the construction and operation of additional pretreatment required for the user to meet the applicable pretreatment standards. Such events include, but are not limited to, hiring an engineer, completing preliminary and final plans, executing contracts for major components, commencing and completing construction, and beginning and conducting routine operation;
- (b) No increment referred to above shall exceed nine (9) months;
- (c) The user shall submit a progress report to the manager no later than fourteen (14) days following each date in the schedule and the final date of compliance including, as a minimum, whether or not it complied with the increment of progress, the reason for any delay, and, if appropriate, the steps being taken by the user to return to the established schedule; and
- (d) In no event shall more than nine (9) months elapse between such progress reports to the manager.

(3) *Reports on compliance with categorical pretreatment standard deadline.* Within ninety (90) days following the date for final compliance with applicable categorical pretreatment standards, or in the case of a new source following commencement of the introduction of wastewater into the POTW, any user subject to such pretreatment standards and requirements shall submit to the manager a report containing the information described in subsection (1)(b)4. through 6. of this section. For users subject to equivalent mass or concentration limits established in accordance with the procedures in 40 CFR 403.6(c), this report shall contain a reasonable measure of the

user's long-term production rate. For all other users subject to categorical pretreatment standards expressed in terms of allowable pollutant discharge per unit of production (or other measure of operation), this report shall include the user's actual production during the appropriate sampling period. All compliance reports must be signed and certified in accordance with section 35-172(6) of this article.

(4) *Periodic compliance reports.*

- (a) All significant industrial users shall, at a frequency determined by the manager, but in no case less than twice per year (in June and December), submit a report indicating the nature and concentration of pollutants in the discharge which are limited by pretreatment standards and the measured or estimated average and maximum daily flows for the reporting period. All periodic compliance reports must be signed and certified in accordance with section 35-172(6) of this article.
- (b) When the utility conducts the sampling and flow data collection for the significant industrial user, the reporting requirements listed under subsection (4)(a) above shall be waived.
- (c) All wastewater samples must be representative of the user's discharge. Wastewater monitoring and flow measurement facilities shall be properly operated, kept clean, and maintained in good working order at all times. The failure of a user to keep its monitoring facility in good working order shall not be grounds for the user to claim that sample results are unrepresentative of its discharge.
- (d) If a user subject to the reporting requirement in this section monitors any pollutant more frequently than required by the manager, using the procedures prescribed in subsection (11) of this section, the results of this monitoring shall be included in the report.
- (e) All significant industrial users required by the manager to submit periodic com-

pliance reports shall use the form supplied by the manager or other approved form.

(5) *Monthly self-monitoring reports.*

- (a) When required by the manager, all industrial users subject to a national categorical pretreatment standard shall submit a monthly self-monitoring report indicating the nature and concentration and/or mass of pollutants in the discharge which are limited by pretreatment standards and the measured or estimated average and maximum daily flows for the reporting period. All monthly self-monitoring reports must be signed and certified in accordance with section 35-172(6) of this article.
- (b) All wastewater samples must be representative of the user's discharge. Wastewater monitoring and flow measurement facilities shall be properly operated, kept clean, and maintained in good working order at all times. The failure of a user to keep its monitoring facility in good working order shall not be grounds for the user to claim that sample results are unrepresentative of its discharge.
- (c) If a user subject to the reporting requirement in this section monitors any pollutant more frequently than required by the manager, using the procedures prescribed in subsection (11) of this section, the results of this monitoring shall be included in the report.
- (d) All categorical industrial users required by the manager to submit monthly self-monitoring reports shall use the form supplied by the manager or other approved form.

(6) *Reports of changed conditions.* Each user must notify the manager of any planned significant changes to the user's operations or system which might alter the nature, quality, or volume of its wastewater at least sixty (60) days before the change.

- (a) The manager may require the user to submit such information as may be deemed

necessary to evaluate the changed condition, including the submission of a wastewater discharge permit application under section 35-172(5) of this article.

- (b) The manager may issue a wastewater discharge permit under section 35-172(5) of this article or modify an existing wastewater discharge permit under section 35-173(4) of this article in response to changed conditions or anticipated changed conditions.
- (c) For purposes of this requirement, significant changes include, but are not limited to, flow increases of twenty (20) percent or greater, and the discharge of any previously unreported pollutants.
- (d) No user shall implement the planned change condition(s) until and unless the manager has responded to the users notice.

(7) *Reports of potential problems.*

- (a) In the case of any discharge, including, but not limited to, accidental discharges, discharges of a nonroutine, episodic nature, a noncustomary batch discharge, or a slug load, that may cause potential problems for the POTW, the user shall immediately telephone and notify the manager of the incident. This notification shall include the location of the discharge, type of waste, concentration and volume, if known, and corrective actions taken by the user.
- (b) Within five (5) days following such discharge, the user shall, unless waived by the manager, submit a detailed written report describing the cause(s) of the discharge and the measures to be taken by the user to prevent similar future occurrences. Such notification shall not relieve the user of any expense, loss, damage, or other liability which may be incurred as a result of damage to the POTW, natural resources, or any other damage to person or property; nor shall such notification relieve the user of any fines, penalties, or other liability which may be imposed pursuant to this article.

(8) *Other reports permitted and unpermitted users.* All users shall provide appropriate reports to the manager as the manager may require. Such reports may request, but are not limited to, the nature and characteristics of the users wastewater (industrial waste survey). Failure to complete requested reports or survey shall be considered a violation of this section and considered reasonable grounds for legal action as provided by this article.

(9) *Notice of violation/repeat sampling and reporting.* If sampling performed by a user indicates a violation, the user must notify the manager within twenty-four (24) hours of becoming aware of the violation. The user shall also repeat the sampling and analysis and submit the results of the repeat analysis to the manager within thirty (30) days after becoming aware of the violation. The user is not required to re-sample if the manager monitors at the user's facility at least once a month, or if the manager samples between the user's initial sampling and when the user receives the results of this sampling.

(10) *Notification of the discharge of hazardous waste.*

(a) Any user who commences the discharge of hazardous waste shall notify the POTW, the EPA regional waste management division director, and state hazardous waste authorities, in writing, of any discharge into the POTW of a substance which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261. Such notification must include the name of the hazardous waste as set forth in 40 CFR Part 261, the EPA hazardous waste number, and the type of discharge (continuous, batch, or other). If the user discharges more than one hundred (100) kilograms of such waste per calendar month to the POTW, the notification also shall contain the following information to the extent such information is known and readily available to the user: an identification of the hazardous constituents contained in the wastes, an estimation of the mass and concentration of such constituents in the wastestream discharged dur-

ing that calendar month, and an estimation of the mass of constituents in the wastestream expected to be discharged during the following twelve (12) months. All notifications must take place no later than one hundred eighty (180) days after the discharge commences. Any notification under this paragraph need be submitted only once for each hazardous waste discharged. However, notifications of changed conditions must be submitted under subsection (5) of this section. The notification requirement in this section does not apply to pollutants already reported by Users subject to categorical pretreatment standards under the self-monitoring requirements of subsections (1), (3), (4), and (5) of this section.

- (b) Dischargers are exempt from the requirements of paragraph (a), above, during a calendar month in which they discharge no more than fifteen (15) kilograms of hazardous wastes, unless the wastes are acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e). Discharge of more than fifteen (15) kilograms of non-acute hazardous wastes in a calendar month, or of any quantity of acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e), requires a one-time notification. Subsequent months during which the user discharges more than such quantities of any hazardous waste do not require additional notification.
- (c) In the case of any new regulations under Section 3001 of RCRA identifying additional characteristics of hazardous waste or listing any additional substance as a hazardous waste, the user must notify the manager, the EPA regional waste management waste division director, and state hazardous waste authorities of the discharge of such substance within ninety (90) days of the effective date of such regulations.
- (d) In the case of any notification made under this section, the user shall certify that it has a program in place to reduce the

volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical.

- (e) This provision does not create a right to discharge any substance not otherwise permitted to be discharged by this article, a permit issued thereunder, or any applicable federal or state law.

(11) *Analytical requirements.* All pollutant analyses, including sampling techniques, to be submitted as part of a wastewater discharge permit application or report shall be performed in accordance with the techniques prescribed in 40 CFR Part 136, unless otherwise specified in an applicable categorical pretreatment standard. If 40 CFR Part 136 does not contain sampling or analytical techniques for the pollutant in question, sampling and analyses must be performed in accordance with procedures approved by EPA. All samples shall be collected at the secure sample point, control manhole, or process sampling point as designated by the manager.

All independent laboratories performing analyses for Industrial users, including, but not limited to self monitoring reports, periodic reports on continuing compliance, baseline monitoring reports and/or split sample verification, shall be certified by the Arkansas Department of Environmental Quality Laboratory Certification Program for the specific analysis being performed. The manager reserves the right to reject any analysis performed by an independent laboratory that is not duly certified for a particular analysis.

(12) *Sample collection.*

- (a) If as a result of any sampling and analyses authorized by the manager, or due to the existence of any other information, the manager may have sufficient reason to suspect the presence of toxic or prohibited substances as limited or prohibited by this ordinance to exist in the wastewater discharge of a facility, the manager may direct the owner or operator of said facility to have a representative of that facility's wastewater subjected to the appropriate physical, chemical, and biological tests performed by a qualified labora-

tory acceptable to the manager. The purpose of such tests shall be to determine the conformance of the wastewater characteristics to this article. A prompt report shall be made in writing to the manager by the laboratory stating the results of the tests. The costs associated with the sampling and testing required by this section shall be borne by the owner or operator.

- (b) Any sampling, testing, and/or sample delivery associated with duplicate sample analysis in excess of the regularly scheduled sampling and analysis performed by the utility that is requested by an industrial customer for the purpose of assessing a surcharge or enforcement of this article will be borne by the owner or operator of the facility. The owner or operator of the facility which has a duplicate analysis performed by an independent laboratory will submit a prompt report in writing from the laboratory giving the results of the analyses and all quality assurance information relative to the analyses.
- (c) Except as indicated in subsection (d), below, the user must collect wastewater samples using flow proportional composite collection techniques. In the event flow proportional sampling is not feasible, the manager may authorize the use of time proportional sampling or a minimum of four (4) grab samples where the user demonstrates that this will provide a representative sample of the effluent being discharged. In addition, grab samples may be required to show compliance with instantaneous discharge limits.
- (d) Samples for oil and grease, temperature, pH, cyanide, phenols, sulfides, and volatile organic compounds must be obtained using grab sample collection techniques.
- (e) Sampling and testing shall be performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto. The sampling methods performed shall include at a minimum

procedures for sample chain of custody, preservation techniques, and holding times.

(13) *Timing.* Written reports will be deemed to have been submitted on the date they are received by the manager.

(14) *Record keeping.* Users subject to the reporting requirements of this article shall retain, and make available for inspection and copying, all records of information obtained pursuant to any monitoring activities required by this article and any additional records of information obtained pursuant to monitoring activities undertaken by the user independent of such requirements. Records shall include the date, exact place, method, and time of sampling, and the name of the person(s) taking the samples; the dates analyses were performed; who performed the analyses; the analytical techniques or methods used; and the results of such analyses. These records shall remain available for a period of at least three (3) years. This period shall be automatically extended for the duration of any litigation concerning the user or the city, or where the user has been specifically notified of a longer retention period by the manager.

(Ord. No. 17,966, §§ 6.1—6.14, 3-16-99)

Sec. 35-175. Power and authority of inspectors.

(1) *Right of entry—Inspection and sampling.* The manager shall have the right to enter the premises of any user to determine whether the user is complying with all requirements of this article and any wastewater discharge permit or order issued hereunder. Users shall allow the manager ready access to all parts of the premises for the purposes of inspection, sampling, records examination and copying, and the performance of any additional duties. The manager shall conduct inspection and sampling tasks at a minimum of once a year for every user.

(a) Where a user has security measures in force which require proper identification and clearance before entry into its premises, the user shall make necessary arrangements with its security guards so that, upon presentation of suitable iden-

tification, the manager will be permitted to enter without delay for the purposes of performing specific responsibilities.

(b) The manager shall have the right to set up on the user's property, or require installation of, such devices as are necessary to conduct sampling and/or metering of the user's operations.

(c) The manager may require the user to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the user at its own expense. All devices used to measure wastewater flow and quality shall be calibrated at least annually to ensure their accuracy.

(d) Any temporary or permanent obstruction to safe and easy access to the facility to be inspected or sampled shall be promptly removed by the user at the written or verbal request of the manager and shall not be replaced. The costs of clearing such access shall be born by the user.

(e) Unreasonable delays and/or refusals in allowing the manager access to the user's premises for the purpose of making an inspection authorized by this section shall be a violation of this article.

(f) In addition to the provisions of this article, the sewer committee of the City of Little Rock is specifically authorized to make such other reasonable rules and regulations in regard to the construction, use, and operation of sanitary sewers to be connected to, or connecting into, the mains of the Little Rock Wastewater Utility system. Such rules and regulations so made and adopted at a regular meeting of the sewer committee shall become effective as follows:

1. A public notice of intent to enact and intention of proposed rules and regulations shall be placed in a daily newspaper in the City of Little Rock, Arkansas, one (1) day for each of two

- (2) successive weeks with a brief summary of the proposed rules and regulations.
2. The proposed rules and regulations shall be available for public inspection and reproduction at the office of the manager of the Little Rock Wastewater Utility for thirty (30) days following the first publication of the public notice.
 3. A correct copy of those rules and regulations shall be filed for permanent record with the city clerk of the City of Little Rock together with any written objections to the proposed rules and regulations at the end of the thirty (30) day public review period.
 4. Said rules and regulations shall become effective on the filing of said copy for permanent record with the city clerk.

(2) *Search warrants.* If the manager has been refused access to a building, structure, or property, or any part thereof, and if the manager is able to demonstrate probable cause to believe that there may be a violation of this article, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program of the utility designed to verify compliance with this article or any permit or order issued hereunder, or to protect the overall public health, safety and welfare of the community, then upon application and affidavit by the Little Rock Sanitary Sewer Committee by its attorney, the appropriate municipal court judge of the City of Little Rock, Arkansas, may issue a search and/or seizure warrant describing therein the specific location subject to the warrant. The warrant shall specify what, if anything, may be searched and/or seized on the property described. Such warrant shall be served at reasonable hours by the manager or the Little Rock Sanitary Sewer Committee attorney in the company of a uniformed police officer of the City of Little Rock, Arkansas. In the event of an emergency affecting public health and safety, inspections shall be made without the issuance of a warrant.

(Ord. No. 17,966, §§ 7.1, 7.2, 3-16-99)

Sec. 35-176. Confidential information.

Information and data on a user obtained from reports, surveys, wastewater discharge permit applications, wastewater discharge permits, and monitoring programs, and from the managers inspection and sampling activities, shall be available to the public without restriction, unless the user specifically requests, and is able to demonstrate to the satisfaction of the manager, that the release of such information would divulge information, processes, or methods of production entitled to protection as trade secrets under applicable state law. Any such request must be asserted at the time of submission of the information or data. When requested and demonstrated by the user furnishing a report that such information should be held confidential, the portions of a report which might disclose trade secrets, secret processes, or proprietary information shall not be made available for inspection by the public, but shall be made available immediately upon request to governmental agencies for uses related to the NPDES program or pretreatment program, and in enforcement proceedings involving the person furnishing the report subject to the provisions of the Arkansas Freedom of Information Act, A.C.A. Section 25-19-101 et seq. Wastewater constituents and characteristics and other "effluent data" as defined by 40 CFR 2.302 will not be recognized as confidential information and will be available to the public without restriction.

(Ord. No. 17,966, § 8, 3-16-99)

Sec. 35-177. Publication of users in significant noncompliance.

The manager shall publish annually, in the largest daily newspaper published in the City of Little Rock, a list of the users which, during the previous twelve (12) months, were in significant noncompliance with applicable pretreatment standards and requirements. The term "significant noncompliance" shall mean:

- (a) Chronic violations of wastewater discharge limits, defined here as those in which sixty-six (66) percent or more of wastewater measurements taken during a six-month period exceed the daily maximum limit or average limit for the same pollutant parameter by any amount;

- (b) Technical review criteria (TRC) violations, defined here as those in which thirty-three (33) percent or more of wastewater measurements taken for each pollutant parameter during a six-month period equals or exceeds the product of the daily maximum limit or the average limit multiplied by the applicable criteria (1.4 for BOD, TSS, oil and grease, and 1.2 for all other pollutants except pH);
- (c) Any other discharge violation that the manager believes has caused, alone or in combination with other discharges, interference or pass through, including endangering the health of POTW personnel or the general public;
- (d) Any discharge of pollutants that has caused imminent endangerment to the public or to the environment, or has resulted in the manager's exercise of its emergency authority to halt or prevent such a discharge;
- (e) Failure to meet, within ninety (90) days of the scheduled date, a compliance schedule milestone contained in a wastewater discharge permit or enforcement order for starting construction, completing construction, or attaining final compliance;
- (f) Failure to provide within thirty (30) days after the due date, any required reports, including baseline monitoring reports, reports on compliance with categorical pretreatment standard deadlines, periodic self-monitoring reports, monthly self-monitoring reports, and reports on compliance with compliance schedules;
- (g) Failure to accurately report noncompliance; or
- (h) Any other violation(s) which the manager determines will adversely affect the operation or implementation of the local pretreatment program.

(Ord. No. 17,966, § 9, 3-16-99)

Sec. 35-178. Administrative enforcement remedies.

(1) *Noncompliance incident.* Whenever the manager or his designated agent finds that any user has violated or is violating this article a wastewa-

ter discharge permit or order issued hereunder, or any other requirement, the manager or his agent may notify the user of noncompliance. This notification may be oral or written. Within thirty (30) days of the receipt of the notice of noncompliance incident, the user must notify the utility of the reason for the noncompliance and the steps taken to prevent any recurrence. Submission of this information in no way relieves the user of liability for any violation occurring before or after receipt of the notice of the noncompliance incident. Nothing in this section shall limit the authority of the utility to take any action, including emergency actions or any other enforcement action, without first issuing a notice of a noncompliance incident.

(2) *Notice of violation.* When the manager finds that a user has violated, or continues to violate, any provision of this article, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the manager shall serve upon that user a written notice of violation. Within thirty (30) days of the receipt of this notice, an explanation of the violation and a plan for the satisfactory correction and prevention thereof, to include specific required actions, shall be submitted by the user to the manager. Submission of this plan in no way relieves the user of liability for any violations occurring before or after receipt of the notice of violation. Nothing in this section shall limit the authority of the manager to take any action, including emergency actions or any other enforcement action, without first issuing a notice of violation.

(3) *Consent orders.* The manager is authorized to enter into consent orders, assurances of voluntary compliance, or other similar documents establishing an agreement with any user responsible for noncompliance. Such orders, assurances, or other similar documents will include specific action to be taken by the user to correct the noncompliance within a time period specified by the document. Such order, assurances, or other similar documents shall have the same force and effect as the administrative orders issued pursuant to subsections (4) and (5) of this section and shall be judicially enforceable.

(4) *Show cause hearing.*

- (a) The manager may order any user which causes or contributes to violation(s) of this article, wastewater discharge permits, or orders issued hereunder, or any other pretreatment standard or requirement, to appear before the sewer committee and show cause why a proposed enforcement action should not be taken. Notice shall be served on the user specifying the time and place for the hearing, the proposed enforcement action, the reasons for such action, and a request that the user show cause why this proposed enforcement action should not be taken. The notice of the meeting shall be served personally or certified mail (return receipt requested) at least ten (10) days prior to the hearing. Such notice may be served on any authorized representative of the user. Whether or not the user appears as ordered, immediate enforcement action may be pursued following the hearing date. A show cause hearing shall not be a prerequisite for taking any other enforcement action.
- (b) The sewer committee may itself conduct the show cause hearing and take the evidence or the sewer committee or its chairman may designate the manager to:
1. Issue in the name of the sewer committee notices of hearings requiring attendance, testimony of witnesses and the production of evidence relevant to any matter involved in such hearings;
 2. Take the evidence; and
 3. Transmit a report of the evidence and hearing, including transcripts and other evidence together with recommendations to the sewer committee for action thereon.
- (c) At any hearing held pursuant to this article, any testimony taken must be under oath and be recorded by cassette tape. Any party desiring stenographic recording may provide the same at its own expense. A copy of a cassette tape or of the

stenographic recorded transcript will be made available to any member of the public or any party to the hearing upon payment of the usual charges thereof (such as postage, printing, copying expense, etc.). Any decision made as a consequence of any hearing held pursuant to this article, shall be subject to review by appeal to the Circuit Court of Pulaski County, in accordance with the law of Arkansas.

- (d) Following the show cause hearing, the hearing officer, if other than the sewer committee, shall within ten (10) days after the hearing submit his findings and recommendations to the members of the sewer committee. Following receipt of the recommendations, the sewer committee shall consider the findings and recommendations at its next regularly scheduled meeting or at any special meeting called for that purpose at which meeting the sewer committee shall take such action as it deems necessary. Within fifteen (15) days after consideration of the matter, the sewer committee shall have served on all parties the action recommended. If the sewer committee finds that legal action should be brought against the user for the violation(s), the sewer committee may institute such action to seek such civil and/or equitable relief including but not limited to injunctive relief, as may be appropriate; provided, however, that no suit to collect civil or criminal penalties may be initiated until after such time that a resolution authorizing such suit is duly adopted by the sewer committee pursuant to A.C.A. Section 8-4-103(g)(1) and (2).

Additionally, the sewer committee, through the manager, may issue to any user in violation, notice that following a specified period of time, the sewer service will be discontinued unless its pretreatment facility shall have installed adequate devices or other related appurtenances are properly operated. Other orders and directives as necessary and appropriate may be issued. An order directing the cessation of sewer service shall not preclude legal or

equitable action as the sewer committee may deem appropriate under the circumstances.

(5) *Compliance orders and schedules.* When the manager finds that a user has violated, or continues to violate, any provision of this article, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the manager may issue an order or schedule to the user responsible for the discharge directing that the user come into compliance within a specified time. If the user does not come into compliance within the time provided, sewer service may be discontinued subject to notice and right to a hearing as provided herein unless adequate treatment facilities, devices, or other related appurtenances are installed and properly operated. Compliance orders also may contain other requirements to address the noncompliance, including additional self-monitoring and management practices designed to minimize the amount of pollutants discharged to the sewer. A compliance order may not extend the deadline for compliance established for a pretreatment standard or requirement, nor does a compliance order relieve the user of liability for any violation, including any continuing violation. Issuance of a compliance order shall not be a bar against, or a prerequisite for, taking any other action against the user.

(6) *Cease and desist orders.* When the manager finds that a user has violated, or continues to violate, any provision of this article, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, or that the user's past violations are likely to recur, the manager may issue an order to the user directing it to cease and desist all such violations and directing the user to:

- (a) Immediately comply with all requirements; and
- (b) Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and/or terminating the discharge.

Issuance of a cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the user.

(7) *Administrative fines.*

- (a) When the manager finds that a user has violated, or continues to violate, any provision of this article, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the manager may fine such user in an amount not to exceed one thousand dollars (\$1,000.00). Such fines shall be assessed on a per violation basis. In the case of monthly or other long term average discharge limits, fines shall be assessed for each day during the period of violation. Each day of a continuing violation shall be deemed a separate violation.
- (b) Users desiring to dispute such fines must file a written request for the manager to reconsider the fine along with full payment of the fine amount within ten (10) days of being notified of the fine. Where a request has merit, the manager may convene a hearing on the matter. In the event the user's request is granted, the payment shall be returned to the user. Collection of a fine can only be effected in a court of competent jurisdiction.
- (c) Issuance or pursuit of an administrative fine shall not be a bar against, or a prerequisite for, taking any other action against the user, and in no event shall legal proceedings be initiated to collect said fine or penalty without a resolution of the sewer committee authorizing such court action.

(8) *Emergency suspensions.* The manager may immediately suspend a user's discharge, after notice to the user and a hearing within five (5) days of the suspension, whenever such suspension is necessary to stop an actual or threatened discharge which reasonably appears to present or cause an imminent or substantial endangerment to the health or welfare of persons. The manager may also immediately suspend a user's discharge, after notice and opportunity to respond, that threatens to interfere with the operation of the POTW, or which presents, or may present, an endangerment to the environment.

- (a) Any user notified of a suspension of its discharge shall immediately stop or elim-

inate its contribution. In the event of a user's failure to immediately comply voluntarily with the suspension order, the manager may take such steps as deemed necessary, including immediate severance of the sewer connection, to prevent or minimize damage to the POTW, its receiving stream, or endangerment to any individuals. The manager may allow the user to recommence its discharge when the user has demonstrated to the satisfaction of the manager that the period of endangerment has passed, unless the termination proceedings in subsection (8) of this section are initiated against the user.

- (b) A user who is responsible, in whole or in part, for any discharge presenting imminent endangerment shall submit a detailed written statement, describing the causes of the harmful contribution and the measures taken to prevent any future occurrence, to the manager prior to the date of any show cause or termination hearing under subsection (8) or (9) of this section.

Nothing in this section shall be interpreted as requiring a hearing prior to any emergency suspension under this section.

(9) *Termination of discharge.* In addition to the provisions in section 35-173(5) of this article, any user who violates the following conditions of this article, wastewater discharge permits, or orders issued pursuant to any provision of this article may be subject to discharge permit termination:

- (a) Violation of wastewater discharge permit conditions;
- (b) Failure to accurately report the wastewater constituents and characteristics of its discharge;
- (c) Failure to report significant changes in operations or wastewater volume, constituents, and characteristics prior to discharge;
- (d) Refusal of reasonable access to the user's premises for the purpose of inspection, monitoring, or sampling; or

- (e) Violation of the pretreatment standards in division 2 of this article. Such user will be notified of the proposed termination of its discharge and be offered an opportunity to show cause under subsection (4) of this section why the proposed action should not be taken. Exercise of this option by the manager shall not be a bar to, or a prerequisite for, taking any other action against the user.

(Ord. No. 17,966, §§ 10.1—10.9, 3-16-99)

Sec. 35-179. Judicial enforcement remedies.

(1) *Injunctive relief.* When the manager finds that a user has violated, or continues to violate, any provision of this article, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, the sewer committee may commence proceedings for the issuance of a temporary or permanent injunction, as appropriate, which restrains or compels the specific performance of the wastewater discharge permit, order, or other requirement imposed by this article on activities of the user. The sewer committee may also seek such other action as is appropriate for legal and/or equitable relief, including a requirement for the user to conduct environmental remediation. A complaint for injunctive relief shall not be a bar against, or a prerequisite for, taking any other action against a user.

(2) *Civil penalties.*

- (a) A user who has violated, or continues to violate, any provision of this article, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement shall be liable to the utility for a maximum civil penalty of one thousand dollars (\$1,000.00) per violation. In the case of a monthly or other long-term average discharge limit, penalties shall accrue for each day during the period of the violation; and, each day of a continuing violation may be deemed a separate violation.
- (b) The manager may recover all costs recoverable under the law of Arkansas, and other expenses associated with enforce-

ment activities, including sampling and monitoring expenses, and the cost of any actual damages incurred by the utility.

- (c) In determining the amount of civil liability, a court of competent jurisdiction may take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration of the violation, any economic benefit gained through the user's violation, corrective actions by the user, the compliance history of the user, and any other factor as justice requires.
- (d) Filing a suit for civil or criminal penalties shall not be a bar against, or a prerequisite for, taking any other action against a user, provided, that no such suit to collect civil or criminal penalties shall be commenced without a resolution of the sewer committee authorizing such court action.
 1. For users with properties located within the corporate limits of the City of Little Rock, no suit to collect civil or criminal penalties or fines may be initiated until after such time that a resolution authorizing the suit is duly adopted by the sewer committee, as the governing body pursuant to Ark. Code Ann. Section 8-4-103.
 2. For users with properties located outside the corporate limits of the City of Little Rock, the board of directors of the City of Little Rock hereby delegates authority to the sewer committee to be the governing body to authorize, by resolution, legal actions to collect civil or criminal penalties or fines.

(3) *Criminal prosecution.*

- (a) A user who willfully or negligently violates any provision of this article, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement shall, upon conviction, be guilty of a misdemeanor, punish-

able by a fine of not more than one thousand dollars (\$1,000.00) per violation or imprisonment for such term as allowed by law or both; provided that no criminal prosecution may be commenced without a prior resolution of the sewer committee authorizing such prosecution.

- (b) A user who willfully or negligently introduces any substance into the POTW which causes personal injury or property damage shall, upon conviction, be guilty of a misdemeanor and be subject to a penalty of at least one hundred dollars (\$100.00) but not more than five hundred dollars (\$500.00) for any one (1) specified offense or violation thereof, and not less than one hundred dollars (\$100.00) but not more than one thousand dollars (\$1,000.00) for each repetition of such event or violation, or be subject to imprisonment for such term as allowed by law, or both. This penalty shall be in addition to any other cause of action for personal injury or property damage available under state law.
- (c) A user who knowingly makes any false statements, representations, or certifications in any application, record, report, plan, or other documentation filed, or required to be maintained, pursuant to this article, wastewater discharge permit, or order issued hereunder, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this article shall, upon conviction, be punished by a fine of at least one hundred dollars (\$100.00) but not more than five hundred dollars (\$500.00) for any one (1) specified offense or violation thereof, and not less than one hundred dollars (\$100.00) but not more than one thousand dollars (\$1,000.00) for each repetition of such event or violation, or be subject to imprisonment for such term as allowed by law, or both. This penalty shall be in addition to any other cause of action for personal injury or property damage available under state law.

(4) *Remedies nonexclusive.* The remedies provided for in this article are not exclusive. The manager may take any, all, or any combination of these actions against a noncompliant user. Enforcement of pretreatment violations will generally be in accordance with the utility's enforcement response plan. However, the manager may take other action against any user when the circumstances warrant. Further, the manager is empowered to take more than one enforcement action against any noncompliant User. (Ord. No. 17,966, §§ 11.1—11.4, 3-16-99)

Sec. 35-180. Supplemental enforcement action.

(1) *Performance bonds.* The manager may decline to issue or reissue a wastewater discharge permit to any user who has failed to comply with any provision of this ordinance, a previous wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, unless such user first files a satisfactory bond, payable to the sewer committee, in a sum not to exceed a value determined by the manager to be necessary to achieve consistent compliance.

(2) *Liability insurance.* The manager may decline to issue or reissue a wastewater discharge permit to any user who has failed to comply with any provision of this article, a previous wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, unless the user first submits proof that it has obtained financial assurances sufficient to restore or repair damage to the POTW caused by its discharge.

(3) *Public nuisances.* A violation of any provision of this article, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement is hereby declared a public nuisance and shall be corrected or abated as directed by the manager. Any person(s) creating a public nuisance shall be subject to the provisions of the City Code for the City of Little Rock governing such nuisances, including reimbursing the city and/or the sewer committee for any costs incurred in removing, abating, or remedying said nuisance. (Ord. No. 17,966, §§ 12.1—12.3, 3-16-99)

Sec. 35-181. Affirmative defenses to discharge violations.

(1) *Upset.*

(a) For the purposes of this section, "upset" means an exceptional incident in which there is unintentional and temporary noncompliance with categorical pretreatment standards because of forces beyond the reasonable control of the user. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

(b) An upset shall constitute an affirmative defense to an action brought for noncompliance with categorical pretreatment standards if the requirements of paragraph (c), below, are met.

(c) A user who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and the user can identify the cause(s) of the upset;
2. The facility was at the time being operated in a prudent and workmanlike manner and in compliance with applicable operation and maintenance procedures; and
3. The user has submitted the following information to the manager within twenty-four (24) hours of becoming aware of the upset. If this information is provided orally, a written submission must be provided within five (5) days:
 - a. A description of the indirect discharge and cause of noncompliance;
 - b. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

c. Steps being taken and/or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

- (d) In any enforcement proceeding, the user seeking to establish the occurrence of an upset shall have the burden of proof.
- (e) Users will have the opportunity for a judicial determination on any claim of upset only in an enforcement action brought for noncompliance with categorical pretreatment standards.
- (f) Users shall control production of all discharges to the extent necessary to maintain compliance with categorical pretreatment standards upon reduction, loss, or failure of its treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

(2) *Prohibited discharge standards.* A user shall have an affirmative defense to an enforcement action brought against it for noncompliance with the general prohibitions in section 35-165(a) of this article or the specific prohibitions in subsections 35-165(b)(3) through (17) of this article if it can prove that it did not know, or have reason to know, that its discharge, alone or in conjunction with discharges from other sources, would cause pass through or interference and that either:

- (a) A local limit exists for each pollutant discharged and the user was in compliance with each limit directly prior to, and during, the pass through or interference; or
- (b) No local limit exists, but the discharge did not change substantially in nature or constituents from the user's prior discharge when the utility was regularly in compliance with its NPDES permit, and in the case of interference, was in compliance with applicable sludge use or disposal requirements.

(3) *Bypass.*

(a) For the purposes of this section:

- 1. *Bypass* means the intentional diversion of wastestreams from any portion of a user's treatment facility.
- 2. *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(b) A user may allow any bypass to occur which does not cause pretreatment standards or requirements to be violated, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of paragraphs (c) and (d) of this section.

(c) 1. If a user knows in advance of the need for a bypass, it shall submit prior notice to the manager at least ten (10) days before the date of the bypass, if possible.

- 2. A user shall submit oral notice to the manager of an unanticipated bypass that exceeds applicable pretreatment standards within twenty-four (24) hours from the time it becomes aware of the bypass. A written submission shall also be provided within five (5) days of the time the user becomes aware of the bypass. The written submission shall contain a description of the bypass and its cause; the duration of the bypass, including exact dates and times, and, if the bypass has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass. The manager may waive the written report

on a case-by-case basis if the oral report has been received within twenty-four (24) hours.

- (d) 1. Bypass is prohibited, and the manager may take an enforcement action against a user for a bypass, unless:
- a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - c. The user submitted notices as required under paragraph (c) of this section.
2. The manager may approve an anticipated bypass, after considering its adverse effects, if the manager determines that it will meet the three conditions listed in paragraph (d)1. of this section.

(Ord. No. 17,966, §§ 13.1—13.3, 3-16-99)

Sec. 35-182. Extra strength surcharge rates.

(1) *General.* The manager may at any time collect appropriate samples from any industrial or commercial user's discharge and conduct analyses to determine the concentrations of BOD, TSS, and oil and grease (O&G). If the sampling and analyses performed by the manager or his designated assistant indicates concentrations of BOD, TSS, and O&G exceeding the limits set forth in subsection (2) below, he shall compute an extra strength surcharge as set by the existing sewer rate ordinance, and the owner shall be

liable for payment of the amount thereof. The collection of an extra strength surcharge is not a penalty, but rather allows the utility to defray the costs of treating industrial wastewater concentrations that are above average domestic wastewater concentrations. The surcharge shall be considered a sewer charge for which the owner shall be liable in accordance with the applicable law of the State of Arkansas, as amended and upon default in such payment, the utility shall be entitled to those remedies set forth in said statute.

(2) *Computations.* The extra strength surcharge shall be calculated in accordance with the provisions of the applicable rate ordinance (the same being incorporated by reference) using the following limits and calculations:

BOD in excess of 300 mg/l

TSS in excess of 300 mg/l

O&G in excess of 100 mg/l

SURCHARGE =

$[(BOD_x - 300 \text{ mg/L}) (8.34) (V) (A)] +$

$[(TSS_x - 300 \text{ mg/L}) (8.34) (V) (B)] +$

$[(O\&G_x - 100 \text{ mg/L}) (8.34) (V) (C)]$

Where:

BOD_x = concentration of BOD in mg/l

TSS_x = concentration of TSS in mg/l

$O\&G_x$ = concentration of O&G in mg/l

8.34 = weight of one gallon of water, pounds

V = flow in million gallons per month

A = unit charge for BOD

B = unit charge for TSS

C = unit charge for O&G

(Ord. No. 17,966, §§ 14.1, 14.2, 3-16-99)

Sec. 35-183. Miscellaneous provisions.

(1) *Pretreatment charges and fees.* The manager may adopt fees for reimbursement of costs of setting up and operating the utility's pretreatment program which may include, but is not limited to the following:

- (a) Fees for wastewater discharge permit applications including the cost of processing such applications;

- (b) Fees for monitoring, inspection, and surveillance procedures including the cost of sample collection and analyzing a user's discharge, and reviewing monitoring reports submitted by users;
 - (c) Fees for reviewing and responding to accidental discharge, including reasonable costs incurred for labor, materials, and proper disposal of incompatible wastes not subject to treatment by the POTW treatment plant;
 - (d) Fees for reviewing written requests for discharge of special wastes;
 - (e) Fees for filing appeals; and
 - (f) Other fees as the manager may deem necessary to carry out the requirements contained herein. These fees relate solely to the matters covered by this article and are separate from all other fees, fines, and penalties chargeable by the city.
- (Ord. No. 17,966, § 15.1, 3-16-99)

Little Rock Wastewater Utility

Collection System Management Plan (CSMP)

Table of Contents

Letter of Transmittal

<u>Volume</u>	<u>Tab</u>	<u>Description</u>
1	A	Major Goals of CSMP
	B	Personnel Responsible for Implementing CSMP
2		Legal Authority of LRWU:
	A	Control of Private Inflow Sources
	B	Design/ Construction of Sewers & Connections
	C	Installation, Testing, & Inspection of New & Rehabilitated Sewers
	D	Address Flows from Satellite Municipal Collection Systems
	E	Implementation of Prohibitions of National Pretreatment Program
3		Lift Station Maintenance Division General Procedures
4		Collection System Maintenance Division General Procedures <i>The following are included within Volume 4:</i>
		• Maintenance Procedures to Prioritize Collection System Activities
		• Collection System Preventive Maintenance
		• Identification, Prioritization, Rehabilitation of Structural Deficiencies
		• Equipment and Replacement Inventories
		• Sanitary Sewer Overflow Response Plan
5	A	Geographic Information System (GIS)
	B	Computerized Maintenance Management System
	C	Collection System Employee Training
6		Standard Specifications for Installation and Testing of New Collection System Facilities (Draft)
7		Trap Control Program
8		Typical Specifications for Rehabilitation of Collection System Facilities
9		System Evaluation and Capacity Assurance Plan <i>The following is included within Volume 9:</i>
		• Current Capacity of Collection System and Treatment Facilities

Little Rock Wastewater Utility

Volume 3

Lift Station Maintenance Division General Procedures

for

Collection System Management Plan (CSMP)

CONTENTS

General Procedures:

Safety Protocol	Page 1
Work Orders	Pages 1 & 2
Repair Procedures	Page 2
After Hours	Pages 2 & 3
Inclement Weather Policy	Pages 3, 4, & 5
PM Schedule	Page 5
Unscheduled Work	Pages 5 & 6
Work Order Request Form	Page 6
Preparing Work Orders	Page 6
Completing Work Orders	Page 7
Extra Item Section	Page 7
Labor Section	Page 8
External Departments	Page 8
Priority	Pages 8, 9 & 10
O & M	Page 10
Non-Work Order Related Stock Items	Pages 10 & 11

Storeroom Procedures:

Acquiring Materials from Storeroom	Page 23
Acquiring Materials that Are Not Stocked in Storeroom	Pages 23 & 24
Purchasing Materials from Other Vendors	Page 24
Operation of Storeroom	Page 24
Issuing Materials	Page 25
Stock Request Form	Page 25
Hansen Information System Stock Issue Transactions	Page 25
Issue Transactions	Page 26
Stock Information Screen	Page 26
Reordering Materials	Pages 26 & 27
Receipt Transaction	Page 27
Price Quotation Forms	Page 27
Replenishing the Stock on the Shelves	Page 28
Storeroom to Storeroom Transfer Form	Page 28
Entering the Transfer Transaction	Page 29

FACILITY & EQUIPMENT & PUMPS GENERAL PROCEDURES

- **SAFETY PROTOCOL**

- A. With the institution of the safety program all Utility personnel are expected to follow and adhere to the rules set forth by the Environmental Health & Safety Division of the Utility as explained in the safety manual guidelines.
- B. Within IMS a standing work order number (example: 1000 for Facility & Equipment & Pumps personnel) has been set aside to track the training and development of their Utility personnel.
- C. All safety items have been set up under an account (see attachment A-5) and have been grouped together in one location in the storeroom so ordering and tracking of these items can be maintained at a high priority. Also medical kit supplies are also readily available and maintained at this same level.

- **WORK ORDERS**

- A. All work performed must be accompanied by a work order.
- B. Maintenance planner and secretary will prepare work orders from:

1. Customers request. (Operations, Clearwater, Engineering, or Downtown Personnel)
2. Computer generated PM's.
3. Emergency (**priority-5**) work orders arising during the workday, will be called in to the maintenance planner, secretary, or supervisor.

- **REPAIR PROCEDURES WILL BE AS FOLLOWS:**

The emergency repair priority-5 work orders will be evaluated by the maintenance planner and/or supervisor in charge of maintenance crews, who will determine the crew to handle the work order and will then dispatch the said crew to that location. At which time the crew will be given required information along with the work order number.

- **AFTER HOURS**

Repairs required after normal working hours that are **priority-5** and cannot wait will be handled with the following procedures:

- A. The employee needing work performed will contact the maintenance supervisor and/or planner and describe the problem. See attached list (pages 10 & 11) of phone numbers for contacts.

B. The supervisor will select personnel to perform the work and send them to the site to make the necessary repairs. The maintenance secretary will take the information and enter it in IMS, which will issue the assigned work order number.

• **INCLEMENT WEATHER POLICY**

A. Actual Inclement Weather

1. Equip essential vehicles with snow or ice chains. (if needed)

- a) Pump Station Truck (One)
- b) Electricians Vans (Two)
- c) Supervisors Trucks (Two)
- d) Construction Tech Truck (One)

2. Personnel Availability

- a) Essential personnel required (Either will be on-call or held at *plant)
 - 1) Electrician (One)
 - 2) Mechanic (One)
 - 3) Eng/Gen Tech / Industrial Electrician (One)
 - 4) Utility Worker (One)
 - 5) Supervisor (One)

* Personnel will be held at plant if road conditions

prevent them from returning to the plant in a timely manner.

** Essential personnel will be allowed to take Utility vehicle home if warranted.

*** Bedding (air mattresses and sleeping bags) kept in storeroom.

3. Operations will be instructed to notify the proper supervisor of any problems, who will then notify and organize his crews.

B. Forecast Inclement Weather

1. Equip essential vehicles with snow or ice chains. (if needed)
 - a) Pump Station Truck (One)
 - b) Electricians Vans (Two)
 - c) Supervisors Trucks (Two)
 - d) Construction Tech Truck (One)
2. Personnel Availability (*will be on-call status)
 - 1) Electrician (One)
 - 2) Mechanic (One)
 - 3) Eng/Gen Tech / Industrial Electrician (One)
 - 4) Utility Worker (One)
 - 5) Supervisor (One)

* If road conditions deteriorate personnel will be called in as needed.

** Operations will be instructed to notify the proper supervisor of any problems, who will then notify and organize his crews.

- **PM SCHEDULE**

A. PM schedules will primarily be used in the IMS Plant Module. PM's will be set at monthly intervals determined by Equipment O & M manuals and past history.

B. Each PM will be accompanied by a work order, which will be completed by the specified crew.

C. All PM's will be set in **MONTHLY UNITS** and will be rescheduled by **SCHEDULED DATE** rather than completion date.

- **UNSCHEDULED WORK**

Work that has to be done, which does not have an existing work order will be handled by the following procedure:

The person requesting the work will call the planner, secretary, or supervisor who will then assign it to a crew to perform said activity. The crew performing the activity will fill out a paper account sheet and attach it to the paper work order form (that

was generated by the planner or secretary receiving the call) upon arriving at the plant at the end of their shift. The secretary will then enter it into IMS the next morning.

- **WORK ORDER REQUEST FORM**

There will be work order request forms available for all departments to fill out and turn into the secretary and/or maintenance planner with as much information as possible about the requested task, so a number may be generated in IMS. Work order request forms will also be available for each crew so they can maintain their time accounting. See attachment A-3 for work order request form.

- **PREPARING WORK ORDER**

The following information must be entered on every work order paper or computer that is initiated:

DATE INITIATED	
ACTIVITY	(see attachment A-2)
INITIATED BY	(employee #)
PROJECT #	(if applicable)
PROBLEM	(if known)
PRIORITY	(see priority procedure)
COMMENTS	

- **COMPLETING WORK ORDERS**

The crew will keep an actual account of time spent on each work order for employees, as well as, amount of materials used. These work orders will be assigned back the next day or at a later date if not completed the day assigned.

- **EXTRA ITEM SECTION**

A. This section will be used for PA and PO purchases that we have a cost for and are a direct cost to the work order. There will need to be a date entered. Under extra item place the PA or PO number, quantity will be one (1) and total cost shown under rate for each PA or PO. Inventory items will also be entered in this section.

B. The secretary and/or maintenance planner will complete this section when list of invoices is received from crews on a daily basis. These items will consist of any items, which we do have a cost for at the time it is received. The crew will have to place the work order number on each receiver they sign, which will be turned in to the maintenance planner daily, along with their daily work orders.

- **LABOR SECTION**

This section will have the normal crewmember already listed and any additional employees used will need to be written on the sheet. There will need to be a date entered, pay type, and hours worked for each employee.

- **EXTERNAL DEPARTMENTS**

The other departments in the Utility who request work from the Facilities & Equipment, Pumps & Electrical Department may do so by any of the following methods:

1. Call secretary or planner with work requested.
2. Fill out work order request form and send in interoffice mail or fax.
3. E-mail secretary or planner describing the work requested.

Upon receiving request, a work order will be generated and prioritized and person requesting work will be notified of when work will be done.

- **PRIORITY**

The priority used on each work order will be even more important with the new IMS, as to the way work orders will be

stored and generated. The following procedure should be used to determine the priority used on each work order:

- **Priority-5 Emergency, Drop All Other Work**

1. Class A equipment repairs. (see equipment classification attachment A-1)
2. Items that will result in a permit violation.
3. Work you would call someone after normal work hours to perform.
4. Customer complaints, which have lost service or potential danger to the public.
5. Sewer on the ground.

- **Priority-4 Rush, Drop Other Work If Possible**

1. Class B equipment repairs. (see equipment classification attachment A-1)
2. All customer complaints other than those covered under Priority-5.

- **Priority-3 Ahead of Routine**

1. Class C equipment repairs. (see equipment classification attachment A-1)
2. All PM work orders.

3. Work orders which have to be completed within 7-28 days.

- **Priority-2 With Routine**

1. Class D equipment repairs. (see equipment classification attachment A-1)
2. Work orders which can exceed 12 months before completion.

- **Priority-1 When Time Permits**

1. All projects and work orders, which do not fall under any of the other priorities. (see equipment classification attachment A-1)

- **O & M**

The planner and supervisors will make a list of materials needed (see blue sheet attachment A-6) for all work orders and give as much advance notice to the storekeeper as possible to help prevent delays in retrieving stock (minimum of one day).

- **NON-WORK ORDER RELATED STOCK ITEMS**

Stock items required that are not a direct cost to work orders such as tools, towels, gloves, and etc., which are now being

used as part of the overhead will continue to be tracked as such. These types of items will be requested on as needed basis and will be issued to the appropriate account number by the storekeeper. These items should be requested from the storeroom with as much advance notice as possible to prevent delays. Upon supervisor approval personnel will submit requested items each afternoon (needed for the following day) to stockroom personnel so that items can be pulled from stock and ready for pick-up the following morning.

EMERGENCY CREW PROCEDURES

- **EMERGENCY AND AFTER HOUR CALLOUTS**

Person discovering problem must notify supervisor, planner, or superintendent and relay any information about the problem to the person notified. Supervisor will notify the crew needed to make the repairs or will instruct person making the call whom to call in to correct the problem. Once the crew has corrected the problem appropriate personnel should be notified and a detailed report should be completed.

EMERGENCY PHONE LIST

Dwayne Lackey	834-8226 (Home) 681-0573 (Mobile) 370-8422 (Pager)
Bill Hall	602-5732 (Home) 681-0572 (Mobile) 688-2735 (Pager)
David Wood	941-2092 (Home) 231-6544 (Mobile) 688-5310 (Pager)

Frank (870) 879-2832 (Home)
DiBartolo 681-0570 (Mobile)
688-0302 (Pager)

Paul Goodson 821-2845 (Home)
395-7056 (Pager)

Jim Diederling 888-4098 (Home)
688-0493 (Pager)

Danny Woods 888-7844 (Home)

Ron Knight 982-2762 (Home)

Gene Volz 794-2696 (Home)

Tracey Bell 256-3398 (Home)

Lonnie Green 888-8049 (Home)

Danny Robnett 778-6382 (Home)
940-2410 (Mobile)
688-0482 (Pager)

Jim Rowe 568-9672 (Home)
688-2754 (Pager)

Pete Jones 376-7640 (Home)

John Williams 870-552-7042 (Home)

RECEIVING CUSTOMER CALLS

- GUIDELINES

Note: If any other LRWU employee receives call/complaint, gather all information listed and report to secretary as soon as possible. (Contact planner if secretary is not available, supervisor if planner is not available.) Follow guidelines below:

Gather the Following Information:

- Customer Name
- Customer Address
- Address of Problem
- Contact Phone Number – (home and work)
- Nature and Location of Complaint
- Record Time Call Received
- Check for Related Calls
- Rate Priority

CAPITAL PROJECTS

- IN-HOUSE CAPITAL PROJECTS

The capital projects will be sent direct to the maintenance planner which will consist of three sets of plans, an approved investment work order and any other items required to construct the project. The maintenance planner will prepare a work order for each activity involved in said project. The work orders will be placed under a park asset called **CAPITAL BUDGET** along with project number so costing information can be distributed to the new assets when project is completed. The maintenance planner will also verify that adequate materials are in stock to construct the project and reserve said materials two (2) weeks in advance of project starting. The start time will be coordinated with maintenance supervisors and verified prior to reserving materials.

Once a capital project has been completed the cost from the park **CAPITAL PROJECTS** will be distributed based on the number of new asset units created for each activity. The Finance Department will handle the distribution of cost back to the new assets.

- **SCHEDULING PROJECTS**

The planner will take the project, verify cost estimate matches plans, materials are in stock, and enter it on our Progression Chart (see attachment A-8) according to priority. The Progression Chart is updated on a weekly basis at a meeting with planner, maintenance superintendent, and supervisors. The projects are scheduled based upon priority. Priority-5 is the first to be scheduled. The project is scheduled and a crew is determined at these meetings.

The planner takes this schedule, prepares required work orders, sets up a project file, and gets with the supervisors and the Engineering Tech that designed the project to get the project ready for crew to start.

- **CONSTRUCTION PHASE**

Once the project is turned over to a crew the supervisor of that crew is then responsible for the following:

- A. Material Checks

1. Verify stock materials are available
2. Determine any non-stock materials required (inform planner)

- B. Equipment

1. Verify required equipment (availability)
2. Equipment rental (setup with planner)

C. Project Progresses as Scheduled

- **COMPLETION PHASE**

As the project progresses the supervisor is to turn in all work orders daily in to the planner. The planner verifies all phases have been completed and prepares a cost report on each associated work order activity, which is then transferred to a cost comparison document. The cost comparison document shows the relationship between our in-house cost and contracted cost with a percentage value for savings or loses. The planner then takes the actual cost for the project and prepares a reconciliation change order for the project along with an explanation for any overage that may have occurred from the original cost estimate submitted by Engineering (This process is normally completed within 30 days). The Engineering Department is notified in our weekly meetings of the completion of each project.

NOTE: At this point in the process maintenance has no control over the time involved in the completion of As-Built Drawings, which currently may be as long as two years from date of actual

construction. Currently the projects are being shown as complete in our accounting department without any As-Built Drawings being done.

The accounting department is notified via e-mail of the reconciliation change order and at this point as to how the charges are being distributed to the asset is unknown, but it was covered in our General Procedures.

REPAIRS

- SCHEDULING REPAIRS

The planner will take existing work orders and determine if there are multiple work orders in a given area so these work orders can be scheduled together.

The planner should try to insure the crews have at least eight hours of work orders with them daily. This will prevent delays and the needless down time where they can simply move to another location if problems exist at one.

A. Supervisors of assigned will be responsible for the following:

1. Determine materials required (prepare stockroom request form (1) day in advance of repair)
2. Verify required equipment
3. Verify any possible conflicts

The crew leader will also be responsible for placing notes on the work order as to what additional items are required to complete the project and turn that hard copy of the work order in to the planner so he can schedule the completion of

the job. If the original crew completes the job then a note is added to the work order stating it is completed.

- **OVERFLOWS**

- Any and all sewage overflows are Priority 5's and are to be cleaned as soon as possible and as conditions allow.
- One of the maintenance supervisors, planner, or superintendent are to be contacted so photographs can be taken of the overflow area before and after the cleanup.
- All crews discovering and/or cleaning an overflow are to prepare an overflow report form (see attachment A-9), to be turned in to a supervisor or planner that day. It will then be forwarded to the secretary, and on to Adams Field for reporting to ADEQ.

EQUIPMENT AND VEHICLE PROCEDURES

GENERAL GUIDELINES

- Each crew is assigned vehicles and equipment that they are responsible for checking fluid levels, tires, batteries, lights, and alarms (where applicable).
- A check list card is given for each vehicle and another card for the different equipment (see attachment A-10) that the crew has. The cards are given out by and collected by the maintenance supervisor at the first workday of a new month. The cards will then be turned in to the secretary for compiling a mileage list to be sent to Baker Support Systems.
- The designated crewmember that's responsible for following the checklist must record the starting mileage of the vehicles and initial the card each time new mileage is recorded.
- When a problem is discovered during the checklist process, the vehicle or equipment is tagged out and the garage personnel (Baker Support Systems) are notified. The crewmember takes the checklist card (for the problem vehicle or equipment) to the garage where the garage personnel will write the work order number in the center section of the card.

- Once Baker Support Systems issues their work order number the work will fall under their procedures.

STOREROOM PROCEDURES

- **ACQUIRING MATERIALS FROM STOREROOM**

NOTE: For the sake of procedure definitions, the word materials shall include all equipment, parts, tools, as well as, supplies.

Stocked materials can be obtained from the storeroom in the following two methods:

1. By sending a Stock Request Form to the storekeeper via the interoffice mail, fax, or hooking up to the storeroom printer.
2. Come by or send your representative to the storeroom.

- **ACQUIRING MATERIALS THAT ARE NOT STOCKED IN STOREROOM**

When an item is not stocked in the storeroom a request for purchase form or blue sheet can be obtained from the storekeeper. It will be the responsibility of the individual desiring those materials to complete the form. It should have the desired quantity, description, estimated unit cost, and account number. Whenever possible, the vendor's name, phone

number, and contact person should be noted in the suggested vendors portion of the form.

- **PURCHASING MATERIALS FROM OTHER VENDORS**

1. Contact a buyer Downtown before any purchases are made.
2. Complete purchasing department purchase requisition form.
3. Complete price quotation form.

Note: Price quotation forms cover those purchases that will be over \$100.00 but will not exceed \$10,000.00.

- **OPERATION OF STOREROOM**

The primary function of the storeroom is to keep on hand in predetermined amounts of those items that are routinely used in the performance of repairs and preventative maintenance of equipment throughout the Utility.

It will be the responsibility of the storekeeper to maintain accurate records of all transactions that are performed in and through the storeroom. The transactions are to be funneled through the Hansen Information System.

- **ISSUING MATERIALS**

Materials shall be issued to employees of the Utility.

- **STOCK REQUEST FORM**

As items are issued it will be the responsibility of the storekeeper to log those items on a stock request form.

NOTE: Whenever feasible, the work order number should be listed on the stock request form.

- **HANSEN INFORMATION SYSTEM STOCK ISSUE TRANSACTIONS**

Listed in the Hansen Information System under the parts category is a list of all the stock transactions that can be accessed. Selecting the issue transaction screen will allow the storekeeper or any authorized person to make entries into the Hansen Information System. The ideal time to enter stock issue transactions into the Hansen Information System is at the time the items are being issued or in a timely manner thereafter.

- **ISSUE TRANSACTIONS**

Listed in the Hansen Information System under the parts category is a list of all the stock transaction that can be accessed. Selecting the issue transaction screen will allow the storekeeper or any authorized person to make entries into the Hansen System.

- **STOCK INFORMATION SCREEN**

Along with the issue transaction screen the stock information screen should be run in tandem. In the Hansen Information System under the parts category resides the stock information screen. This screen must be accessed as issues are made to insure that all items that fall below minimum reorder levels are ordered. Accessing the stock information screen at the time of issuance will aid the storekeeper and prevent stock outages.

When stock levels fall below minimums it is at that time that an asterisk (*) should be placed next to the item on the stock request form, as well as, the quantity needed to be reordered.

- **REORDERING MATERIALS**

As items that are issued and fall below minimum stock levels a purchasing department purchase requisition form should be completed. Multiple items can be listed on a single purchase

requisition form when those items can be ordered from a single vendor. It will be necessary for separate purchase requisition forms to be used when items come from different vendors.

- **RECEIPT TRANSACTION**

Items that are delivered to the storeroom by the vendor should be checked in as they arrive. Quantity and vendor item number should be checked for accuracy. Receivers should be matched with the purchasing department purchase requisition form and entered into the Hansen Information System using the stock receipt transaction screen. Multiple items should be received by line item.

- **PRICE QUOTATION FORMS**

Before any purchase is made that is over \$100.00 but does not exceed \$10,000.00, a price quote sheet must accompany the request for purchase form or blue sheet. It will be the responsibility of either the storekeeper or the person doing his own purchasing to complete this. It will be the responsibility of the storekeeper to obtain three price quotes from vendors that we intend to purchase items from. Forms must be filled out as prices are gathered before any purchases are made.

- **REPLENISHING THE STOCK ON THE SHELVES**

After items have been checked in and received through the Hansen Information System the Utility catalog number should be affixed to the item or groups of items if packaged together. They should be arranged neatly in their appropriate location. Receivers and associated paper work should be forwarded to the buyers Downtown for processing and payment.

- **STOREROOM TO STOREROOM TRANSFER FORM**

To move items from one storeroom to another storeroom can be accomplished by using the storeroom to storeroom transfer form. The form should be sent by the desiring storekeeper to the storeroom that will be transferring the item.

NOTE: Consideration should be given to the effect that transferring items would have on that storeroom's inventory. Example: If an item is potentially transferred and at that time the item falls below reorder minimums, it would not benefit the transferring storeroom to transfer that item. The storeroom desiring the item should be notified that no transfer will be made and the desiring storeroom should make other arrangements to have that item brought in.

- **ENTERING THE TRANSFER TRANSACTION**

After logging on the Hansen Information System, click on the parts category and then click on stock transaction. As an additional box is activated click on transfer transaction, then click with the left mouse key and the transaction will then appear on the screen. Complete the form and note the transaction number on the storeroom to storeroom transaction form.

ATTACHMENTS:

Equipment Classification Sheet	A-1
Activity Sheet	A-2
Blank Work Order	A-3
Hansen Work Order	A-4
Safety Account Sheet	A-5
Blue Sheet	A-6
One Call Sheet	A-7
Progression Chart	A-8
Overflow Report Sheet	A-9
Vehicle Monthly Inspection Card	A-10
Lockout/Tagout Procedures	A-11

A-1

Equipment Classification Sheet

EQUIPMENT CLASSIFICATIONS

CLASS A – A piece of equipment that has no back-up and can't fail at anytime. Complete replacement or parts to repair immediately must be kept in storeroom or it will cause us to fall out of compliance with EPA or DEQ.

CLASS B – A piece of equipment that can't be out of service for over a 36 hour period. Parts for this equipment must be kept in the storeroom or available on a next day air basis.

CLASS C – A piece of equipment that has back-up available and can be allowed to fail. This equipment should be put back in service within 7-28 days.

CLASS D – A piece of equipment not required for the treatment process or essential for meeting permit.

A-2

Activity Sheet

Maintenance Activity Descriptions

<u>ACTIVITY</u> <u>CODE</u>	<u>ACTIVITY</u> <u>DESCRIPTION</u>
MT2MPM	2 MONTH PM
MT3DOL	3 DROPS OF OIL
	Tasks:
	01 IN EACH PUMP EVERY MONTH
MT3PM1	3 MONTH PM
	Tasks:
	001 OVERHAUL MOTOR
	002 CHANGE OIL
	003 CHECK BELT TENSION & ADJ IF NEC
MT3PMO	3-MONTH P.M.
	Tasks:
	001 CHANGE OIL IN PUMP
	002 GREASE BEARINGS IN MOTOR
MT5YR	5 YR P.M.
	Tasks:
	001 OVERHAUL MOTOR
	002 REPLACE MECHANICAL SEAL
	003 INSPECT IMPELLER & WEAR RING
	Messages:
	001 USE SAFETY HARNESS
	002 USE GAS DETECTOR
	003 USE BOOM TRUCK & 20 FT. LADDER
MT610	6 MONTH P.M.
	Tasks:
	001 CHECK IMPELLER
	002 CHECK WEAR RINGS
	003 CHECK OIL & CHANGE IF NECESSARY
	004 FLUSH JACKET WATER
MT6MO7	6-MONTH P.M.
	Tasks:
	001 PULL PUMP FOR INSPECTION
	002 CHECK IMPELLER & VOLUTE HOUSING
	003 GREASE PUMP & MOTOR
	004 GREASE U-JOINTS
	005 GRS PILLOW BLOCK BEARINGS
	006 CHECK LINE SHAFT
	007 CHECK WEAR RINGS
MT6MPM	6-MONTH P.M.
	Tasks:
	001 PULL PUMP
	002 FLUSH OUT WATER JACKET
	003 CHANGE OIL
	004 CHECK IMPELLERS
	005 CHECK STATOR FOR LEAKS
MT6P10	6-MONTH P.M.
	Tasks:
	001 INSPECT PUMP
	002 CHECK BELT TENSION & CONDITION
	003 CHECK IMPELLER & VOLUTE HOUSING
	004 GREASE PUMP & MOTOR
MT6P11	6-MONTH P.M.
	Tasks:
	001 CHECK CONDITION OF LOBES
	002 CHANGE OIL
	003 CHECK BELT TENSION & ADJUST IF NEC

Maintenance Activity Descriptions

1/4/00

<u>ACTIVITY</u> <u>CODE</u>	<u>ACTIVITY</u> <u>DESCRIPTION</u>
MT6P12	12 MONTH PM
Tasks:	
001	CHECK BEARINGS,SEALS,BELTS & BLADES;CHANGE IF NEC
002	CHANGE OIL & CHECK ELECTRICAL SWITCHES IN ROTARY VALVE
MT6PM	6-MONTH P.M.
Tasks:	
001	CHANGE OIL
002	GREASE MOTOR
003	INSPECTION
004	READ METER
MT6PM1	6-MONTH P.M.
Tasks:	
001	GREASE U-JOINTS
002	GREASE BEARINGS
003	INSPECT IMPELLER
MT6PM2	6-MONTH P.M.
Tasks:	
001	PULL PUMP FOR INSPECTION
002	CHECK IMPELLER & VOLUTE & HOUSING
003	GREASE PUMP & MOTOR
MT6PM3	6-MONTH P.M.
Tasks:	
001	GREASE PUMP & MOTOR
002	PULL PUMP FOR INSPECTION
MT6PM4	6-MONTH P.M.
Tasks:	
001	CHECK IMPELLER
002	CHECK WEAR RING
003	GREASE MOTOR
MT6PM5	6-MONTH P.M.
Tasks:	
001	GREASE U-JOINTS
002	GRS PILLOW BLOCK BEARINGS
003	CHECK LINE SHAFT
MT6PM6	6-MONTH P.M.
Tasks:	
001	PULL PUMP FOR INSPECTION
002	CHECK IMPELLER & VOLUTE HOUSING
003	CHANGE OIL IF NEEDED
MT6PM7	6-MONTH P.M.
Tasks:	
001	PULL PUMP FOR INSPECTION
002	CHECK IMPELLER & VOLUTE HOUSING
003	CHECK CUTTER CLEARANCES & ADJ IF NEC (.020)
004	CHANGE OIL
MT6PM8	6-MONTH P.M.
Tasks:	
001	PULL PUMP FOR INSPECTION
002	CHECK IMPELLER & VOLUTE HOUSING
003	CHECK SHREDDER RING
004	CHANGE OIL(USE 3 QUARTS)
005	TRANSFORMER OIL
MT6PM9	6-MONTH P.M.
Tasks:	
001	PULL PUMP FOR INSPECTION
002	CHECK IMPELLER & VOLUTE HOUSING
003	CHANGE OIL IN MOTOR & SEPARATION CHAMBER
004	WASH DOWN PUMP
005	CHECK CONDITION OF POWER CABLE

Maintenance Activity Descriptions

1/4/00

<u>ACTIVITY CODE</u>	<u>ACTIVITY DESCRIPTION</u>
MTACMO	AIR COMP MONTHLY PM
Tasks:	
001	INSP AIR SYSTEM FOR LEAKS
002	INSP OIL FOR CONTAMINATI
003	CHK BELT TENSION & WEAR
MTADD	ADD EQUIPMENT OR MATERIAL
MTADJ	ADJUST
MTADJP	ADJUST PACKING
MTADO	ADD OIL
MTAPM	ANNUAL P.M.
Tasks:	
001	PULL SUMP PUMP FOR INSP.
002	CHECK SEAL & CHANGE OIL
MTAPM1	ANNUAL P.M.
Tasks:	
001	PULL PUMP FOR INSPECTION
002	CHECK WEAR RINGS, IMPELLER & SLEEVES
003	GREASE MOTOR - FLUSH OLD GREASE OUT
MTAPM2	ANNUAL P.M.
Tasks:	
001	PULL PUMP FOR INSPECTION
002	CHANGE OIL - SAE 30 WT.
MTAPM3	ANNUAL P.M.
Tasks:	
001	CHECK PACKING SLEEVE
MTAPM4	ANNUAL P.M.
Tasks:	
001	PULL SUMP PUMP FOR INSP.
MTAPM5	ANNUAL P.M.
Tasks:	
001	GREASE ELECTRIC MOTOR
002	PULL SUMP PUMP FOR INSP.
003	CHANGE OIL
004	PULL PUMP FOR INSPECTION
005	CHECK FRONT & REAR BALL GEAR
006	CHECK STATOR
MTAPM6	ANNUAL P.M.
Tasks:	
001	GREASE MOTORS
002	PULL PUMPS FOR INSPECTION
003	CHECK IMPELLA FOR WEAR
004	CHK WEAR RING FOR CLEAR.
MTAPM7	ANNUAL P.M.
Tasks:	
001	GREASE MOTOR
MTBEE	EXTERMINATE BEES
MTBLD	BUILD
MTBLED	BLEED AIR OFF LINE
MTBRSH	BRUSH TUBES
MTCALI	CALIBRATE

Maintenance Activity Descriptions

1/4/00

<u>ACTIVITY</u> <u>CODE</u>	<u>ACTIVITY</u> <u>DESCRIPTION</u>
MTCBGM	CHK BELT GREASE MOTR
Tasks:	
01	CHECK BELT TENSION
02	CHECK & GREASE MOTOR
MTCCEL	CHECK CRANE ELECTRIC
Tasks:	
001	CK MOTOR, HOOK, OPERATION
002	ELECTRICAL TRACK & SHOES
003	CHECK BEARINGS FOR GREASE
MTCCG	CHECK & CHANGE GEL
MTCCO	CHECK CHANGE OVER
Tasks:	
01	SWITCH FROM NORMAL TO
02	EMERGENCY & BACK TO
03	NORMAL
MTCGAF	CHANGE AIR FILTER
MTCGOA	CHG OIL & AIR FILTER
MTCGOI	CHANGE OIL & INSPECT
MTCGOL	OIL CHANGE
MTCHEC	CHECK
MTCHG	CHANGE
MTCHGG	CHANGE GREASE
Tasks:	
001	LOWER BEARING
002	MOBILE DELVAC 1210
003	COUPLING MOBILUX #2
004	GEAR REDUCER 30 GALLONS
005	MOBILE GEAR 630
006	CHECK BOLTS LOWER BEARING
MTCHK	CHECK
Tasks:	
001	CHECK OIL & OPERATION
002	CHANGE OIL AS NEEDED
MTCHK1	CHECK
Tasks:	
001	CHECK CABLES
002	CHECK DRUMS
003	CHECK RAKE
004	CHECK HYDRAULIC SYSTEM
MTCHK2	CHECK
Tasks:	
001	CHECK BEARINGS
002	CHECK SEALS
MTCHK3	CHECK
Tasks:	
001	CHECK BEARINGS
002	CHECK SEALS
003	CHECK SCREWS

Maintenance Activity Descriptions

1/4/00

<u>ACTIVITY</u> <u>CODE</u>	<u>ACTIVITY</u> <u>DESCRIPTION</u>
MTCHK4	CHECK OIL
Tasks:	
001	CHECK OIL
002	REMOVE RAGS
MTCHK5	CHECK PUMP OPERATION
Tasks:	
001	CHECK PUMP OPERATION
002	WASH DOWN PUMP & STATION
MTCHK6	CHECK MIXERS
MTCHK7	DAILY VISUAL CHECK
MTCHK8	CHECK & CHANGE GEL
Tasks:	
001	CHANGE LUBRICATING GEL ON TRANSDUCERS
002	CHECK SENSITIVITY ON FLOW
MTCHK9	CHECK
Tasks:	
001	CAPACITOR FUSES
MTCHKA	CHECK CONVEYOR
Tasks:	
001	GREASE BEARINGS
002	CHECK ROLLERS & BELT
MTCHKB	CHECK BURNER
MTCHNG	CHANGE
MTCHRG	CHARGE BATTERY
MTCKBM	CHK BELT-MOTOR OPER.
MTCKBT	CHECK BATTERIES
MTCKCG	CHECK & CHANGE GEL
MTCKEL	CHK EMERGENCY LIGHTS
MTCKFL	CHK FLOW
MTCLFL	CHECK & CLEAN FLOATS
MTCLGN	CLEANING GENERAL
MTCLN	DISMANTLE/CLEAN
MTCLN1	CLEAN SUMP PUMP PIT
MTCLN2	CLEAN CONTACTS
MTCLN3	CLEAN DRAIN LINE
MTCLN4	CLEAN & INSPECT
MTCLN5	CLEAN
Tasks:	
001	DISASEM.& CHK FOR RAGS

Maintenance Activity Descriptions

1/4/00

<u>ACTIVITY</u> <u>CODE</u>	<u>ACTIVITY</u> <u>DESCRIPTION</u>
MTCLNA	CLEAN DUST
Tasks:	
001	CLEAN DUST FROM WINDOWS
MTCLR	CLEAR LINE
MTCLR1	CLEAR SIGHT GLASS
MTCLSE	CLOSE
MTCURD	CURRENT DRAW
MTCUT	CUT
MTDCPS	DRAIN COMP/PURGE SYS
Tasks:	
001	DRAIN COMPRESSOR
002	PURGE SYSTEM
MTDEFR	DEFROST REFRIGERATOR
MTDISC	DISCONNECT
MTDISM	DISASSEMBLE
MTDPA	DRAIN COMPRESSOR
Tasks:	
001	DRAIN COMPRESSOR
002	PURGE SYSTEM
003	ALTERNATE COMPRESSORS
MTDRIL	DRILL
MTDRN	DRAIN CONDENSATE
Tasks:	
001	CHECK THICKNER
002	DRAIN CONDENSATE
MTDRNA	DRAIN AIR TANK
MTDRNI	DRAIN & INSPECT
MTDWLK	DAILY WALK THROUGH
MTEXER	EXERCISE
MTFAB	FABRICATE
MTFILL	FILL IN
MTFL1	FLUSH MIXER
Tasks:	
001	FLUSH MIXER WITH DIESEL
MTFL2	FLUSH & REFILL
Tasks:	
001	FLUSH & REFILL HOT WATER
002	LOOP SYSTEM
MTFLSH	FLUSH GREASE
Tasks:	
001	CHECK BEARINGS
002	CHECK ALIGNMENT
003	FLUSH GREASE

Maintenance Activity Descriptions

1/4/00

<u>ACTIVITY</u> <u>CODE</u>	<u>ACTIVITY</u> <u>DESCRIPTION</u>
MTFORM	FORM
Tasks:	
023	FORM CURB
MTGBM	GRIT BLOWER MONTHLY
Tasks:	
001	CHECK OIL
002	CHECK BELTS
003	GREASE BEARINGS
004	CHECK AIR FILTER
MTGBWK	GRIT BLOWER WEEKLY
Tasks:	
001	LUBRICATE & CHECK
MTGCLC	GRIT CLASSIFIER CHEK
MTGCLK	GRIT CLASSIFIER WKCK
Tasks:	
001	INSPECT AND LUBRICATE
MTGFCB	GREASE & CHECK
Tasks:	
001	GREASE FAN & CHECK BELTS
MTGMFB	GREASE & CHECK
Tasks:	
001	GREASE MOTOR & FAN
002	CHECK BELTS
MTGPB	GREASE
Tasks:	
001	GREASE PUMP BEARINGS
002	GREASE U-JOINTS
003	CHANGE PACKING, IF NECESS
MTGPB1	GREASE UPPER BEARING
MTGPB2	GREASE MOTOR
MTGPB3	GREASE UPPER BEARING
Tasks:	
001	USE MOBILUX #2 - 8 OZ _____
MTHANG	HANG
MTINCT	INVENTORY COUNT
MTINDL	INSTALL DOOR LOCK
MTINRE	INSPECT/RECALIBRATE
MTINS1	INSPECT
Tasks:	
001	INSPECT IMPELLER & VOLUTE
MTINSC	INSPECT & CLEAN
MTINSP	WALKING INSPECTION
MTINST	INSTALL
MTINV	INVENTORY
MTISMS	INSTALL
Tasks:	
001	SPLIT MECHANICAL SEAL

Maintenance Activity Descriptions

1/4/00

<u>ACTIVITY CODE</u>	<u>ACTIVITY DESCRIPTION</u>
MTLIGT	RELIGHT
MTLUB	LUBRICATE
MTLUB1	LUBRICATE
Tasks:	
001	TACONITE SEALS
002	SHOTS - MOBILUX #2
MTLUB2	LUBRICATE
Tasks:	
001	FRONT & REAR BEARINGS
002	USE MOBILUX #2
MTLUDR	LUBRICATE & DRAIN
MTMANG	MANAGEMENT DUTIES
MTMEG	MEGG MOTOR
	RECORD ALL MOTOR READINGS IN COMMENTS BELOW
MTMEG6	6 MONTH P.M.
Tasks:	
001	MEG MOTORS
002	USE HEATGUN TO CHK HEAT
MTMEG7	6 MONTH P.M.
Tasks:	
001	MEG STATOR & FIELDS
002	CHK BUZZ W/HEATGUN FOR
002A	SPOTS
MTMOVE	MOVE FURNITURE OR EQ
MTMOW	GROUNDS UPKEEP
MTMPM1	MONTHLY P.M.
Tasks:	
001	CHECK BELT TENSION
002	CHECK BEARING TEMPERATURE
003	CHECK PULLEY
MTMPM2	MONTHLY P.M.
Tasks:	
001	CHECK BEARING TEMPERATURE
002	CHECK BELT TENSION
003	CHECK GREASE CUP
004	CHECK FLEX COUPLING
MTOFM	OIL FAN MOTOR
MTOH	OVERHAUL
MTOPEN	OPEN
MTPLUG	PLUG
MTPM03	3 MONTH PM

Maintenance Activity Descriptions

1/4/00

<u>ACTIVITY CODE</u>	<u>ACTIVITY DESCRIPTION</u>
MTPM1	MONTHLY P.M.
	Tasks:
	001 CHECK ECCENTRIC BEARINGS
	002 INSPECT ECCENTRIC BEARING LINER
	003 CHANGE OIL
	004 LUBRICATE
	005 INSPECT BALL SEATS; REPLACE IF NECESSARY
	Parts:
	630 MOBIL 630 OIL 1.00 EACH
	Tools:
	SHT STANDARD HAND TOOLS
MTPM11	1 MONTH PM
MTPM2	A/C UNIT P.M.
	Tasks:
	001 CHECK AIR CONDITIONER
	002 REPLACE FILTER AS NEEDED
MTPM3	MONTHLY PM
	Tasks:
	001 GREASE PACKING
	002 RECORD MONTHLY HOUR RUN
	002A METER READING
MTPM4	HVAC EQUIPMENT PM
	Tasks:
	001 INSPECT
	002 CHANGE AIR FILTER AS
	002A NEEDED
MTPM5	1000 HRS CHECK
MTPM6	WEEKLY P.M.
	Tasks:
	001 EXERCISE SUMP PUMP
	002 CLEAN STATION
	003 OIL LOCK AND HINGES
MTPM6D	DISASSEMBLE PUMP
	Tasks:
	1 DISASSEMBLE PUMP
	2 CHK DIAPHRAM & CLACK VALV
MTPM7	WEEKLY P.M.
	Tasks:
	001 EXERCISE PUMP UNDER
	001A GENERATOR POWER
MTPMPD	PUMP DOWN WET WELL
MTPNT	PAINT
MTPNT1	PAINT STRUCTURE
MTPNT2	PAINT PIPING & PUMPS
MTPNT3	PAINT PUMPS
MTPNT4	PAINT CRANE
MTPNT5	PAINT WALLS & DOORS

Maintenance Activity Descriptions

1/4/00

<u>ACTIVITY CODE</u>	<u>ACTIVITY DESCRIPTION</u>
MTPPST	PURGE PRES SW TUBING
MTPULL	PULL
MTPUPT	PICK UP PARTS
MTPURG	PURGE SYSTEM
MTRAT	PUT OUT RAT POISON
MTREAD	READ METER
MTREBL	REBUILD
MTRECO	RECONNECT
MTRELC	RELOCATE
MTREM	REMOVE
MTREPB	REPLACE LIGHT BULB
MTREPF	REPLACE FILTER
MTREPH	REPLACE PUMP HOUSING
MTREPL	REPLACE
MTREPR	REPAIR
MTRETR	REPLACE TRANSFORMER
MTREVR	REVERSE DIRECTION
MTRGDS	READ GAS DETECT SYST
MTRPGB	REPAIR GYPSUM BOARD
MTRPP	REP. PLUNGER/PACKING
MTSAMP	TAKE OIL SAMPLE
MTSAPM	SEMI-ANNUAL P.M.
	Tasks:
001	PULL PUMP
002	INSPECT
003	CHANGE OIL
MTSBLA	SANDBLAST
MTSBUG	SPRAY FOR BUGS
MTSEAL	SEAL
MTSEC	SECURE/ATTACH
MTSER	SERVICE MACHINE

Maintenance Activity Descriptions

1/4/00

<u>ACTIVITY CODE</u>	<u>ACTIVITY DESCRIPTION</u>
MTSERV	SERVICE
MTSP6M	SUMP PUMP 6 MONTH PM
Tasks:	
001	CHECK OIL
002	CHNG.OIL IF CONTAMINATED
003	CHK. IMPELLER FOR WEAR
MTSPOL	OIL SAMPLE
MTSPRY	SPRAY
MTSVC1	SERVICE AIR STARTER
MTSVC2	SERVICE FUEL SHUTVLV
MTTEST	TEST
MTTRAN	TRANSPORT
MTTRIM	TRIM BUSHES/HEDGES
MTTS	TROUBLE SHOOT
MTUGEL	UPGRADE ELECTRICAL
MTUPKP	UPKEEP
MTVAC	CLEAN WITH VACTOR
MTWASH	CLEAN STATION
MTWASV	WASH VEHICLES
MTWAX	WASH & WAX
MTWELD	WELD
MTWPIT	CLEAN SUMP PUMP PIT
MTWPUM	WASH-PUMP

A-3

Blank Work Order

LITTLE ROCK WASTEWATER UTILITY

PLANT MAINTENANCE SYSTEM JOB ORDER

EQUIPMENT UNIT IDENTIFICATION NUMBER

[][][]

FACILITY CODE EQUIP TYPE QUALIFIER

INITIATED DATE: / /

TIME: / AM PM

INITIATED BY EMP #: _____
NAME: _____

EQUIPMENT DESCRIPTION:

LOCATION: AFTP ___ FCTP ___ DOWNTOWN ___

PUMP STATION ___ CLEARWATER ___

FROM	TO	SECTION	SUPERVISOR
		OPERATIONS	SUPERVISOR AUTHORIZED:
		EQUIPMENT MAINTENANCE	WORK ORDER # 17037
		BUILDINGS & GROUNDS	PRIORITY: 5 4 3 2 1
		PUMPS & CONTROLS	MAINTENANCE TYPE: ___ SCHEDULED ___ UNSCHEDULED
		ENGINEERING	SPECIAL TOOLS:
		FINANCE & ADMINISTRATION	
		COLLECTIONS SYSTEM	

PROBLEM:	SMOKES	PLUGGED	FAILS TO START	ALARM TRIPPED
NOISY	VIBRATION	RUNS HOT	PRESSURE TOO HIGH	LIGHTS BURNED OUT
LEAKING	JAMMED	TRIPPED OFF	BELTS BURNED OFF	OTHER

COMMENTS:

COMPLETED DATE: / /	COMPLETED BY #:	SIGNATURE:
-------------------------------	------------------------	-------------------

CHECK	REPAIR	LUBRICATE	REPLACE	REMOVE	ADJ PACKING	BUILD	INSTALL
-------	--------	-----------	---------	--------	-------------	-------	---------

COMMENTS IN DETAIL:

CRAFT	HOURS	PARTS	COST EA.	QUANTITY	PARTS	COST EA.	QUANTITY
			\$			\$	

A-4

Hansen Work Order

Report Date 01/05/2000 10:07 AM

Submitted By

Work Order # 101006 Activity MTCHEC CHECK

Equipment ID AMPD322 Description TELEMETRY COMPUTER

Site FAC AMP Description MAIN PUMP STATION

Subunit Of
 Area
 District Sub-area
 Loc Qualifier Loc

Equipment Type D322 RADIO TELEM. SYSTEM Manufacturer
 Building Building Level
 Service Status Expected Life 0
 Avg Monthly Usage 0.00 Total Usage 0.00
 Model # Warranty Expires MTBF 0
 Serial # Purchase Date Purchase Cost 0.00
 Budget #

Initiated By 0800 WILLIAM HALL Initiated Date 04/16/1997 Scheduled
 Assigned To Service # Due

Authorization 0800 BILL HALL
 Budget #
 Crew
 Maint Type PRO PROACTIVE MAINTENANCE
 Priority 3 AHEAD OF ROUTINE
 Problem
 Project
 Source
 Last Activity MTCHEC CHECK
 Out of Service
 Potential Service Request
 Last Activity Completed 09/19/1997

Work Order Comments
 CHECK STATION STATUS ON COMPUTER.

Extra Item				
Charge Date	Time	Extra Item	Quantity	Rate

Labor		Choose Crew Type, Crew ID or Job Class					
Charge Date	Time	Crew Type	Crew ID	Job Class	Employee ID	Pay Type	Hours Worked

Comments

A-5

Safety Account Sheet

**ITEMS TO BE CHARGED
TO SAFETY ACCOUNT
406-4003-002-011-00**

Part Number	Description
120005	Flagging, Roll Safety
120006	Fire Extinguisher
120007	Flagging, Pennant Safety
120011	Glasses, Safety Tinted
120020	Goggles, Safety
120021	Hat, Hard
120022	Harness, Safety
120025	Kit, First Aid, Vehicle
120031	Muff, Ear Industrial
120033	Plugs, Ear Small Disposable
120048	Flags, Traffic
120077	Vest, Safety
120082	Case, Safety Glasses
120083	Cleanser, Poison Oak-N-Ivy
120084	Faceshield Windows For Hard-hats
120086	Ear Muff Kit
120091	Lens, Repl. Safety Tinted
120093	Lotion, Sun Screen
120096	Suspension Web, Hard Hat
120098	Pack, Emergency Spill
120101	Skin Wipes, Antimicrodial
120103	Cleaner, Lens
120104	Vest, P-Hydro
120105	Bandanna, P-Hydro
120106	Drkg. Water Only Sign
120107	Non-Pot Water Sign
120127	Safety Glasses, Clear Lens
120128	Replacement, Lens Clear
170252	Cones, Traffic 28In.
180038	Wasp Spray
180056	Insect Repellent

A-6

Blue Sheet

A-7

One Call Sheet

ONE CALL INFORMATION SHEET

WORK ORDER NUMBER #

LOCATION

ADDRESS:

MANHOLE NUMBERS _____ **TO** _____

LOCATION OF WORKSITE

ALLEY: _____

STREET AREA: _____

YARD:[FRONT] _____

[REAR] _____

[check if complete] MARKED WITH WHITE PAINT.

STREET CUT PERMIT CALLED INTO DISPATCH

CALLED IN AS EMERGENCY

CALLED IN ON THREE DAY LOCATE

TIME CALLED IN _____ **AM or PM**

circle one.

DATE CALLED IN _____ / _____ / 99

EXPIRES [28 DAYS] _____ / _____ / 99

REFERENCE NUMBER # _____

Turn into Dispatch after each locate is called in by Radio.

A-8

Progression Chart

MAINTENANCE PROGRESSION UPDATE

PRI	IWO #	DESCRIPTION	PROPOSED												DATE REC'D	CONST COMP		
			JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC				
5	5-9003	BOND PROJECT MABLEVALE PIKE & GEYER SPRINGS CREW: T. KNITTIG (HOLD)														2/21/90	4/5/95	
5	5-9804	OHIO CBDG RELOCATION CREW: SCHAFFER														11/29/98	12/2/98	02/19/99
5	5-9805	HINKSON RD. CBDG CREW: J. SCHAFFER REOPEN 4/21/99														11/29/98	12/4/98	
5	6-9502	POLICE ACADEMY PS															9/30/98	03/31/99
5	5-9501	CREW. R. INGRAM [OUR PART COMPLETE. 02/17/99] EVERGREEN-UNIVERSITY TO FLORIDA PHASE II														3/27/96	1/13/97	
5	5-0015	FAIRPARK CBDG. CREW. T. KNITTIG														6/25/97	1/6/99	02/19/99
5	5-9604	ROOSEVELT OVERPASS CREW: T. KNITTIG															06/21/98	
5	4-9920	2720 S HARRISON MACKAY / CARPENTER																
5	4-9802	1998 SEWER REHAB CONTRACT NO PLANS														IN HOUSE	NO PLANS	6/02/99
5																		
4	4-9502	410 BATTERY ST. CREW. T. KNITTIG W. Monts grout fill														6/21/95	8/9/95	
4	4-9715	2900 SOUTH MONROE CREW: ROOSEVELT INGRAM														3/20/98	7/15/98	03/31/98
4	4-9810	408 OAK LANE - PHASE II CREW: ROOSEVELT INGRAM														7/18/98	7/22/98	5/17/99
4	4-9814	2301 SOUTH TYLER CREW: R. INGRAM														8/27/98	9/3/98	03/10/99
4	4-9817	35TH AND POLK ST. CREW: T. KNITTIG														8/27/98	11/6/98	03/04/99
4	4-9818	I AND MIDLAND STS.														11/9/98	11/9/98	
4	3-9603	PLEASANT FOREST PS CREW. T. KNITTIG															9/30/98	1/12/99
4	4-9708	30TH & TAYLOR CREW: J. SCHAFFER															10/7/97	
4	4-9706	30TH & CONFEDERATE BLVD.														1/26/99	2/12/99	5/19/99
4	4-9815	HALL HIGH REHAB MH REPLACEMENT OF 4005 CREW: MACKAY															02/08/99	02/16/99
4	4-9902	6909 JUNIPER RD CREW: TIM KNITTIG														2/23/99	2/23/99	5/14/99
4	3-9902	McALMONT COMMUNITY LINE TAD PRICE/ JIM MACKAY														IN HOUSE	NO PLANS	
4	4-9911	2216 ARTHUR DR.														4/08/99	4/16/99	5/14/99
4	4-9910	#603 EAST 23RD ST. CREW: ROOSEVELT INGRAM														4/28/99	5/3/99	

A-9

Overflow Report Sheet

CITY OF LITTLE ROCK, ARKANSAS
SANITARY SEWER OVERFLOW OR BYPASS REPORT

___ Adams Field WWTP NPDES No. AR0021806 ___ Fourche Creek WWTP NPDES No. AR0040177

OVERFLOW DATE _____ LOCATION _____
TIME REPORTED _____ DATE REPORTED _____
TIME CREW ARRIVED _____ DATE CREW ARRIVED _____
TIME WORK COMPLETED _____ DATE WORK COMPLETED _____

DESCRIPTION OF PROBLEM: BLOCKAGE, LINE BREAK, OVERFLOW OR BYPASS (CHECK ONLY ONE).

___ LINE BLOCKAGE ___ LINE BREAK ___ PUMP STATION BYPASS ___ OTHER
___ MANHOLE OVERFLOW (RAINFALL) ___ WWTP BYPASS ___ PRIVATE LINE

EXPLAIN ONLY ONE:

EXPLAIN WHAT THE BLOCKAGE MATERIAL WAS: _____
EXPLAIN WHAT CAUSED MANHOLE OVERFLOW: _____
EXPLAIN WHAT CAUSED LINE BREAK: _____
EXPLAIN WHAT CAUSED P.S. OR WWTP BYPASS: _____

DESCRIPTION OF REPAIR (Include if it was hand rodded, hydra cleaned, etc.):

EXPLAIN STEPS OR REPAIR ACTION TAKEN TO CORRECT, REDUCE, ELIMINATE, AND/OR PREVENT RECURRENCE OF
BLOCKAGE, LINE BREAK, OVERFLOW OR BYPASS: _____

WHERE DID OVERFLOW GO? (CHECK ONLY ONE.) ___ YARD ___ DITCH ___ STREAM
___ STORM SEWER ___ BUILDING ___ OTHER

EXPLAIN OVERFLOW: _____

LENGTH OF TIME OF OVERFLOW: _____ AMOUNT OF OVERFLOW: _____

* IF LENGTH OF TIME OR AMOUNT OF OVERFLOW ISN'T KNOWN, WRITE "UNKNOWN" IN BLANKS.

WAS THERE ANY EVIDENCE OF A FISH KILL OR OTHER HARM TO THE RECEIVING WATERCOURSE? ___ Yes ___ No

EMPLOYEE'S SIGNATURE REPORTING PROBLEM: _____ DATE: _____

REPORTING SUPERINTENDENT'S SIGNATURE: Lynn A Hyke DATE RECEIVED: _____

NOTIFICATION PROCESS

NOTIFY BY TELEPHONE/FAX:
LORRAINE SPANN, ADEQ 501-682-0633

TIME REPORTED: _____ DATE REPORTED: _____

DATE MAILED: _____

MAIL A COPY OF THE REPORT WITHIN FIVE DAYS TO:
ARKANSAS DEPT. OF ENVIRONMENTAL QUALITY
ATTN: LORRAINE SPANN
P. O. BOX 8913
LITTLE ROCK, AR 72219-8913

A-10

Vehicle Monthly Inspection Card



**LITTLE ROCK WATER UTILITIES
OPERATOR'S INSPECTION GUIDE AND TROUBLE REPORT
(GENERAL PURPOSE VEHICLES)**

VEHICLE TYPE		REGISTRATION NUMBER	
USING ORGANIZATION	LOCATION	PHONE NUMBER	
NAME OF VEHICLE CONTROL OFFICER		GRADE	PHONE NUMBER
<p>ITEMS TO BE CHECKED WEEKLY INSPECTIONS CAN BE DONE MORE FREQUENTLY AS DIRECTED BY LAWU (Operator's signature required on reverse)</p>			
1. CLEAN VEHICLE (exterior and interior)			
2. DAMAGE (exterior and interior, missing parts)			
3. TIRES (visually check for damage/abnormalities)			
4. LEAKS (visually check fuel/oil/coolant)			
5. ENGINE OIL AND COOLANT (visually check fluid levels) ¹			
6. BATTERY (visually check fluid level/hold-down secure/cleanliness)			
7. DRIVE BELTS (visually check for fraying or cracking)			
8. LIGHTS (visually check all for proper operation)			
9. SAFETY DEVICES (seatbelts/harness, headrests, warning lights, etc.)			
10. INSTRUMENTS/HORN/WINDSHIELD WIPERS (functionally check for operation)			
11. BRAKES/STEERING (functionally check-responsive/effective/smooth)			
12. UNUSUAL OCCURRENCES (noise/vibration/odor/erratic instruments/etc.)			
13. FIRST AID KIT (proper supplies)			
14. FIRE EXTINGUISHER (monthly check)			
15. TOOLS AND LOAD STORED ORDERLY.			
¹ Check engine oil following each refueling.			

ITEMS TO BE CHECKED (continued)

16. OTHER (specify)			
17. OTHER (specify)			
18. OTHER (specify)			
19. OTHER (specify)			
OPERATOR'S SIGNATURE SIGNIFIES ACCOMPLISHMENT OF CHECKS			
DAY	DAY	DAY	DAY
1	11	21	
2	12	22	
3	13	23	
4	14	24	
5	15	25	
6	16	26	
7	17	27	
8	18	28	
9	19	29	
10	20	30	
		31	
MONTHLY TIRE PRESSURE CHECK			
TIRE PRESSURE GAUGED (COLD) AND ADJUSTED TO:			
FRONT	LBS	REAR	LBS
OPERATOR'S SIGNATURE			
DATE PERFORMED			

A-11

Lockout/Tagout Procedures

LOCKOUT / TAGOUT PROCEDURES

PURPOSE:

To ensure that all energy sources are safely disabled so that no electrical discharge or accidental startup is possible while performing maintenance, or while machinery is damaged.

DESCRIPTION:

Lockout device - A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the startup of a machine or equipment.

Tagout device - A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

GENERAL REQUIREMENTS:

When disabling electrical devices that have fixed electrical connections, or machines using other fixed energy sources, the proper lockout / tagout procedure must be followed:

SURVEY:

Before any type of long term lockout/tagout procedure is performed, a survey of all machinery to be disabled must be performed to identify all isolating devices that apply to the equipment to be locked or tagged out. The results of this survey will be recorded on the LRWU Equipment Lockout/Tagout Log.

NOTIFICATION:

All effected employees should be notified that a lockout/tagout procedure is going to be used in their working environment. All other employees who have access to the area should be briefed on the machine(s), and the types of hazards that are being locked out or tagged out.

OPERATIONS RESPONSIBILITIES:

Operations employees should tagout faulty equipment and write a work order. Each work order will be updated by the maintenance secretary to indicate either LO for Lockout and/or TO for Tagout in the comment

section. Operations employees can use the lockout procedures only for long term shutdown of equipment, and only under the direction of the Plant Superintendent.

PROCEDURE:

A lockout device should be used, such as a combination or padlock, that will isolate the power sources, and provide protection against electrical shock or accidental startup of any type of machinery. Lockout devices must be designed to be strong enough to withstand removal without excessive force or the use of bolt cutters. If a padlock is being used, the keys should be kept in the possession of the authorized employee(s) performing the work.

If more than one individual is required to lockout or tagout equipment, then each should install their own assigned lockout or tagout device. If the energy isolating device cannot accept multiple locks or tags, then a multiple lockout or tagout device (hasp) may be used.

If for any reason a device cannot be locked out, a tagout procedure should still be used in order to notify any person that the machine is being serviced or not in a running condition. The tagout device should be placed at or as close to where a lockout device would be used.

Tagout devices must be durable enough to withstand all environmental conditions that they will be exposed to for a maximum amount of time that exposure is expected. Tagout devices should be secured by a nylon self-locking tie that can withstand 50 pounds of pull, and will require cutting to remove.

When lockout devices are to be removed, they must be removed by the authorized employee that installed them. If the original employee is unable to be present at the time necessary for removal, then the device may be removed only under the direction of the immediate LRWU supervisor or other authorized personnel. The original authorized employee must be informed by the immediate supervisor that his lockout/tagout device has been removed before he returns to the work site.

Before the lockout/tagout device is removed, maintenance employees should make certain that all tools and non-essential items must be cleared away from the work area, and the machine must be checked to ensure that all components are operationally intact. Maintenance must then notify Operations that the repairs are complete. The immediate supervisor will be responsible for ensuring that all of the proper lockout/tagout procedures have been performed correctly.

EXEMPTIONS TO LOG:

If Lockout/tagout procedures performed by maintenance employees are done on a routine basis, such as minor tool adjustments or repairs that will only

take a short period of time, a log of the action is not necessary. If maintenance of equipment can be performed in one work shift without running over into another shift, a log of the action is not necessary.

INSPECTION:

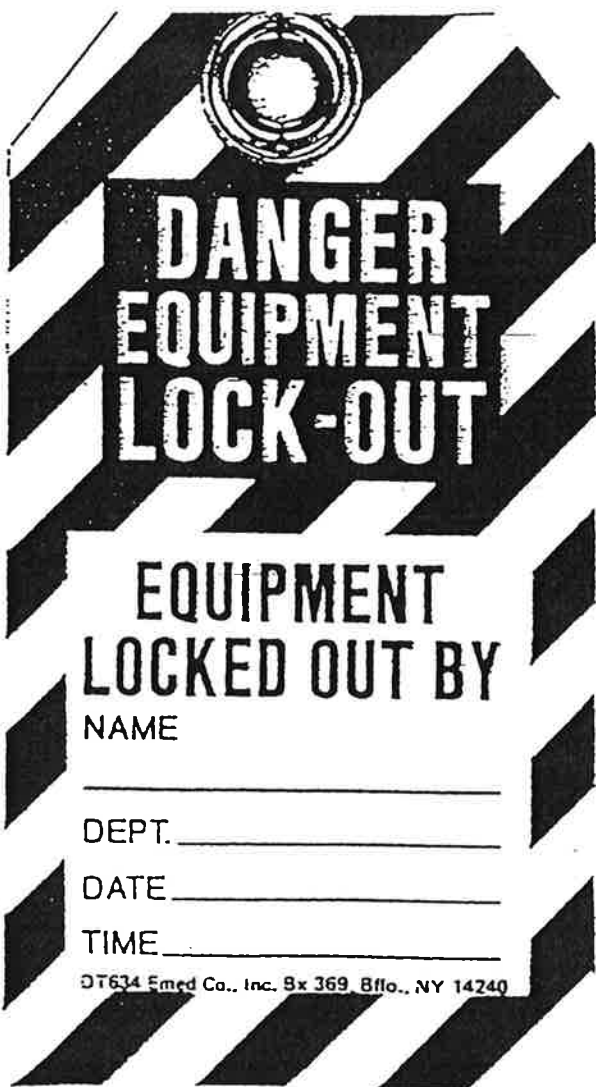
Little Rock Wastewater will conduct a periodic inspection at least annually to ensure that the proper lockout / tagout procedures are being followed. The inspection will be performed by an authorized employee other than the person using the lockout / tagout procedure. Any inconsistencies with this policy will be pointed out at the scene and corrected as soon as possible.

The periodic inspection will also include a review, between the inspector and the authorized person performing the lockout, of that person's responsibilities under the energy control procedure being inspected.

LRWU will certify that the above mentioned periodic inspections have been performed and have met the requirements listed above. The certification should include the identity of the machine that is using the lockout / tagout procedure, the date of inspection, the authorized person using the procedure, and the name of the qualified inspector.

Tagout Identification

This Lockout/Tagout Identification should be used whenever a Lockout/Tagout procedure is to be performed. All information should be correctly written in the spaces provided on the tag.



(Front and rear view of tag)

Little Rock Wastewater Utility

Collection System Management Plan (CSMP)

Table of Contents

Letter of Transmittal

<u>Volume</u>	<u>Tab</u>	<u>Description</u>
1	A	Major Goals of CSMP
	B	Personnel Responsible for Implementing CSMP
2		Legal Authority of LRWU:
	A	Control of Private Inflow Sources
	B	Design/ Construction of Sewers & Connections
	C	Installation, Testing, & Inspection of New & Rehabilitated Sewers
	D	Address Flows from Satellite Municipal Collection Systems
	E	Implementation of Prohibitions of National Pretreatment Program
3		Lift Station Maintenance Division General Procedures
4		Collection System Maintenance Division General Procedures <i>The following are included within Volume 4:</i>
		<ul style="list-style-type: none"> • Maintenance Procedures to Prioritize Collection System Activities • Collection System Preventive Maintenance • Identification, Prioritization, Rehabilitation of Structural Deficiencies • Equipment and Replacement Inventories • Sanitary Sewer Overflow Response Plan
5	A	Geographic Information System (GIS)
	B	Computerized Maintenance Management System
	C	Collection System Employee Training
6		Standard Specifications for Installation and Testing of New Collection System Facilities (Draft)
7		Trap Control Program
8		Typical Specifications for Rehabilitation of Collection System Facilities
9		System Evaluation and Capacity Assurance Plan <i>The following is included within Volume 9:</i>
		<ul style="list-style-type: none"> • Current Capacity of Collection System and Treatment Facilities

Little Rock Wastewater Utility

Volume 4

**Collection System Maintenance Division General
Procedures**

for

Collection System Management Plan (CSMP)

Contents

Attachments:

<i>Safety Account Sheet</i>	A-1
<i>Emergency Call follow-up TVI</i>	A-2
<i>Daily Crew accounts work sheet</i>	A-3
<i>Blank workorder request form</i>	A-3a
<i>Copy of a Hansen workorder</i>	A-4
<i>Stockroom request form</i>	A-5
<i>Flood report sheet</i>	A-6
<i>Overflow report sheet</i>	A-7
<i>Reimbursement Policy</i>	A-8
<i>Service area map</i>	A-9
<i>All cleaning crews service areas</i>	A-10
<i>Service line authorization form</i>	A-11
<i>Capital Projects progression chart</i>	A-12
<i>Notification flier</i>	A-13
<i>Notification flier</i>	A-14
<i>Service line procedures from Engineering</i>	A-15
<i>Vehicle monthly inspection card</i>	A-16
<i>Hansen activity code list</i>	A-17
<i>Courtesy notice(grease problem found by TV)</i>	A-18
<i>Community Service Line Policy</i>	A-19
<i>Utility Damage Report</i>	A-20
<i>One call codes for (Log section of W/O)</i>	A-21
<i>Public Works policy statement</i>	A-22
<i>Standard property agreement</i>	A-23

General Procedures section:

Weather protocol.....Appendix I
Safety Protocol.....Page 1
Dispatcher/Emergency crew.....Page 2
Emergency repairs.....Page 2
After hours emergencies..... Page 2
Cleaning Procedures.....Page 3
PM schedules.....Page 4
Unscheduled work.....Page 5
Paper forms.....Page 5
External Departments.....Page 5
Preparing & Completing workorders.....Page 6
Part 1:Workorder number.....Page 6
Part 2:Activity.....Page 6
Part 3:Equipment, Extra item & Labor sections.....Page 7
Part 4:Material & Vehicle section.....Page 8
Part 5:Priority.....Pages 8, 9, 10
Service, Private, Community lines.....Pages 10 & 11
Capital projects.....Pages 11 & 12
O&M work.....Page 12
Stockroom items not charged to workorders.....Page 12
O&M job costings.....Page 13
Asset attributes.....Page 14
Asset requirements.....Page 14
TV inspections.....Page 14
Monthly reports.....Page15

Emergency call procedures section:

General guidelines for emergency calls.....page 16
Emergency activity codes.....pages 16 & 17

Dispatch procedure section:

Dispatch guidelines.....page 18
Priority ratings.....pages 18 & 19
Work distribution.....page 19
Dispatcher.....page 19
Emergency /field crew.....page 20
Receiving customer calls.....pages20 & 21
Customer log information / complaint.....pages 21 & 22
Utility calls internal / external.....pages 22 & 23
Request for line locates.....pages, 24& 25
Street cuts.....page 26
Follow-up Tv investigations.....page 27

Cleaning procedure section :

Work orders.....pages 28 & 29
Work areas Hydro & Hand cleaning.....page 29
Cleaning crew operations.....page 30
Activity codes for Hydro & Hand cleaning.....pages 31 & 32

Capital projects procedure section :

Engineering Department.....Page 33
Construction & repairs department.....page 33
Cleaning / Inspection.....page 34
Existing / In –House.....page 34
Scheduling of projects.....page 35
Construction Phase.....pages 35 & 36
Completion Phase.....pages 37

Clearing of Right of ways,(walking & cutting):

Process for ROW PM's.....page 38 & 39
Preparing workorders.....page 39
Scheduling Phase.....page 40
Completion Phase.....page 40

Engineering Study Procedures :

Engineering Department.....page 41
Construction / Repairs.....page 41
Cleaning / Inspection.....page 42
Existing In-House procedures.....page 42
Preparing workorders.....page 42
Ranking Phase.....page 43
Completion Phase.....page 43
Scheduled Projects.....page 44

Line Repair procedures :

Engineering Department.....page 45
Construction / Repairs.....page 45
Cleaning / Inspection.....page 46
Existing repair procedure.....pages 46 – 50

Manhole Repair & Rehabilitate Procedures :

Existing Rehabilitation Program.....part 1 of Section
Engineering Department.....page 51
Cleaning / Inspection.....page 51
Existing manhole program.....page 51
Existing Rehabilitation.....page 52
Future Rehabilitation.....page 52
Existing Types of Manhole rehabilitation.....page 53

Manhole Rehabilitation Proposed Program.....part 2 of section

Application Process (classify manholes).....pages 54 & 55

Rehab methods of for A, B, & C class manholes.....pages 54 & 55

Investigation of Existing Rehabilitation (MS-2).....pages 55 & 56

Investigations concerning (Quadex).....page 57

Preformed Fiberglass Inserts.....page 58

Rubber Adjustment Rings.....page 58

Cleaning / Inspection Ports.....pages 58 & 59

Manhole Work Procedures.....part 3 of section

Replace Lid.....page 60

Bolt down Lid.....page 60

Frame & Cover work.....pages 60 - - 62

Rehab preparation.....pages 63 – 68

Replace structure.....pages 68 – 78

Service Line Repairs :

Engineering Department.....page 79

Construction / Repairs.....page 79

Cleaning / Inspection.....pages 79 & 80

Existing Procedures.....pages 80 & 81

Scheduling Repairs / Completion.....pages 81- 83

Service Line Replacements :

Engineering Department.....page 84

Construction / Repairs.....page 84

Cleaning / Inspection.....pages 84 & 85

Existing Replacement Procedures.....pages 85 & 86

Engineering Replacement procedures.....(A-15)page 85

Scheduling Replacements / Completion.....pages 86- 88

Sewer Service Line Seals Procedures :

Engineering Department.....page 89
Construction / Repairs.....page 89
Cleaning / Inspection.....page 89
Existing Service Line Procedure.....pages 89 & 90
Scheduling Service Line Seals / Completion.....pages 90 & 91

Storeroom Procedures :

General Guidelines.....page 92
Ordering / Receiving Merchandise.....pages 93-95
Request for Stock from Crews.....pages 92 & 93
Entering / Issuing into IMS.....page 96
Check-out Sheets.....pages 96 & 97
Setting Up Concrete for Crews.....page 98
Inventory of Warehouse.....pages 98

Sanitary Sewer Overflow Response Plan:

Authority & General guidelines.....pages 100 & 102
Overflow Response procedure.....pages 102 & 103
Overflow report form.....page 103a
Overflow tracking protocol.....page 104
Dispatching crew, damages, & inspections.....pages 105 & 106
Overflow correction, containment, & clean-up.....pages 106-109
Overflow report, how to, SSO volume & flow rate.....page 109
Public & Media notification.....pages 110-118
Capacity related manhole list.....pages 118-120
SSO Action plan.....pages 121-125
Signage for overflows.....page 126

TV Procedures :

General Guidelines.....pages 127 & 129
Workorders.....page 129
Activity Codes.....pages 128 & 129
Tape Distribution.....page 129
Workorder Priorities.....pages 130 & 131
Operators Procedures.....pages 131 & 132
Final Inspections.....pages 132 & 133
Defect Codes.....page 133
Keyboard Layout Sheet.....page 133a

Utility & Barricade Crew Procedures

General Guidelines.....pages 134 & 135

Equipment and Vehicle Procedures :

General Guidelines.....page 136

Goals, Graphs, and Tracking :

Introduction Sheet.....G-1
Emergency Calls Monthly Graph.....G-2
Emergency Calls Year to Date.....G-3
Hand Cleaning Monthly Graph.....G-4
Hand Cleaning Year to Date.....G-5
Hydro Cleaning Monthly Graph.....G-6
Hydro Cleaning Year to Date.....G-7
Capital Iwo Bar Chart : CAPTK.....G-8
Capital Iwo Bar Chart : CAPJS.....G-9
Capital Iwo Bar Chart : CAPRI.....G-10
Right of Way Annual Graph.....G-11
Line Repair Annual Graph.....G-12

Manhole Adjustment Annual Graph.....G-13
Manhole Rehab Annual Graph.....G-14
Manhole Repair Annual Graph.....G-15
Service Line Repair Annual Graph.....G-16
Service Line Replacement Annual Graph.....G-17
Service Line Seal Annual Graph.....G-18
Tv Monthly Graph.....G-19
TV Year to DateG-20
GLLM Locates Annual Graph.....G21
Walking Lines Monthly Graph.....G-22
Walking Lines Year to Date.....G-23
Monthly Goal report.....G-24

CHANGES TO PROCEDURES

1. *CHANGES TO CREW DAILYS.....AUGUST 31ST 1999*
2. *CHANGES TO IWO SCHEDULE.....SEPTEMBER 1 1999*
3. *CHANGES TO CONTENTS.....SEPTEMBER 8 1999*
4. *CHANGES TO TV.....SEPTEMBER 8 1999*
5. *CHANGES TO ATTACHMENTS...ADD NEW DAMAGE REPORT JULY 17th 2000*
- 5a. *ALSO ADD ONE CALL CODES.....JULY 17th 2000*
- 5b. *ALSO ADD PUBLIC WORKS POLICY ON PROJECTS.....JULY 17th 2000*
6. *CHANGES TO COMMUNITY SERVICE LINE IN GENERAL PRO. JULY 17th 2000*
7. *CHANGES TO CAPITAL PROJECTS..... JULY 17th 2000*
8. *CHANGES TO HOME BUILDING FLOODS.....JULY17th 2000*
9. *CHANGES TO ONE CALL PROCEDURE.....JULY 17th 2000*
10. *ADD UTILITY DAMAGE REPORT.....JULY 17th 2000*
11. *CHANGES TO MANHOLE ADJUSTMENT.....JULY 17th 2000*
12. *CHANGES TO MAINLINE REPAIR, SERVICE LINE REPAIR, SERVICE LINE REPLACEMENT, & SERVICE SEALS.....JULY 17th 2000.*
13. *Use log tab on Work order for one calls, utility damage reports, & street cuts----- 1/1/2001*
14. *Add utility Barricade procedures-----February 12th 2001*
15. *Add Inclement Weather policy to the procedures-----April 4^h 2001*
16. *Add take pictures to all construction parts and also dispatch-----June 27th 2001*
17. *Update overflow policy and activity codes.-----June 27th 2001*
18. *Changes to manhole repair new coating from strong(fibergl.)-----June 27th 2001*
19. *Change (SO) code to SOD & SOW overflow dry or wet-----July 10th 2001*
20. *Change pages 29,41,65,69,70,78,79,83 and adopt SSO plan to book-----Sept. 27th 2002*
21. *changes to temporary cuts in alleyway and streets must have asphalt cove-----Oct. 14th2002*
22. *change to ROW procedures about the width of ROW's and opening lids for investigation-----Oct. 14th 2002*
23. *change SOD & SOW to SOC & SONC & from problem code to activity code April 22nd 2003*
24. *Change test installation sheet in manhole section added stonglite adjustment rings 03/17/04*
25. *change to vehicle section remove SKE and install our group to manual-----03/17/04*
26. *change to utility section add that their section take care of line locates-----08/20/04*

COLLECTION SYSTEM PROCEDURES GENERAL PROCESS REQUIREMENTS

• SAFETY PROTOCOL

A. With the institution of the safety program all utility personnel are expected to follow and adhere to the rules set forth by the Environmental Health & Safety Division of the utility as explained in the safety manual guidelines.

B. Within IMS a standing Labor Type of T&D exists for the purpose of tracking the training hours of utility personnel.

C. All safety items have been set up under an account (*see attached, A-1*) have been grouped together in one location in the storeroom so ordering and tracking of these items can be maintained at a high priority. Also medical kit supplies are also readily available and maintained at this same level.

• WORK ORDERS

A. All work performed must be accompanied by a work order.

B. Maintenance Coordinator will prepare workorders from:

1. Customers request, either from personal contact or received through Dispatch.
2. Service request
3. Emergency (**priority-5**) workorders located by field crews during the work day, which will be called into the dispatcher or by directly notifying the Maintenance Coordinator

•DISPATCHER/EMERGENCY CREW

A. Upon receiving calls, which are determined to be sewer related, the dispatcher will enter the call into the **IMS CALLER LOG**, dispatch said complaint to the emergency crew.

B. The emergency crew immediately after completing the investigation will report back to the dispatcher his findings. Any **priority-5** situations, the Crew will notify the Maintenance Coordinator or Area Foreman, an appropriate workorder for repairs and or cleaning and televising will be created. Crews will be dispatched to the problem area ASAP [**within the hour**]

•Repair procedures will be as follows:

The emergency repair **priority-5** workorders will be dispatched to the Maintenance Coordinator, Area Foreman or Supervisor in charge of repair crews, who will then dispatch appropriate crew to location at which time the crew will be given required information along with the workorder number.

•AFTER HOURS

A. Cleaning, TV, or repairs, which the emergency crew locates after normal working hours that are **priority-5** and can not wait, will be handled with the following procedures:

B. The Emergency crew will contact a Maintenance Coordinator and or Supervisor who will select personnel to perform the work and send them to the site where the emergency crew should have workorder prepared with the proper information for the repair. The Maintenance Coordinator will take the prepared workorder information and enter it in **IMS**, which will issue the assigned workorder number.

C. **Priority-5** repairs, Cleaning or Inspection, which can wait until normal working hours, will be handled with the following procedures:

The emergency crew will contact a Maintenance Coordinator and or Supervisor by phone before scheduled work time. Provide them with the information necessary to prepare a workorder, which the Maintenance Coordinator and or Supervisor will prepare and enter into **IMS**, assign it to the appropriate crew so repairs can be accomplished without delays.

•Cleaning procedures will be as follows:

A. The Maintenance Coordinator will determine which crew is assigned to the particular area. That crew (**if possible**) will be dispatched and given all workorder information. If cleaning crew determines the line needs to be televised they will communicate back to the Maintenance Coordinator for appropriate **TV** workorder to be generated. Dispatcher will then contact the appropriate **TV** crew to be dispatched to that particular area.

B. All **priority-4** or lower workorders will be made out by the emergency crew and generated by their assigned Maintenance Coordinator.

C. All after hours workorders will be made by Emergency crew on paper request form. **Priority-5** communicated to the cleaning Maintenance Coordinator or Supervisor prior to starting time the following day for scheduling **Priority-4** or less to be turned in with following day's paperwork.

D. All emergency calls in which the main line is stopped up will be properly cleaned within three (**3**) working days with a follow-up **TV workorder** to be completed within two (**2**) additional working days. (*see attached A-2*)

E. All main line stoppages will be put on a PM cleaning schedule. Cleaning type to be determined by the emergency crews findings.

Dispatcher will also be required to verify employee's time on a daily basis. In addition they will be responsible for entry of Holiday, Leave and Training &

Development Time on time sheets for each employee in the Maintenance Department.

F. Coordinators will prepare all workorders, which will consist of those, located by field crews with **priority of 4 or less**. The field crews will prepare a paper workorder form, which will be turned in each day for these type workorders to be prepared. Secretary and Data Entry Clerk will be responsible for entries of time accounting sheets, materials, equipment and vehicles on all workorders.

.PM SCHEDULES

A. **PM schedules** will primarily be used in the **Sewer Module for Right of Way clearing, Hydro cleaning, Hand cleaning and Root Control Application**.

As stated in the Dispatcher/Emergency Section cleaning **PM's** will be set at monthly intervals determined by the emergency crew and changed at the discretion of **follow-up TV work** based on their findings. **PM adjustments or additions** should be conveyed to Dispatcher / Project Planner in order to be maintained in the database. Subbasin maps are available to us through GIS, hydro cleaning **PM's** are grouped by Subbasin Drainage Areas. Each hydro crew will be assigned a specific area or areas. **PM's** will be identified by those subbasins and assigned to the crew responsible.

B. Each **PM** will be accompanied by a separate workorder, which will be completed by the specified crew. **(See workorder)**

C. All **PM's** will be set in **MONTHLY UNITS** and will be rescheduled by **COMPLETION DATE** rather than scheduled date. All cleaning **PM's** will cycle from January to January.

.UNSCHEDULED WORK

Work that has to be done, which does not have an existing workorder will be handled by the following procedure:

The crew requesting the work will prepare a paper workorder form, which will be given to the crew to perform said activity. The crew performing the activity will fill out a paper account sheet and attach it to the paper workorder form to be turned into the Dispatchers at the end of each day. Dispatch will verify the time and ensure the service request numbers are recorded properly. The work will then be forwarded to the Secretary and Data Entry Clerk for entry into IMS database.

.PAPER FORMS

There will be blank paper workorder request forms available for all field crews to request additional work. The crews are to fill out as much information as possible about the requested task, then turn into Dispatch daily. Dispatch will then verify if the task is related to a service request. Crew account sheets will also be available for each crew as they are set-up in **IMS**, so they can maintain their time accounting. (*See the attached forms, A-3 & A-3a*)

.EXTERNAL DEPARTMENTS

The other departments in the Utility who request work from the Maintenance Department will be expected to prepare workorders in the **IMS WORKORDER MODULE** when the following information is known:

ACTIVITY TO BE PERFORMED
ASSET
MANHOLE NUMBERS (IF APPLICABLE)

These items along with as many of the required fields (**see preparing workorder**) as possible, which must include a priority. Once entered, if the priority is a **(5)**, an E-Mail should be sent to the Maintenance Coordinator or Supervisor notifying them of its existence.

Those that do not know the three fields may request assistance from the Maintenance Department via an E-Mail or by telephone.

•PREPARING WORKORDER

The following information must be entered on every workorder paper or computer: that is initiated:

ACTIVITY *(see attached A-4)*
DATE INITIATED
ASSET *(see attached A-4)*
MANHOLE NUMBERS both upstream and downstream
CREW *(see attached A-4)*
INITIATED BY (employee #)
PROJECT # (if applicable)
BUDGET #
PROBLEM
PRIORITY (see priority procedure)
COMMENTS

•COMPLETING WORKORDERS

The crew will keep an actual account of time spent on each workorder for employees, equipment, and vehicles as well as amount of materials used, which will be entered on a paper accounting sheet. These accounting sheets will be turned in daily along with the workorder if completed. The crew until completion will hold the workorder. The accounting sheet will consist of several sections as detailed below:

•WORKORDER NUMBER

This must be filled out for each accounting sheet used.

•ACTIVITY

This also must be filled out for each accounting sheet used, which a copy of the activities are attached for reference.

•EQUIPMENT SECTION

This section will have a list of the equipment used on a daily basis already on the sheet, which any additional equipment used will have to be hand written on the sheet. There will need to be a date entered and the time a piece of equipment is actually used on that workorder for each piece of equipment used.

•EXTRA ITEM SECTION

1. This section will be used for **PA** and **PO** purchases that we have a cost for and are a direct cost to the workorder. There will need to be a date entered. Under extra item place the **PA** or **PO** Number, Quantity will be one (1) and total cost shown under rate for each **PA** or **PO**.

2. The Data Entry Clerk and or Maintenance Coordinator will complete this section when lists of invoices are received from crews and attached to accounting sheets on a daily basis. These items will consist of asphalt, gravel, concrete and sod, which we do have a cost for at the time it is received. The crew will have to place the **Budget Number, Project Number** and **Workorder Number** on each receiver they sign, which will be turned into the Maintenance Coordinator daily along with their daily accounting sheets.

•LABOR SECTION

This section will have the normal crew member already listed and any additional employees used will need to be hand written on the sheet. There will need to be a date entered, pay type and hours worked for each employee. The attached pay type list will be used in this location.

•MATERIAL SECTION

A. This section will be used to enter materials used on workorders, which are inventory items. There will need to be a date entered, stock area [**Rolling stock vehicle number**], part number and quantity used for each item used on the workorder.

B. There will be a stock area assigned to each construction crew[**Rolling stock vehicle number**], which they will maintain an inventory of materials and show usage from that inventory on the workorders.

•VEHICLE SECTION

Same procedures as on equipment section.

•PRIORITY

The priority used on each workorder will be even more important with the new IMS, do to the way workorders will be stored and generated. The following procedure should be used to determine the priority used on each workorder:

•Priority-5 Emergency, Drop All Other Work

- (1) Customer complaints, which have lost service or potential danger to the public.**
- (2) Sewer on ground**
- (3) Main Line Stoppage**
- (4) Service Line Stoppage, determined to be Wastewater's responsibility**
- (5) Main Lines with severe deterioration, which service can not be maintained without repairs.**

•Priority-4 Rush, Drop Other Work If Possible

- (1) All customer complaints other than those covered under Priority-5**
- (2) CDBG Projects, which have to be completed on a schedule ahead of city contractors**
- (3) Main Line or Service Line problems that are severe but service can be maintained for a moderate amount of time**
- (4) Construction workorders, which have to be completed within 90-days and cleaning workorders within 30-days**

• Priority-3 Ahead of Routine

- (1) Projects which have existing lines that, can maintain service for an extended amount of time, but less than 12-months.**
- (2) Main lines or Service lines, which can maintain service for an extended amount of time but less than 12-months**
- (3) Workorders, which have to be completed within 12-months**
- (4) All PM Workorders**

•Priority-2 With Routine

- (1) Projects, which have existing lines that can maintain service for more than 12-months**
- (2) Main lines or Service Lines, which can maintain service for more than 12-months**
- (3) Workorders, which can exceed 12-months before Completion**

•Priority-1 When Time Permits

- (1) All projects and workorders, which do not fall under any of the other priorities**

•SERVICE LINE

The construction of service line assets will be handled with additional procedures when field works is up and running. However, all new assets will be the responsibility of the **GIS SECTION** with the following exceptions.

- The service line assets will be started by the existing service line information being transferred into the new **IMS**. There is also existing As-Built plans from 1987 to date that have adequate locations shown on services that can be used to start setting up the service line assets. There will also be work performed on existing service lines that can be setup as assets do to these occurrences. We feel that our Secretary will need the ability to setup service line assets as well. The procedure will be for the workorder to be prepared under **SSL** asset which the construction crew will acquire the information needed to setup the asset (**see asset requirements**) and bring that back to the Secretary. Who will then setup the service line asset and transfer cost to the new asset.

•COMMUNITY SERVICE LINES

The construction of community service lines will be handled under the service line asset. The service line ID will be the same with the following example showing how multiple addresses will be handled [The normal service line ID would be 9J0001, which the same would apply to a community line with multiple connections using 9J001-A for the first address and 9J001-B for the second address and so on. This will allow us to track the locations of community services as well as the cost of maintenance on them (*see attached A-19 for more detailed information on community service lines*).

.PRIVATE LINES

•The **GIS** section will transfer the existing private line history into an Access File until the private assets can be setup within **IMS**.

Any work performed on private lines during this period will be handled under the PARK ASSET where there will be three locations to help separate cost.

The PARK called CITY will be used for any work performed on private facilities owned by the City.

The PARK called STATE will be used for any work performed on private facilities owned by the STATE.

The PARK called PRIVATE will be used for work performed on private facilities, such as private mains and community service lines.

The cost breakdown will only be to the three PARK levels and the SSL ID until the private assets are established so a more detailed breakdown can be retained.

.CAPITAL PROJECTS

The capital projects will be sent direct to the Maintenance Coordinator, which will consist of three sets of plans, an approved investment workorder and any other items required to construct the project. The Maintenance Coordinator will prepare a workorder for each activity involved in said project. The workorders will be placed under a park asset called **CAPITAL PROJECT** along with project number where a new asset is being created so costing information can be distributed to the

new assets when project is completed. In the event that a capital project is replacing an existing asset the work order will be prepared against that asset so costing distribution will not be required. The Maintenance Coordinator will also verify that adequate materials are in stock to construct the project and reserve said materials two (2) weeks in advance of project starting. The start time will be coordinated with construction Supervisors and verified prior to reserving materials.

Once a capital project has been completed then GIS will setup the new assets and cost from the park **CAPITAL PROJECTS** will be distributed based on the number of new asset units created for each activity. The Finance Department will handle the distribution of cost back to the new assets.

.O & M

All construction crews will have a rolling stock location assigned to their truck, which they must maintain. The crews will prepare a list of materials (*the existing green sheet attached A-5*) they need to replenish their stock and turn it into Maintenance Coordinator and or Storekeeper at least **24**-hours ahead (**where possible**) of actual pickup of materials. This will allow the Maintenance Coordinator time to verify list as to part numbers and quantities so the storekeepers can have materials ready the following day. The Foreman will be responsible for checking materials received against the pick list and sign off on items received. Those crew, which do not have a rolling stock area assigned will need to give as much advance notice to the storekeepers as possible to help prevent delays, [**minimum of one day**].

.NON-WORKORDER RELATED STOCK ITEMS

Stock items required that are not a direct cost to workorders such as tools, towels, gloves and etc., which are now being used as part of the overhead will continue to be tracked as such. These types of items will be requested on as needed basis and

will be issued to the appropriate account number by the Storekeeper. These items should be requested from the storeroom with as much advance notice as possible to prevent delays. Upon Supervisor approval Cleaning & Inspection personnel will submit requested items each afternoon (**needed for the following day**) to stockroom personnel so that items can be pulled from stock and ready for pick-up the following morning.

.JOB COSTING

.CONSTRUCTION/REPAIRS

O & M Activity Codes which consist of the following:

1. CRBF	6. CRMREH	11. GLLM	16. CRMAB
2. CRCR	7. CRMRR	12. GLLR	17. CRMC
3. CRLR	8. CRSL	13. GLMH	18. CRGAL
4. CRMA	9. CRSR	14. GLSR	
5. CRME	10. CRSS	15. CRPC	

All cost occurred during the completion of each of these activities will be charged to the activity.

EXAMPLE : CRLR - Line Point Repair would include excavation, pipe, tap, tap saddle, street repair or sidewalk repair, topsoil, sod, & tree removal.

Whatever it takes to complete the activity will be charged as a direct cost.

.ASSET ATTRIBUTES

Maintaining asset attributes on the collection system will be handled by the Secretary, which will consist of work such as manhole adjustment, manhole rehab, and manhole repair that change manhole heights, ring and lid or manhole material such as rehabbing internal walls. The GIS section will handle changes such as main relays or new manhole construction where as-builts are prepared.

.ASSET REQUIREMENTS

The following information will need to be collected so the Secretary can setup a service line as an asset:

- (1) Address that the service serves**
- (2) Distance from upstream or downstream manhole to the point of connection to the main**
- (3) Sewer Main line asset manhole numbers**

.TV INSPECTIONS

.FINALS: All assets will be defined and entered into **IMS** prior to any final **TV** inspection workorders. Therefore it will be the responsibility of Engineering to determine if any changes occurred during installation of all assets in conjunction with the preliminary project plans. Manholes added, excluded, etc. All distances between manholes must be checked for accuracy before entering line assets into **IMS** due to the fact that line information can not be entered greater than line length.

.MONTHLY REPORTS

The Construction and Repairs Department, as well as the Cleaning and Inspection Department make a monthly report to the Manager of the Utility and the Director of **(406)** Maintenance. The monthly is prepared by the Dispatch office and covers the progress (+ or -) of each section including cost , goal progress(**graphs**) and completion of utility projects Capital or O&M.

EMERGENCY CREW PROCEDURES

GENERAL GUIDELINES

- Incoming calls are to be addressed or investigated as soon as possible.
- Caller information such as name, address, phone number and related information about the complaint should be recorded.
- Customer or caller should be contacted upon arrival at the complaint site.
- Every attempt should be made to investigate and correctly identify the problem associated with the complaint.
- Once the crew has determined the problem, a detailed report should be completed, along with any special forms. i.e. flood report, overflows, policy reimbursement etc...(see *attachments, A-6, A-7, & A-8*).

ACTIVITY CODES

ECO/ Emergency Call Other

Used for customer complaints which require little or no response in regards to a follow-up work order or actual work to be performed. Complaints such as storm drains, ground water, water lines etc. These calls are charged to utility and miscellaneous calls.

ECP/ Emergency Call Private

Customer complaints that are of a private nature requiring no action other than an investigation by our crew. Complaints such as home or business service lines leaking or broken, a private manhole cover missing etc. These calls are charged to ECP. Exceptions :

1. When a private service or community service line is actually rodded, labor costs will be charged to HRS/ Hand Rod Service.
2. To a capitol project when rodding for capitol project crews.

ECM/ Emergency Call Mainline

Customer complaints that require immediate attention due to mainline stoppages, overflows, residential flooding due to sewer mains etc. These calls are charged to ECM.

Once the problem to the above calls are determined the crew should contact the customer and/or caller with their findings. Any findings other than Wastewater Utility issues, customer should be notified of possible agency to solve their problem. If the customer is unavailable, a card should be left at the home or business with a brief description of our findings and a contact person and phone number with L. R. Wastewater.

DISPATCH PROCEDURES

General Guidelines

PRIORITY RATINGS

Priority 5 – Drop all other calls

- Sewer on the ground
- Manhole lids missing or damaged in street
- Manhole overflowing
- Flooding in building or residence
- Customers out of service
- Broken sewer line by other utility

Priority 4 – Ahead of other calls if possible

- Service lines or main lines which can drop to level 4 will be re-evaluated based on volume of priority 5 calls received and crews availability
- Emergency Locates

Priority 3 – Routine

- All other calls that do not fall under a Priority 5 or 4

WORK DISTRIBUTION

- All calls and duties will be handled in order of priority
- Work will be entered into system with specific details
- Maintain files, forms and records of calls
- Other projects – task will be performed as time permits

DISPATCH PROCEDURES – GUIDELINES

Dispatcher

- Calls are issued to Emergency Crew or other field Personnel as soon as they are received or recorded
- Communicate as much information as possible
- Problem and Priority Rating
- Expect call back from field crew upon completion of each job assignment
- Customer should be contacted immediately with information of findings either by Crew or the person who originally received call

Emergency/field crew

All calls are addressed according to priority

Call back to dispatch within 15 minutes upon completion of assigned call

Should several calls occur or if field crew is backed up with calls, crew is to immediately communicate with dispatch so calls can be re-evaluated and re-assigned.

If field crew has prior job assignments or foresees any reason they can not accept calls (**BEING OUT OF RADIO CONTACT FOR MORE THAN 15 MINUTE**) they should contact dispatch prior to being occupied and should convey to dispatch when available.

- All after hours and weekend calls will be addressed with dispatch ASAP the following work day so that dispatch can process the complaints.

RECEIVING CUSTOMER CALLS – GUIDELINES

*****Note ***** If call/complaint is received by any other LRWU employee, gather all information listed and report to Dispatcher as soon as possible. (**Contact Coordinator if Dispatch is not available, Supervisor if Coordinator is not available.**) use the Following guidelines :

Gather information

Customer Name

Customer Address

Address of Problem

Contact Phone Number – **(home and work)**

Nature and location of Complaint

Manhole Numbers if known

Record time call received

Check for related calls

Rate Priority

Log Customer Information/Complaint

Search for related incidents – Service requests incidents

Record calls – check database for prior records

New caller – New Problem = New incident

New caller – Same Unresolved Problem = Activity to existing record

Same caller – Additional Problem = New incident

Utility Calls / Inspection Requests- Internal and External

A. Other Utility reporting they have damaged sewer service or main

Address of specific location

Caller information

Utility reporting damage

Contact phone number of other utility

Size and type of line

Record time of call

Nature of incident

Verify the site is excavated to expedite repairs by LRWU crews

Log Information

Dispatch repair crew, check with Construction Coordinator if unable to determine which crew can make necessary repairs. **(if call is received by another utility employee other than dispatch, they are to notify dispatch immediately so appropriate action can be taken)**

B. Our Utility reporting they have damaged another utilities service.

Address of specific location

Crews information on Utility damaged

Contact phone number of other utility

Type of service interrupted

Record time of call

Was other utility marked by one call

Verify the one call marks and take pictures if needed, fill out utility damage report.

Log Information to work order under log tab.

Emergency Main Line Location Requests

Address of specific location

Caller information

Utility reporting (**if requested by utility**)

Contact phone number

Record time of call

Nature of emergency

What type of markings used

Log information

Emergency locates will be evaluated and dispatched accordingly

Dispatch crew to locate and mark main (**if call is received by another utility employee other than dispatch, they are to notify dispatch immediately so appropriate action can be taken**) use one call codes under log tab of work order to record one call personnel, number and date. (*see attached A-21*)

Routine Main Line Locate Requests

Address of specific location

Caller information

Utility reporting (**if requested by utility**)

Contact phone number

Record time of call

Nature of work to be performed

What type of markings used

Log information

Dispatch crew to locate and mark main (**if call is received by another utility employee other than dispatch, they are to notify dispatch immediately so appropriate action can be taken**) work will be performed within 2 working days. Use one call codes under log tab of work order to record one call personnel, number and date. (*see attached A-21*)

Locates For Other Utilities

Address of specific location (**nearest address and detailed description of location**)

Person requesting locate

Type of work to be performed

Record time of call

Contact Arkansas One Call (**record person taking call**) enter information onto **log** tab of the work order generated for this job, personnel talked to, number, & date. (*see attached A-21*)

Log information

Street Cuts

Address of specific location (**nearest address and detailed description of location**)

Person requesting locate, internal or external crews.

Type of work to be performed, size of cut, & work order number

Record time of call & date

Issue Street Cut Permit from Public works website data base and file accordingly

Utility crew that completes the cut notifies dispatch to show permit completed on Public Works website data base.

TV Investigation – Emergency Follow-up Forms (*See Attached A-2*)

Log Information; also onto workorder log tab street-cut was made for.

File hard copy forms

COLLECTION SYSTEM CLEANING PROCEDURES

WORK ORDERS

Work will be performed in order of priority.

Priority's are addressed in the general guidelines procedures section.

Prior to creating work orders, Hansen should be checked by requester to ensure no existing cleaning work order exist for that asset and for last cleaning date.

Efforts should be made to determine if line can be accessed by hydro cleaning vehicles or the easement machine rather than having to be hand cleaned.

Requester should give complete description of any special requests desired during the cleaning process.

Emergency crew will prepare cleaning and CCTV work orders on all mainline stoppages with cleaning to be performed within 3 working days. The Emergency crew turns in hand written work orders to the maintenance coordinator to prepare follow-up Cleaning & TV work orders in Hansen.

Outside departments preparing work orders are to send IMS work order numbers or group project numbers to the C&I Coordinator via e-mail and copy to the C&I Supervisor for crew distribution. Included should be a brief

description of the work to be performed and a desired completion date. (*note: jobs will be scheduled according to priority, so as much lead time as possible will help in meeting desired deadlines.*)

Hydro Cleaning

Four of our six hydro crews are divided into separate geographical areas and primarily assigned to those areas, the other two cover the whole city.

HCC- Hydro Cleaning Central

HCE- Hydro Cleaning East

HCS - Hydro Cleaning South

HCW- Hydro Cleaning West

HCER- Small Vaccon Emergency

HCRO- Vaccon rover

Maps are available from GIS defining these areas (*See Attached A-9*).

HAND CLEANING

Five hand cleaning crews, as the hydro crews, are divided into geographical areas, with one to cover the whole city.

(*See attached A-10*).

HRC- Hand Rod Central

HRE- Hand Rod East

HRS- Hand Rod South

HRW-Hand Rod West

HRER- Hand Rod Emergency Rover

CLEANING CREW OPERATORS/FOREMEN

Cleaning crews should make every effort to ensure lines are properly cleaned the first time to eliminate repeat cleaning and/or complaints.

Crews should coordinate PM's and cleaning intervals with the supervisor or Dispatcher / project planner so they may be set up and intervals adjusted accordingly.

Cleaning crews detecting lines needing televised should prepare a work order and submit it to the coordinator or secretary for scheduling. *(Do not call TV crews to come televise lines on site, only in emergency situations, crew should contact coordinator or supervisor to activate a TV crew)*

HYDRO CLEAN ACTIVITY CODES

HCO-(HYDRO CLEAN OTHER)Used for emergency call follow-ups or requested mainline non - PM related work orders.

HCOE-(HYDRO CLEAN OTHER EASEMENT)Used for emergency call follow-ups or requested mainline non - PM related work orders.

HCP-(HYDRO CLEAN PM)Used on computer generated Preventive Maintenance work orders.

HCPE-(HYDRO CLEAN PM EASEMENT)Used on computer generated Preventive Maintenance work orders.

HCR-(HYDRO CLEAN ROUTINE) For routine work orders.

HCRE-(HYDRO CLEAN ROUTINE EASEMENT) For routine work orders.

HCRTX-(ROOTX APPLICATION) Used for in-house root control chemical applications.

HCRTXE-(ROOTX APPLICATION EASEMENT) Used for in-house root control chemical applications.

CRROOT- (Contracted chemical root treatment)

CROTPM- (Contracted chemical root treatment PM)

GLROT- (For root treatment study for possible added contract lines)

HCS-(H/C SERVICE LINE) Used on service lines.

HCSE-(H/C SERVICE LINE EASEMENT) Used on service lines.

HCW-(H/C WASHDOWN) Used for wash downs around manholes, yards etc.

HCWE-(H/C WASHDOWN EASEMENT) Used for wash downs around manholes, yards etc.

HAND CLEAN ACTIVITY CODES

HRP- For preventive maintenance work orders.

HRO- Used for follow-ups or requested non PM related work Orders.

HRS- Used when rodding service lines.

HRR- For routing cleaning.

ER / LINE WALKING CREW ACTIVITY CODES

CRWL- Walking lines looking for problems and stoppages.

NOTE: *EMERGENCY RESPONSE / LINE WALKING CREWS CONSIST OF FOUR CREWS ONE ASSIGNED TO EACH SERVICE AREA. THESE CREWS WALK LINES AND LOOK FOR POSSIBLE PROBLEMS, STOPPAGES, ETC., ASSIST IN ASSIGNING CREWS WITHIN THEIR SERVICE AREA TO THE PROPER TASK.*

IN-HOUSE CAPITAL PROJECTS PROCEDURES

The location of Capital Projects, which require rehabilitation are determined by the following groups:

Engineering Department

Technical Services

Engineering Support

Design Construction

The Engineering Department studies and determines the major areas that require rehabilitation of sewer mains as well as adjustments, replacement, or rehabilitation of manholes to accommodate state highway, city streets / easements and drainage improvements. They also review any Engineering Studies, which are sent to them by our Construction / Repairs and Cleaning / Inspection sections.

Construction / Repairs

This section determines possible Capital Projects from line repairs, which exceed four in one line segment and line repairs where pipe deterioration is beyond repairs. These type lines are sent to engineering in the form of an Engineering Study so they can determine the appropriate construction method. Plans are prepared and sent back to the construction section or included in contract projects. The main lines with total failures where service can not be maintained are re-laid at that time, which a capital project number is acquired from our Engineering Department so cost can be tracked.

Cleaning / Inspection

This section determines possible Capital Projects from TV inspection, Emergency Calls and the normal cleaning process. They also prepare Engineering Studies on lines with a long history of emergency calls as well as pipe deterioration.

Construction / Repairs and Cleaning / Inspection determine Capital Projects by the following :

- A. Line segments with four or more repairs
- B. Total failures (**Service can not be Maintained**)
- C. Deterioration beyond repairs (**Egg Shaped, Cracks top and both sides**)
- D. Multiple Emergency Calls (**Exceeds 3 Calls**)

Existing In-House Capital Project Procedure (With Plans)

The existing procedure we have in place is projects are turned into our construction coordinator, which must include the following items:

- A. Three sets of plans
- B. Approved Investment Work Order (**With Priority Shown**)
- C. Cost estimate showing Material Break Down
- Copy of Easements (**If Applicable**)
- D. Notification of Public works two weeks prior to work starting via their new policy (11/03/1999) on public easements and R>O>W's concerning adjustments and restoration of public properties. (*see attached A-22*)

Scheduling Projects

The Coordinator will take the project verify cost estimate matches plans, materials are in stock and enter it on our Progression Chart (*see attached A-12*) according to ranking number. The progression chart is updated on a weekly basis by the Construction Coordinator who sends it via email to the Construction Supervisors, Cleaning / Inspection Supervisor, Maintenance Engineer, Engineering Department personnel, Manager of 406 Maintenance and the CEO of LRWU. The projects are scheduled based upon a ranking number (10) are the first to be scheduled and so on. The construction section has determined from years of experience that it takes approximately one week for each one hundred feet of line, which is what is used to estimate the time to complete a project. The project is scheduled and a crew is determined at these meetings.

The construction coordinator takes this schedule prepares required work orders, set-up a project file and gets with the assigned crews and the Engineering Tech that designed the project to get the project staked and ready for crew to start.

Note: Projects will be staked by our Engineering Department one week in advance of the start date shown on the progression chart which will then require verification by Coordinator.

Construction Phase

Once the project is turned over to a crew the Foreman of that crew is then responsibly for the following:

A. Job Site Checks

1. Stake out complete
2. Mark for one-call (**Record One-Call Ref # On Plans and Log section of work order**), also the work must start within ten days of the one call and if working more than twenty days the one call must be **renewed!!**
3. Determine Material Storage Locations
4. Notify Home Owners (**In Construction Area**) and take pictures of surrounding area.
5. Verify no conflicts (**After One-Call is Marked**)
6. Set-up start date with Inspector or Engineering Technician
7. Have on hand, **Utility Damage Report** and fill out a report for each damaged utility service that we interrupt. (*See attached A-20*)
8. Foreman must make work orders for TV final (TVF) after project is complete.

B. Material Checks

1. Verify Stock Materials are available
2. Determine any non-stock materials required (*Inform Coordinator*)

C. Equipment

1. Verify required Equipment (**Availability**)
2. Equipment Rental (**Setup With Coordinator**)

D. As-Built Plans

1. Wye Locations **Red Lined On Plans** (**Address Of service**)
2. Utilities not shown on plans **Red Lined on Plans**
3. Changes to Plans **Red Lined on Plans** (**Grades, Pipe Type or Size, additions or deletions & also manhole depths**)
4. All areas located in the street that are temporary cuts, these repairs must have a layer of asphalt, preferably Hot mix over the SB-2.

Completion Phase

Once the project has been completed the Foreman is to turn in all Work Orders and Red Lined Plans into the construction coordinator. The coordinator verifies all phases have been completed and turns project file over to construction Supervisor who prepares a cost report on each associated work order, which is then transferred to a cost comparison document. The cost comparison document shows the relationship between our in-house cost and contracted cost with a percentage value for savings or loses. The Supervisor then takes the actual cost for the project and prepares a reconciliation change order for the project along with an explanation for any overage that may have occurred from the original cost estimate submitted by Engineering (**This process is normally completed within 30 days**) . The project is updated in *Hansen* to reconciliation status and our GIS section then updates the assets and handles doing the As-builts.

The accounting department is notified via e-mail of the reconciliation change order and at this point as to how the charges are being distributed to the asset is unknown, but it was covered in our General Procedures.

RIGHT-OF-WAY CLEARING PROCEDURES

The location of right-of-ways, which require clearing are determined by the following groups:

Engineering Department

Technical Services

Engineering Support

Design Construction

The Engineering Department locates right-of-ways they need cleared to complete surveys, stake outs or inspections of line segments, which are sent to our Construction / Repairs section via E-mail or by phone.

Construction / Repairs

This section determines right-of-ways that require clearing from walking lines as well as those work orders received from other sections.

Cleaning / Inspection

This section determines right-of-ways that required clearing through their normal daily O&M process.

Existing Right-of-Way Clearing Procedures

Construction / Repairs determine right-of-ways to be cleared by the following:

- A. Each Map Page is walked and PM's set up on line segments that require clearing. **(Lines that will require major clearing are identified for future reference so equipment can be rented to perform this type clearing.)**
- B. Line segments that are received from other sections requesting clearing are reviewed and placed on PM's if applicable.
- C. New lines being added to our system are checked at the final TV stage to determine if clearing will be required and PM's set up where needed by the following:
 1. Foreman of TV crew will highlight line segments that will require clearing on the maps they are furnished to televise finals on projects. These maps will be turned into the Maintenance Secretary who will set up the PM's in accordance with the existing PM's in the area.

Work Order Prepared

- A. The section finding a section needing clearing prepares a work order using the activity code CRCR. **(Comments indicating the reason clearing is being requested)**
- B. The work order is then relayed to the construction coordinator Via e-mail so we are aware of its existence within IMS.

Scheduling Phase

The scheduling of work orders from other sections is done by the construction coordinator, which must follow the following items:

- A. Coordinator must check for an existing PM on the line segment, which if one exist he is to verify the proposed date to be cleared.
- B. Coordinator is to then contact the initiator of the work order and determine if clearing can wait until scheduled PM., which if it can the work order will be deleted.
- C. Coordinator will schedule crew if initiator indicates it must be done now, the scheduling of PM work orders will be done by the Maintenance Secretary as follows:
- D. The secretary will generate PM work orders on the 1st. and 15th. Of each month and these work orders will be sent to the construction coordinator to distribute to the crews.

Completion Phase

The crew completing the clearing will be responsible for turning in the work order with his daily paper work and showing it as being complete. **ROW's** are to be cleared to a minimum width of our easement, but where possible cut to maximum allowable width, to insure if repairs are needed room will be available to do the repairs. The larger in size and the deeper the main line the more room will be needed. Also the crew will open approximately every third manhole and check flows, if a problem is located during their investigation the crew will be responsible for preparing the work orders to correct the problem found.

ENGINEERING STUDY PROCEDURES

The location of Engineering Studies, which require rehabilitation are determined by the following groups:

Engineering Department

The Engineering Department studies and determines the major areas that require rehabilitation. Also line segments identified as needing rehabilitation are processed through the *GLS* spreadsheet as maintained by the Maintenance Engineer.

Construction / Repairs

This section determines possible Engineering Studies from line repairs, which exceed four in one line segment and /or line repairs where pipe deterioration is beyond repairs. These type lines are sent to Maintenance Engineer who issues an engineer study work order. The line segment and possible rehabilitation methods are evaluated. If the best solution is *relay* then the engineering study work order is re-assigned to Construction and Repairs for scheduling.

Cleaning / Inspection

This section determines possible Engineering Studies from TV inspection, Emergency Calls and the normal cleaning process. They submit these line segments to the Maintenance Engineer for review and preparation of the engineering study work orders

Existing In-House Engineering Study Procedures

Construction / Repairs and Cleaning / Inspection determine possible Engineering Studies by the following:

- A. Line segments with four or more repairs
- B. Total failures (**Service can not be Maintained**)
- C. Deterioration beyond repairs (**Egg Shaped, Cracks top and both sides**)
- D. Multiple Emergency Calls (**Exceeds 3 Calls**)

Work Order Prepared

- A. The Maintenance Engineer prepares a work order using the activity code GLES.(**Comments indicating the reason this line is being shown for a study, this practice applies to main lines as well as community service lines that can no longer be maintained**)
- B. In the case of a community service lines or line segments requiring re-route and easements, the work order is re-assigned to the appropriate Engineering department for design and development.
- C. A copy of the TV tape is also sent to the Engineering Department so they have all available information.

Ranking Phase

After determining a line segment warrants an engineering study the work order (GLES) is created within the Hansen data-base by the Maintenance Engineer. The Maintenance Engineer then gathers data required to place the line segment into the GLES ranking spreadsheet. This spreadsheet utilizes the critical rating per Hansen, the number of mainline emergency stoppages and the condition rating from the TV inspection report to “rank” the work order for rehabilitation.

Construction Phase

The Maintenance Engineer evaluates the various line segments associated with the engineering studies and determines the best method of rehabilitation. Depending on the rehabilitation method, the work order is re-assigned to either Construction/Repairs for relay in place, Engineering for design of relocated mains or Engineering for project administration to an outside subcontractor.

Completion Phase

The system was setup for a work order to be left open until the rehabilitation work is completed. Upon completion of the rehabilitation work either with Utility construction crews or subcontractors, the associated engineering study work order is completed.

Scheduling Projects

The scheduling of these projects to be performed by utility crews will be handled as indicated under In-House Capital Projects Procedures.

SANITARY SEWER MAIN LINE REPAIRS

The location of main line repairs are determined by the following groups:

Engineering Department

Engineering Support

Design Construction

The Engineering Department locates repairs through project studies of major areas that require rehabilitation, which are located inside the final project area. These are then relayed to our construction coordinator via e-mail as to work orders being setup.

Construction / Repairs

This section has very little input into the location of line repairs other than those they are dispatched too by our Dispatcher from in coming calls from other utilities for breaks, which they have caused.

Cleaning / Inspection

TV Crews

Hydro Crews

Hand Rod Crews

Dispatcher

Emergency Crew

This section determines possible line repairs through their normal operation and maintenance of our collection system as well as customer calls.

Existing Repair Procedures

The existing procedures we have breaks down into two areas based on the following items:

AREA (1)

Customer Oriented Calls

The calls normally come into our dispatcher or other members of our staff, which our emergency crew is dispatched to the location ASAP (**within the hour**) to investigate the problem as follows:

- A. The crew determines if the problem is sewer related.
- B. They then determine priority of situation.
Priority (5) situations are handled as follows:

- A. The crew investigating will contact the dispatcher with one-call information (**After calling in the one-call information to be logged to W/O , see attached A-21**) and advise that we have an emergency repair that has to be addressed now. (**Crew to stay on site until one-call is marked or repair crew arrives**)
- B. Dispatcher will make one-call, **Log information to work order (see attached A-21)** and contact investigating crew with reference number. In addition dispatcher will contact coordinator or construction supervisor to get a crew assigned at, which point the dispatcher will contact crew give them the following information:
1. Location of repair (**Address front or rear**)
 2. Map Page Number (**Manhole Numbers upstream and downstream from repair**)
 3. Line size and type
 4. Depth of line (**If Available**)
- C. Foreman of dispatched crew will be responsible for the following:
1. Verify materials required (**send personnel to shop if required**)
 2. Verify required equipment (**Trench box, shoring, gas detectors**)
 3. Verify one-call has been marked, and take pictures as needed
 4. Verify any possible conflicts
 5. Repair line ASAP (**Normally within (4) hours**).
 6. Have a report on hand, **Utility Damage Report** and fill out for each damaged utility service that we interrupt. (**See attached A-20**)
 7. Make work order to have line cleaned and televised if needed.

Customer Oriented calls (With Line Breakage, normally other utilities or plumbers.) Priority (5)

These calls also come into our dispatcher, which a repair crew is dispatched to the site (**within the hour**). The dispatcher or staff member who receives the call needs the following information:

1. Location of repair (**Address front or rear**)
2. Line size and type
3. Depth of line (**Determine if shored**)
4. Line is exposed and excavation large enough for repair

Dispatcher will contact coordinator or construction supervisor to get crew assigned, which the above information will be dispatched to the crew.

Foreman of dispatched crew will be responsible for the following:

1. Verify materials required (**send personnel to shop if required**)
2. Check Excavation (determine if safe and ready for repair)
3. If Unsafe (**request on site crew of other utility or plumber to safe up or excavate as required.**)
4. Repair line ASAP (**Normally within (1) hour**)

AREA (2)

Work order Generated Repairs (**priority (4) or less**)

The construction coordinator will schedule these type repairs according to priority as follows:

Scheduling Repairs

The coordinator will take existing work orders and determine if there are multiple work orders in a given area so these work orders can be scheduled together. In addition the following steps must be used in the scheduling of all repair work orders:

1. Verify that line has been televised and repair location marked in white paint.
2. One-call made at least (5) days in advance of scheduled repair. *(call information into Dispatch & record ref.# number in Log section of W/O),*
3. Verify one-call marked (1) day in advance of scheduled repair. **(This maybe transferred to Foreman)**
4. Verify no conflicts **(That may require scheduling with other utilities)**
5. Notify Home Owners **(In person or by flier) (See Attached A-14 & A14a)**
6. Work order to assigned crew a minimum of (1) day Prior to Scheduled repair.

The coordinator should try to insure the repair crews have at least three work orders with them daily. This will prevent delays and the needless down time where they can simply move to another location if problems exist at one.

A. Foreman of assigned will be responsible for the following:

1. Determine materials required (**prepare Stock Room Request Form (1) day in advance of repair**)
2. Verify required equipment (**trench box, shoring, gas detectors**)
3. Verify one-call has been marked, and take pictures if needed.
4. Verify any possible conflicts.
5. Repair Line and back fill, make work order to have line cleaned
6. Streets and Alleys Install temporary Asphalt (**or plate**)
7. Have on hand, **Utility Damage Report** and fill out a report for each damaged utility service that we interrupt. (*See attached A-20*)

The Foreman will also be responsible for placing notes on the work order as to what additional items are required to complete the project (street repair, top soil, sod, ext.) and turn that hard copy of the work order into the coordinator so he can schedule the completion of the job. If the job is completed by the original crew then a note is added to the work order stating it is completed.

Completion of repairs are being handle by allowing excavations out of streets or alleys time to settle for a period of a week or more before top soil and seeding or sod is installed to eliminate customer complaints from excavations settling after the repairs have been completed. This practice has proven to be efficient in not having to go back to repair sites. The repairs that are located within streets and alleys are completed the same day of repair when possible and always within **(5) days max.**

MANHOLE REHABILITATION EXISTING PROGRAM

The location of manholes, which require rehabilitation are determined by the following groups:

Engineering Department

Technical Services

Engineering Support

Design Construction

Construction / Repairs

Cleaning / Inspection

The above groups are in the field on a daily basis and find most of the manholes that we rehab, which includes those on Capital Rehabilitation Projects. Those other than Capital Projects are called into our coordinator and work orders are prepared to schedule these rehabs.

Existing Manhole Program

The existing program we have in place is to determine if the manhole can be rehabbed or if it must be replaced with a poured in place manhole or a precast manhole.

Existing Rehabilitation

The existing rehabilitation of a manhole at this time consist of two types of a Calcium Aluminate Concrete:

Stronglite MS-2, which is used in the cooler temperatures where the water does not exceed 80 degrees as recommended by the manufacture.

Quadex QM-1s, which is used in the higher temperatures where the water exceeds 80 degrees.

Both of these materials have been used over the past several years and have held up in most cases. However with any rehab there are manholes where this type material will not maintain a manhole for any period of time.

The epoxy coatings were tried back in the late 80's and early 90's, however they were extremely hard to get an existing manhole clean enough so the material would adhere to the existing surface. This type rehab has not been used in several years.

Future Rehabilitation

The use of Pre-Formed Fiberglass Inserts is being looked at for manholes with high deterioration due to gas, which would include manholes where drops exist or where force mains discharge. There is only one of these inserts installed at this time but other location are being determined for trials.

Existing Types of Manhole Rehabilitation

Calcium Aluminate Concrete

Polyurethane Coatings

Cured-In-Place Fiberglass Liner

Pre-Formed Fiberglass Inserts

Poured-In-Place Concrete Rehab

Epoxy Coating

The rehabilitation is performed with the procedures for manhole work prepared by Engineering, which covers multiple applications.

MANHOLE REHABILITATION PROPOSED PROGRAM

Application Process

Class "A"

Manholes, which have a high probability of gas deterioration such as the following examples:

- A. Manholes with Force Mains discharging into them.
- B. Manholes with Outside Drops
- C. Manholes with inside splash greater than one foot
- D. Manholes on large outfall lines 42-inch and larger
- E. Manholes and Structures located around Pump Stations

Rehabilitation Methods Recommended for Class A

- 1. Pre-formed Fiberglass Insert (**Being Tested**)
- 2. Cured-In-Place Fiberglass Liner (**Testing Needs to be started**)

Class "B"

Manholes, which have deterioration and infiltration that is not a direct result of gas such as the following examples:

- A. Manholes constructed of bricks
- B. Manholes with no splash or drops

Rehabilitation Methods Recommended for Class B

1. Calcium Aluminate Concrete (**Stronglite MS-2 & Quadex QM-1s**)
2. Poured-In-Place Concrete Rehab (**Testing needs to be started**)
3. Pre-formed Fiberglass Insert (**Being Tested**)

Class "C"

Manholes, which deterioration is very minor but maybe classified as preventive maintenance such as the following examples:

- A. Manholes, which do not meet Class A or B

Rehabilitation Methods Recommended for Class C

1. Calcium Aluminate Concrete (**Stronglite MS-2 & QM-1s**)

Investigation of Existing Rehabilitation

The maintenance section has started checking the existing manholes that have been rehabbed over the past 10 years, which below are some of the findings on different types:

Stronglite MS-2

Class "B" Manholes

- A. **Manholes 1M009 & 1M010** Rehabbed before 1989 exact date unknown was found to be in good condition with no infiltration and the walls were still intact with no cracking of the existing material.
- B. **Manhole 5G030** Rehabbed on 11/15/95 was found to be in good condition with no infiltration and the walls were still intact with no cracking of the existing material.
- C. **Manhole 3E072** Rehabbed on 05/15/98 was found to be in good condition with no infiltration and the walls were still intact with no cracking of the existing material.
- D. **Manhole 3E089** Rehabbed on 05/15/98 was found to be in good condition with no infiltration and the walls were still intact with no cracking of the existing material.
- E. **Manhole 3E107** Rehabbed on 05/15/98 was found to be in good condition with no infiltration and the walls were still intact with no cracking of the existing material.
- F. **Manhole 2H045** Rehabbed on 05/21/98 was found to be in good condition with no infiltration and the walls were still intact with no cracking of the existing material.
- G. **Manhole 2H047** Rehabbed on 05/21/98 was found to be in good condition with no infiltration and the walls were still intact with no cracking of the existing material.

H. **Manhole 3E003** Rehabbed on 04/28/98 was found to be in good condition with no infiltration and the walls were still intact with no cracking of the existing material.

I. **Manhole 3E005** Rehabbed on 04/28/98 was found to be in good condition with no infiltration and the walls were still intact with no cracking of the existing material.

1-A Strong H/P mix with epoxy topcoat.

Class "A" manhole

A. College Station Pump station rehabbed manhole at the influent June, 2001. Has not been in place long enough to make a determination about how well it will last.

Quadex QM-1s

Class "A" Manholes

A. **College Station Pump Station** Rehabbed manhole at the influent around 1996 was found to be in bad condition with all of the material on the walls gone along with infiltration beginning to show again.

Class "B" Manholes

A. **Manhole 5G007** Rehabbed on 11/13/95 was found to be in good condition with no infiltration and the walls were still intact with no cracking of the existing material.

B. **Manhole 5G005** Rehabbed on 11/13/95 was found to be in good condition with no infiltration and the walls were still intact with no cracking of the existing material.

Preformed Fiberglass Insert

Class "A" Manhole

- A. **Manhole 9T002** installed 02/10/99 has not been in long enough to make a determination.

Rubber Adjustment Rings

- A. **Manhole 11I019** installed on 12/22/98 and had to be removed on 02/23/99 due to asphalt and concrete deterioration from all of the movement.
- B. **Manhole 13H012** installed on 12/18/98 still in service will be monitored to check for defects.
- C. **Manhole 13H011** installed on 11/13/98 still in service at this time but deterioration has started and replacement is in the near future.

Plastic Adjustment Rings

- A. **Manhole 11I019** installed on 02/23/99 still in service will be monitored to check for defects.
- B. **Manhole 12J027** installed on 12/22/98 still in service will be monitored to check for defects none at this time.

Cleaning / Inspection Ports

The maintenance section has started installing ports on dead end lines and some private lines to determine if they can be used in the place of standard manholes. The following is a break down on how and what we are using to install these ports:

- A. 24-inch PVC pipe was used for the port with a standard 2- inch extension ring and standard lid. The PVC pipe was placed on a concrete base while it was still green so it could be sealed and an invert constructed. This type port has been placed in three locations at this time.
- B. 24-inch Fiberglass pipe was also tried with the same procedures as the PVC. This type port has been placed in one location at this time.

The ports that have been installed will be watched and our cleaning and inspection section will use then to hand rod, hydro clean and TV out of over the next few months to determine if this is a feasibly replacement for manholes in certain locations.

The following procedures for both rehab and repair will be updated as required:

MANHOLE WORK PROCEDURES

RL – REPLACE LID

1. Remove existing lid.
2. Clean the seating surface on existing frame and new lid.
3. Place new lid in frame. **(NOTE: Lid and frame must be compatible and seat properly. If not compatible, replace frame.)**

RL BOLT – REPLACE LID WITH BOLT DOWN LID

Note: The Director of Maintenance must approve all bolt down lids before installation.

1. Remove existing lid.
2. Clean the seating surface on existing frame and new lid. NOTE: New lid shall have self sealing gasket and at least two (2) bolt holes for bolting lid down using a L shaped stainless steel bolt, a gasket or a sealer, flat washer, lock washer, and a nut.
3. Place new lid in frame and bolt down. **(NOTE: Lid and frame must be compatible and seat properly. If not compatible replace frame.)**

RF – REPLACE FRAME AND COVER

RAISE – RAISE FRAME AND COVER

RHFS – REWORK FRAME AND SEAL TO CORBEL (CONE)

NOTE: Maximum allowable height from top of frame to top of corbel

(**cone**) section: 12 inches measured from top of frame to top of corbel
(**cone**) section.

Grade adjustments that exceed the 12 inch maximum will require the Removal of the corbel (**cone**) section and raising the barrel section to a height that when the corbel (**cone**) section is replaced along with the existing or new frame and lid, the 12 inch maximum will not be exceeded.

⊗ Engineering will monitor Commercial/Industrial owner/contractor work pertaining to buried manholes and will identify and bill them for the direct cost to raise those manhole.

1. If the manhole is located in pavement , the frame and lid removal shall be accomplished by saw cutting a square cut out in the pavement large enough to accommodate the work to be accomplished.
2. Materials shall be removed from around the frame to a depth to expose the entire frame and at least 6 inches of the top of the manhole corbel (**cone**)section and / or if needed for height adjustment, at least 6 inches of the top of the barrel section.
3. Needed height adjustments may utilize the use of:
 - A. Brick and mortar.
 - B. Precast sections.
 - C. Cast in place construction.

If brick and mortar are used, plaster both the inside and outside of the brick with at least one half inch of mortar.

4. After the necessary adjustments to the manhole are completed, coat the bottom of the frame with Mastic Sealant and set the frame in a full bed of mortar.
5. After the mortar has set, if the manhole is cast in place or precast and is located in a paved area or is subject to be submerged by water from a rain event or high ground water, install shrink wrap, such as “StomaSeal” which is distributed by Lee Mastell and Associates, around all of the joints made during the adjustment process including the corbel (**cone**) to frame joint.
6. After installation of the shrink wrap, backfill the excavation with the appropriate backfill material for the area being backfilled.
7. If the manhole is brick, plaster the outside with at least one half inch of mortar, for at least six (**6**) inches below the adjustment starts.
8. If the manhole is in paved area, replace the base and pavement.

Note: Items 4, 5 and 6 are not being used by our in-house at this time.

RHCW – REHAB CORBEL (CONE) AND WALL

RHBI – REHAB BENCH AND INVERT

I. Preparation

1. The corbel (**cone**), walls, bench, and \ or invert shall be clean and free of all deleterious material including dirt, roots, grease, sludge, and any other debris or matter clinging to the corbel (**cone**), wall, and \ or bottom surface of the manhole that is to be rehabbed. Cleaning and preparation before rehabbing starts shall be accomplished by:

A. Use high-pressure water with a minimum of 2500 psi to remove dirt and other foreign material.

1. Where large quantities of grease and oil are present detergents such as “Neutra – Green Neutral Cleaner / Degreaser No. 1201” shall be mixed as per Manufacture’s recommendation, sprayed on the surface to be cleaned, brushed or left to soak for a few minutes, and rinsed off.
2. If necessary, a 10% solution of muriatic acid shall be used to remove foreign material not removed by the previous two- (2) items.

B. All materials resulting from the cleaning operation shall be removed from the manhole being cleaned.

C. Remove any unsound steps. Remove all protruding ledges and unsound brick or rocks and repair all open spaces with brick and a non-shrink grout such as “ Hydro Plug” which is distributed by ICM (**Improved Construction Methods**).

1. A flow through plug with a hose or pipe attached and extending through manhole into the outlet pipe shall be used any time the manhole invert is being worked on and left in until the invert material has properly cured.

2. Seal all active leaks before applying any rehab coatings to any of the manhole sections by:

A. Chisel away all loose or defective material and wipe or brush the surface clean.

B. All active leaks in the manhole structures shall be stopped by quickset grout such as “Hydro Plug”. Lead wool may also be used to plug large leaks.

C. Where substantial water flow entering into the manhole cannot be stopped by quickset grout such as “Hydro Plug” and \ or lead wool, drill and pressure grout through the manhole wall with grout such as “3M 5600 Grout Foam” distributed by ICM.

D. Use quickset grout such as Hydro Plug to seal all pressure relief holes.

E. When sealing active leaks in the invert, take care not to cause a flow restriction through the manhole.

3. Fill all holes and voids, plug all abandoned lines, and patch all cracks before applying any rehab coatings to any of the manhole sections by:

A. Use brick and \ or non-shrink grout such as Hydro Plug to fill holes.

B. Use non-shrink grouts such as “Hydro Plug” to fill 1/8 inch and wider cracks and to replace disintegrated mortar.

C. Use brick and non-shrink grout such as “Hydro Plug” to construct a 12-inch long plug in all abandon lines that have not been plugged.

4. When repairing or rebuilding benches and inverts:

A. Remove all deteriorated material down to sound concrete.

B. Rebuild using non-shrink grout such as “Hydro Plug”.

C. Trowel smooth to proper contour with a minimum ½ inch thickness.

II. Application of Cementitious Coatings

1. When using brush applied coatings:

- A. Coat the surface with a conditioning coat if needed.
- B. A two-coat application of brush applied coatings will be applied to protect the previously repaired and cleaned walls from chemical attack and as a waterproofing measure. The first coat shall be completely dry prior to application of the second coat. The initial and final coats of the brush-applied coatings shall be of two different colors, preferable gray and white, so that they can be readily distinguished.
- C. The minimum thickness of the two coats shall be 1/8 inch.
- D. All “droppings” of foreign and wall sealant materials on the bottom of the manhole (**if not intercepted above the floor**) shall be removed before they harden and shall not be pushed into the pipe.

III. Application of Spray Applied Cementitious Coatings

A. Procedures for “Strong Seal”

1. After the walls, bench, and invert have been cleaned and repaired insert wood covers over the bench and invert.

2. Spray applies the first coat of material to a thickness of at least $\frac{1}{4}$ inch to assure all voids and crevices are filled. Allow material to set sufficiently to allow light troweling without material falling from the wall.
3. After the first coat has set firmly (**usually 3 hours; however, an overnight wait is preferable**), apply a second coat with a thickness of at least $\frac{3}{8}$ inch. This material can be leveled and troweled at this time. This should provide a total thickness of at least $\frac{5}{8}$ -inch.
4. Spray bench with a thickness of at least $\frac{1}{2}$ -inch and trowel smooth.
5. Replace manhole lid and allow material to cure in ambient (**moist**) conditions.

B. Procedures for "Quadex"

1. After the walls, bench, and invert have been cleaned and repaired, moisten them to a damp state, with no visible water drippings or running over brick surface or manhole wall.

2. Spraying shall be performed by starting at the manhole invert progressing to the wall and upward to and including the lower half of the casting in one continuous application.
3. A uniform thickness of ½ inch (**minimum**) of material shall cover all surfaces after troweling. The bench shall be sprayed in such a manner, which prevents water from ponding on the bench.
4. Troweling of material shall begin immediately following the spray application. Initial troweling shall be in an upward motion to compress the material into voids and solidify the manhole wall. Troweling in a circular motion smoothing material for a final finish. Precautions should be taken not to over trowel material.
5. Replace manhole lid and allow material to cure in ambient (**moist**) conditions.

RMH – REPLACE MANHOLE STRUCTURE

1. If the manhole is located in pavement, removal of old manhole structure shall be accomplished by saw cutting a square cut out in the pavement large enough to accommodate the removal of the old manhole structure and construction of the new manhole including if needed, outside drops and provisions for safety.

2. Remove old manhole and enough material around it to allow construction of a new manhole including if needed, outside drops and provisions for safety.

3. New manhole construction:

A. General:

1. Never install base in water filled excavation.
2. Invert depth at the flow line: approximately $\frac{1}{2}$ the pipe diameter.
3. In curved inverts, make curves with the longest possible radius to facilitate smooth flow.
4. Invert shape: semicircular.
5. Invert material and finish: Class A Concrete, smooth finish.
6. Invert grade: constant smooth grade; no offsets.
7. Bench: slope grout upward from edge of the invert to the manhole wall.
8. Form a flow channel in the bench for any services stubbed into manhole. Form invert and finish per above.

9. Cut the upper half of any pipe extending inside the manhole wall flush with the wall. Smooth rough edges with grout.

10. Manholes materials:

A. Manhole brick: Radial manhole brick or common brick of first quality, well burnt, non-porous and free from warps, cracks, broken edges, or other defects which might make the constructed manhole leak or structurally unsound.

B. Manhole grout: by volume, one part Portland cement to four (4) parts sand. Add minimum amount of potable water to achieve a workable consistency.

C. Water for mortar and grout: potable water free from injurious amounts of acids, alkalize, oils, sewage, vegetable matter, and dirt.

D. Cement shall be Portland Type I.

E. Precast concrete manholes: Make sure factory installed cut outs in the bottom section are appropriate for the existing pipe configuration and grade.

Pipe connections at manhole – Cutouts shall be equipped with rubber boots such as “Z LOK XP” as provided with Peterson Concrete Tank Company’s precast manhole to ensure a watertight connection.

Joint Sealant – Flexible rubber sealant for joints in precast manhole sections shall provide permanently flexible watertight joints, shall remain workable over a wide temperature range, and shall not shrink, harden, or oxidize upon aging such as “Forsheda F-114” as provided with Peterson Concrete Tank Company’s precast manhole.

A one- (1) foot long precast section is required immediately below the corbel (**cone**) section in order to lower the manhole for any future change in grade.

The frame for the lid shall be installed when corbel (**cone**) section is cast.

- F. Cast – in –place concrete manhole: Construct with Class A concrete.

Reinforcement shall be per standard manhole detail.

The frame for the lid shall be installed when the manhole is constructed.

- G. Manhole frame and lid:

1. Raise the corbel (**cone**) section to the proper elevation with brick and mortar.
2. Coat the bottom of the frame with Mastic Sealant.
3. Set the frame in Class A concrete as shown per standard manhole detail.

4. Set manhole frame and lid level except in public right – of – way; there set the ring and cover flush with pavements, sidewalks, or other paved surfaced areas.
5. After the mortar has set, if the manhole is in a paved area or is subject to be submerged by water from a rain event or by a high water table, install shrink wrap such as “StomaSeal”, around all the joints made during the adjustment process including the corbel (**cone**) to frame joint.

H. Brick manhole construction:

1. Lay radial brick or common brick in a full mortar bed with the vertical joints between bricks entirely filled with mortar.
2. Horizontal joints and interior joints: not less than $\frac{1}{4}$ inch, nor more than $\frac{1}{2}$ inch in thickness.
3. In vertical walls, lay brick in alternate courses of headers and stretchers with consecutive courses breaking joints.

4. Use a full brick next to the pipes and a bat in the interior of the course where bats are necessary in forming the closures around pipes.
5. Remove, clean, and relay with fresh mortar any brick displaced during construction.
6. Plaster the vertical interior surface and the entire exterior surface with mortar not less than $\frac{1}{2}$ inch in thickness. Finish the plastered mortar to a uniform smooth surface. Keep plastered mortar moist for 48 hours afterwards.
7. Never install mortar when the temperature is below 35 degrees F or when bricks have frost deposits.
8. Interior finish: smooth, free of fins or sharp edges.
9. Invert to be constructed as listed in General above.

10. After coating the bottom of the frame with Mastic sealant, set the frame to proper elevation in a full mortar bed. Moist cure mortar for 48 hours after setting ring.

I. Cast – in – place manhole construction:

1. Dimension and layout: per standard manhole detail. The top section or corbel (**cone**) must be concentric with the barrel unless otherwise noted.
2. Install rubber gaskets around all pipes going through manhole wall.
3. Interior finish: smooth, free of fins or sharp edges.
4. Care should be taken to prevent the end of the pipe from deflecting due to loads imposed by the weight of the concrete.
5. Construction joints on manholes of excessive depth shall be connected with reinforcement as per standard manhole detail.

6. Invert to be constructed as listed in General above.
7. The frame for the lid shall be installed when the manhole is constructed. Coat the bottom of the frame with Mastic Sealant before installing.

J. Precast manhole construction:

1. The bottom section for precast manholes shall be manufactured as an integral part of the manhole base slab.
2. Install remaining sections in a truly vertical plane.
3. Fill space between pipe and periphery of cutout entirely with mortar or concrete.
4. Grout joints between sections inside and outside.
5. Interior finish: smooth, free of fins or sharp edges.
6. Invert to be constructed as listed in General above.

7. The frame for the lid shall be installed when the manhole is constructed. Coat the bottom of the frame with Mastic Sealant before installing.
8. Plug lifting holes with a non-shrink grout such as “Hydro Plug”.

K. Drop manhole construction:

1. Install a drop manhole when the vertical difference between the pipe entering and leaving the manhole exceeds two (2) feet.
2. Construct manhole base, barrel, and corbel (**cone**) sections per the requirements for brick, cast – in – place, or precast manholes.
3. Construct drop of ductile iron pipe with mechanical joint fittings as per standard manhole details.
4. Encase the 90-degree bend in class A or B concrete as per standard manhole details.

5. Extend the ductile iron pipe a minimum of five (5) feet beyond the manhole excavation before changing pipe materials.
6. After manhole is constructed wait no less than 48 hours before backfilling

*Note: The existing procedure is for manholes poured in place to be stripped of forms the same day of pour and in cases where manhole is located in a street that are back filled that day.

7. Backfill the excavation with the appropriate backfill material for the area being backfilled.
8. If the manhole is in a paved area, replace the base and pavement.

SANITARY SEWER SERVICE LINE REPAIRS

The location of service line repairs are determined by the following groups:

Engineering Department

Engineering Support

Design Construction

The Engineering Department locates repairs through project studies of major areas that require rehabilitation, which are located inside the final project area. These are then relayed to our construction coordinator via e-mail as to work orders being setup.

Construction / Repairs

This section has very little input into the location of service repairs other than those they are dispatched too by our Dispatcher from in coming calls from other utilities for breaks, which they have caused.

Cleaning / Inspection

TV Crews

Hydro Crews

Hand Rod Crews

Dispatcher

Emergency Crew

This section determines possible service repairs through their normal operation and maintenance of our collection system as well as customer calls.

Existing Repair Procedures

The existing procedures we have breaks down into two areas based on the following items:

AREA (1)

Customer Oriented Calls

Customer Oriented calls (With Line Breakage, normally other utilities or plumbers. (Priority (5)

These calls also come into our dispatcher, which a repair crew is dispatched to the site (**within the hour**). The dispatcher or staff member who receives the call needs the following information:

Location of repair (**Address front or rear**)

Line size and type

Depth of line (**Determine if shored**)

Line is exposed and excavation large enough for repair

Dispatcher will contact coordinator or construction supervisor to get crew assigned, which the above information will be dispatched to the crew. The dispatcher will initiate work order if there is a **SSL ID** available, and if not have the secretary set one up. After the **SSL ID** has been determined then a work order can be made and number relayed to the repair crew.

A. Foreman of dispatched crew will be responsible for the following:

1. Verify materials required (**send personnel to shop if required**)
2. Check Excavation (**determine if safe and ready for repair**)
3. If Unsafe (**request on site crew of other utility or plumber to safe up or excavate as required.**)
4. Repair line ASAP (**Normally within (1) hour**)

AREA (2)

Work order Generated Repairs (priority (4) or less)

The construction coordinator will schedule these type repairs according to priority as follows:

Scheduling Repairs

The coordinator will take existing work orders and determine if there are multiple work orders in a given area so these work orders can be scheduled together. In addition the following steps must be used in the scheduling of all repair work orders:

1. Verify that line has been televised and repair location marked in white paint.
2. One-call made at least (5) days in advance if scheduled repairs (*call information into dispatch & record ref.# number in Log section of work order*), also the work must start within ten days of the one call and if working more than twenty days the one call must be renewed!!
3. Verify one-call marked (1) day in advance of scheduled repair. (**This maybe transferred to Foreman**)

4. Verify no conflicts (**That may require scheduling with other utilities**)
5. Notify Home Owners (*In person or by flier, See Attached A-14 & A-14a*)
6. Work order to assigned crew a minimum of (1) day
Prior to Scheduled repair.
7. Have on hand, **Utility Damage Report** and fill out a report for each damaged utility service that we interrupt. (*See attached A-20*)

The coordinator should try to insure the repair crews have at least three work orders with them daily. This will prevent delays and the needless down time where they can simply move to another location if problems exist at one.

A. Foreman of assigned will be responsible for the following:

1. Determine materials required (**prepare Stock Room Request form (1) day in advance of repair**)
2. Verify required equipment (**trench box, shoring, gas detectors**)
3. Verify one-call has been marked, and take pictures if needed.
4. Verify any possible conflicts.
5. Repair Line and back fill, make w/o to have main cleaned if needed
6. Streets and Alleys Install temporary Asphalt (**or plate**)

The Foreman will also be responsible for placing notes on the work order as to what additional items are required to complete the project (**street repair, top soil, sod, ext.**) and turn that hard copy of the work order into the coordinator so he can schedule the completion of the job. If the job is completed by the original crew then a note is added to the work order stating it is completed.

Completion of repairs are being handle by allowing excavations out of streets or alleys time to settle for a period of a week or more before top soil and seeding or sod is installed to eliminate customer complaints from excavations settling after the repairs have been completed. This practice has proven to be efficient in not having to go back to repair sites. The repairs that are located within streets and alleys are completed the same day of repair when possible and always within (5) days max. After the work is completed the *foreman* will be responsible for turning in any *follow up work orders* to have the main line cleaned and or televised if needed.

SANITARY SEWER SERVICE LINE REPLACEMENTS

The location of service line replacements are determined by the following groups:

Engineering Department

Permit Section

The Engineering Department determines replacements from applications they receive from customers, their plumbers, or other representatives that are requesting service line replacements within the right-of-way of public roadways and alleys. These are then sent to our construction coordinator via Fax so crews can be assigned as soon as possible were the customer is out of service. Also the permits desk is to notify the Dispatch office before the customer pays for a replacement, so the service line can **hand-rodded and televised (only if it can in fact be cleared)** to determine if a replacement is needed.

Construction / Repairs

This section has very little input into the location of service replacements other than those they receive from Engineering.

Cleaning / Inspection

TV Crews

Hydro Crews

Hand Rod Crews

Dispatcher

Emergency Crew

This section determines if service replacements are required by investigating those sent by Engineering prior to construction crews being dispatched.

Existing Replacement Procedures

The existing procedures we have breaks down as follows:

The Permit section normally the (**Permits Desk Dispatcher**) will send Via Fax the approved application and the signed authorization to dig to the construction coordinator, this is after dispatcher has had the line hand-rodged and televised if possible. See section (A) following the note below.

Note: The application at this point should be checked by an engineering inspector and two way clean-out installed at the right-of-way. (**Which we have received several that clean-outs do not exist on and this causes wasted time. This needs to be eliminated if at all possible.**) [*SEE ATTACHED ENGINEERING PROCEDURES, A-15*]

The Dispatch office will dispatch the (**Emergency Crew**) at this point to rod the service from the **clean-out** to the main.

A. Emergency Crew is able to clear service line

1. Emergency Crew prepares a work order to televise the service.
2. TV Crew finds no problem with service line.

The construction coordinator will notify engineering via e-mail that the service line does not require replacement. (**Engineering at this point now does not collect the replacement fee from the applicant.**)

The work order will be deleted(**if one was created**)and comments that a replacement was not required are added to the TV work order for future reference.

Note: The suggested procedure change is to not collect the replacement fee until it has been verified that a replacement is required.

B. Emergency Crew can not clear service line or the TV Crew determines replacement is required.

Emergency Crew or TV Crew marks for one-call and calls into dispatch as emergency.

They relay this info back to construction coordinator.

Scheduling Replacements

The coordinator will take existing work order, schedule a construction crew to perform the replacement ASAP (**Normally within 24 hours**) where customer is out of service. The normal procedure will be used for scheduling where service can be maintained, which the following steps must be used by the coordinator for normal procedures:

1. Verify that line has been televised and repair location marked in white paint.
2. One-call made at least (5) days in advance if scheduled repairs(*call information into Dispatch & record ref.# number in Log section of W/O*), also the work must start within ten days of the one call and if working more than twenty days the one call must be **renewed!!**
3. Verify one-call marked (1) day in advance of scheduled repair.
(**This maybe transferred to Foreman**)

4. Verify no conflicts (**That may require scheduling with other utilities**)
5. Notify Home Owners (*In person or by flier, See Attached A-14 & A-14a*)
6. Work order to assigned crew a minimum of **(1)** day Prior to scheduled replacement.
7. Have on hand, **Utility Damage Report** and fill out a report for each damaged utility service that we interrupt.
(See attached A-20)

The coordinator should try to insure the repair crews have at least three work orders with them daily. This will prevent delays and the needless down time where they can simply move to another location if problems exist at one.

A. Foreman of assigned will be responsible for the following:

1. Determine materials required (**prepare Stock Room Request Form (1) day in advance of repair**)
2. Verify required equipment (**trench box, shoring, gas detectors**)
3. Verify one-call has been marked, and take pictures if needed.
4. Verify any possible conflicts.
5. Repair Line and back fill, make w/o to have main cleaned if needed
6. Streets and Alleys Install temporary Asphalt (**or plate**)

The Foreman will also be responsible for placing notes on the work order as to what additional items are required to complete the project (**street repair, top soil, sod, ext.**) and turn that hard copy of the work order into the coordinator so he can schedule the completion of the job. If the original crew completes the job then a note is added to the work order stating it is completed.

Completion of replacements are being handle by allowing excavations out of streets or alleys time to settle for a period of a week or more before top soil and seeding or sod is installed to eliminate customer complaints from excavations settling after the repairs have been completed. This practice has proven to be efficient in not having to go back to repair sites. The replacements that are located within streets and alleys are completed the same day of replacement when possible and always within (5) days max. After the work is completed the *foreman* will be responsible for turning in any *follow up work orders* to have the main line cleaned and or televised if needed.

SANITARY SEWER SERVICE LINE SEALS

The location of service line seals are determined by the following groups:

Engineering Department

Permit Section

The Engineering Department determines seals from applications they receive from customers or other representatives that are requesting service line seals. These are then sent to our construction coordinator via Fax or e-mail so crews can be assigned.

Construction / Repairs

This section has very little input into the location of service seals other than those they receive from Engineering.

Cleaning / Inspection

TV Crews

This section determines service locations for the construction crews so seals can be performed.

Existing Service line seals Procedures

The existing procedures we have breaks down as follows:

The Permit section normally the **(Permits Desk Dispatcher)** will send Via Fax or e-mail the work order number to the construction coordinator for scheduling.

Note: The Permits Desk Dispatcher prepares the work order for seals and at this point is placing the address in the qualifier field even if the address exist in IMS, which if it is a valid address that exist in IMS then it should be shown in the address field.

The construction coordinator will schedule a construction crew to perform the seal.

Scheduling Service Seals

The coordinator will take existing work orders, schedule a construction crew to perform the seals. The normal procedure will be used for scheduling service seals, which the following steps must be used by the coordinator for normal procedures:

One-call made at least **(5)** days in advance of scheduled seal. (*use attached one-call information sheet, A-13*)

Verify one-call marked **(1)** day in advance of scheduled seal. (**This maybe transferred to Foreman**)

3. Verify no conflicts (**That may require scheduling with other utilities**)

4. Work order to assigned crew a minimum of **(1)** day Prior to Scheduled seals.

5. Schedule all work orders in the same area at the same time.

The coordinator should try to insure the repair crews have at least three work orders with them daily. This will prevent delays and the needless down time where they can simply move to another location if problems exist at one.

Foreman of assigned will be responsible for the following:

Determine materials required (**prepare Stock Room Request Form (1) day in advance of seal**)

2. Verify required equipment (**trench box, shoring, gas detectors**)

3. Verify one-call (**Record One-Call Ref # number on Log section of work order**), also the work must start within ten days of the one call and if working more than twenty days the one call must be **renewed!!**

4. Verify any possible conflicts.

5. Seal Line as close to the right-of-way line or property line as possible (**mark the end of service with rope and locate from either upstream or downstream manhole and back fill**)

6. Have on hand, **Utility Damage Report** and fill out a report for each damaged utility service that we interrupt. (*See attached A-20*)

The Foreman will also be responsible for placing notes on the work order stating it is complete.

Stockroom Procedures

Stockrooms should be set-up to track and verify all shipping(**stock being issued or transferred to other areas**) and receiving(**incoming stock from vendors or returns from transfers or issues**). We have set our stockroom up as the main warehouse for our facility and then set-up all of our construction crews(**with the exception of the utility crew and the ROW crew**) as in the field stockrooms. Each crew is responsible for an inventory assigned to their vehicle, this way no matter what job they encounter through the day they should be able to handle the repair or repairs without making several trips into the main warehouse.

Transfers, these are usually stock moving from one stock area to another. We have set our stockrooms up with specific account numbers (150 accounts, warehouses and also vehicle accounts called rolling stock) which define the difference between an issue and a transfer.

Issue of stock, this is stock moving to a final location for use as part of overhead to do the job under a task account number, or charged to a specific account through a work order number.

All transfers and issue of stock are done by using a stock request form (*see attachment A-5*). The request forms are required to be filled out and signed by a

Supervisor 24 hours in advance of the stock being picked up by the requester. If any of the information on the form is wrong or left incomplete (**wrong part number, wrong account number, no employee number, or no foreman's signature**) the stock will not be pulled for that request form until it can be verified with the requester. All stock that is processed through a request form must be verified by the stockroom personnel this includes items that are kept in other areas outside of the warehouse itself(**pipe yard & storage area over the garage facility**), example; pipe being checked out must be measured to the tenth of a foot and verified by a stockroom employee before it leaves the pipe yard. This same procedure is true of returns to the warehouse all incoming stock must be verified by the stockroom personnel. Sometimes it is necessary to buy stock for special jobs that we do not have on hand or that has been on backorder from our regular vendor this is done on a PA(used if \$100 dollars or less) or a PO(use if more than \$100 dollars) note; a PO must also be accompanied by a requisition form and signed by a supervisor and a supervisor must also sign off on a PA for it to be valid.

Shipping and Receiving; Sometimes we do ship equipment off for repair in this case the items shipped should be verified through the supervisor as to

the required paperwork needed and the amount of insurance needed on each item shipped and how the item is to be shipped(next day, or ground usually 3 days). Receiving stock from outside vendors requires a PO verification form, requisition form signed by supervisor and a receiver packing list form with the count of items received verified by the stockroom personnel. If any of these are not in hand at the time of delivery the items must remain boxed up until the order can be verified. After the order has been verified it can then be added to warehouse stock. Each item is assigned a location in the warehouse or storage areas in the IMS data base. Each item is also assigned a minimum amount and a maximum amount to have on hand these amounts are checked before an order is placed to replenish warehouse stock. This tool is also used to regulate the inventory counts in the warehouse stock, which most stock has been assessed and put on an annual order amount, but sometimes other stockrooms need more than they indicated when the order was initially placed. Inventory is checked at the main warehouse on quarterly basis and verified annually, our rolling stock vehicles are inventoried after each capital job they complete or on a quarterly basis if they do not handle large projects. At this time the stock can be reconciled back to the main warehouse or any missed issues to a work order can be made.

Stockroom personnel duties;(stockroom buyer & data entry clerk).

BUYER:

A>.The buyer is responsible for checking and tracking all warehouse orders, which includes verifying stock counts, requisition forms and any other paperwork needed before order is placed to the vendor.

B>.The buyer also responsible for receiving stock, verifying requisition forms, PO forms, & vendor packing list forms .

C>.After the verification process the buyer enters the received stock into the IMS data base and updates the system counts and stamps all the paperwork as being received.

D>.Sends copies to the downtown personnel in the finance department.

E>.As a backup to check the system after the buyer does his entries he lets the data entry clerk double check his entries into IMS data base.

DATA ENTRY CLERK:

A>.The data entry clerk is responsible for receiving stock request forms, pulling the stock from the warehouse for each order and boxing the orders separately then making a copy of the request form so the order can be checked by the requester.

B>.After the orders have been pulled he then does transfers as well as issues to work orders into the IMS data base.

C>.The data entry clerk also does daily entries for time and materials to work orders into the IMS data base.

D>. Marking lines for one call in preparation for line repairs.

E>.After his entries are done as a backup to double check the system he lets the buyer check his entries.

The stockroom personnel also are responsible for making sure each item (if needed) on hand has a MSDS sheet that applies to said item and for checking all the fire extinguishers & medical kits in the building and at gas

pumps, they also check fuel, oil, and antifreeze levels periodically to be sure data base quantities are correct and update the safety progress sign at the yard gate.

New products; any new items (including samples) must be approved through a supervisor before it can be added to warehouse stock, this must meet safety protocol if possible unless there is no other substitute that is better.

Safety items; all safety items are highlighted in yellow in the parts catalog so that they can be charged specifically to the safety account and must be one item to an employee, example 2 pair of safety glasses for one employee number would be not be approved, each employee would have to list his or her number for each item. This same practice also applies to uniform items that are warehoused (boots, winter liners, tee shirts, gloves, and rubber gloves, etc).

Aspirin, alcohol wipes, bee sting applicators, antiseptic salve, & other medical supplies do not have to be checked out but are monitored by stockroom personnel.

Special Orders:

Concrete orders; log request for concrete into order book

Foreman who request order supplies information for order form to be completed. Order form has foreman's radio call number, date of request, delivery date and time, location & type of pour, desired mix of concrete, washed rock or not and if calcium is to be added or not. All concrete orders should be made 1 day in advance of pour if possible and if any changes in amount of concrete or type of concrete are needed foreman must notify storeroom at least one hour before delivery time.

Prefab manholes; must furnish storeroom personnel with desired information about the special order base, riser, or cone that is needed and also a location if delivery is to be made straight to the work site. Special manholes prefab products may take from 3 days to 2 weeks to be delivered, depending on the vendors on hand supply.

Gas Detectors:

Complete sign out sheet, check calibration sticker for due date, turn on detector and let it go through the warm-up cycle, check battery voltage, check carrying case to be sure case matches detector, make sure all the attachments are in the case, check remote air pump if supplied with pump, be sure it runs, check probe and hose for stoppage, be sure there is a

filter kit replacement in the case, and be sure to sign detector back in before close at the end of work day.

Equipment check-out:

Date signed out, equipment tag number, description of equipment, employee name, employee number, radio call number, inspection of equipment before leaving, Supervisor signature, inspection of equipment before returning, and sign equipment back in.

Orders on general warehouse stock:

Steps of an order:

- 1>. Stock or non-stock requires a need for an order
- 2>. Generate a purchase requisition
- 3>. Requisition written out and approved by a supervisor
- 4>. Fax approved requisition to purchasing in finance department
- 5>. Order confirmation received from purchasing.
- 6>. Date order is placed
- 7>. Date of delivery to storeroom or work site.
- 8>. Delivery is received
- 9>. Check order for visible outside damage before accepting
- 10>. Open package and verify count of items by packing list (look for MSDS if required)
- 11>. Green copy of PO, white copy of requisition, and a copy of received packing list, staple together and send to purchasing
- 12>. Take original copy of receiver ticket and enter into IMS
- 13>. Items can now be added to storeroom inventory
- 14.> Forward original receiver ticket with IMS transaction number to purchasing.

NOTE: Orders generated through normal checks of inventory by minimum and maximum counts are always verified physically on the shelf in the event an errand entry into IMS causes a low count that actually is not in need of being replenished at that time.

Little Rock Wastewater Utility

SANITARY SEWER OVERFLOW RESPONSE PLAN

I. AUTHORITY

- A. National Pollutant Discharge Elimination System (“NPDES”)**
NPDES Permit # AR0021806
NPDES Permit # AR0040177
Issued by Arkansas Department of Environmental Quality (“ADEQ”)

II. GENERAL

The Sanitary Sewer Overflow Response Plan (“SSORP”) is designed to ensure that every report of a confirmed sewage overflow is immediately dispatched to the appropriate crew so that the effects of the overflow can be minimized with respect to impacts to public health and adverse effects on beneficial uses and water quality of surface waters and customer service. The SSORP further includes provisions to ensure safety pursuant to the directions provided by the ADEQ and that notification and reporting is made to the appropriate local, state, and federal authorities. For purposes of this SSORP, “confirmed sewage spill” is also sometimes referred to as “sewer overflow,” “overflow,” or “SSO” sanitary sewer overflow. The effective date of this plan is **September 30, 2002**.

A. Objectives

The primary objectives of the SSORP are to protect public health and the environment, satisfy regulatory agencies and waste discharge permit conditions, which address procedures for managing SSOs, and minimize risk of enforcement actions against Little Rock Wastewater Utility (“LRWU”).

Additional objectives of the SSORP are as follows:

- Provide appropriate customer service;
- Protect wastewater treatment plant and collection system personnel;
- Protect the collection system, wastewater treatment facilities, and all appurtenances; and
- Protect private and public property beyond the collection and treatment facilities.

This plan shall not supersede existing emergency plans or standard operating procedures (SOPs) unless directed by the LRWU Manager.

B. Organization of Plan

The key elements of the SSORP are addressed individually as follows:

Section III Response Procedure	Overflow
Section IV Procedure	Public Advisory
Section V Notification Plan	Regulatory Agency
Section VI Procedure	Media Notification
Section VII Maintenance of SSORP	Distribution and

C. SSO Tracking

A procedure to track the frequency, type, and location of SSOs has been prepared under Appendix A.

Data on each SSO occurrence is maintained in a database that can be analyzed based on any recorded SSO parameter. The database is maintained and backed up on a regular basis by the Technical Service Department.

III. OVERFLOW RESPONSE PROCEDURE

The Overflow Response Procedure presents a strategy for LRWU to mobilize labor, materials, tools, and equipment to correct or repair any condition which may cause or contribute to an unpermitted discharge. The plan considers a wide range of potential system failures that could create an overflow to surface waters, land, or buildings.

A. Receipt of Information Regarding an SSO

A SSO may be detected by Utility employees or by others. The Maintenance (Cleaning and Inspection Section) Dispatcher is primarily responsible for receiving phone calls from the public of possible SSOs from the wastewater collection system, and for forwarding work orders to the Cleaning and Inspection Section.

Generally, Dispatchers at the Maintenance Cleaning and Inspection Section receive telephone calls from the public reporting possible SSOs. The emergency phone line is staffed 24 hours per day, every day of the year. The sewer system Environmental Health, Safety, and Communications Department has a program for educating the public to report SSOs they observe and the phone number to be called.

- 1 The Dispatcher obtains all relevant information available regarding the overflow including:
 - a. Time and date call was received;
 - b. Specific location;
 - c. Description of problem;
 - d. Time and overflow was observed;
 - e. Caller's name and phone number;
 - f. Observations of the caller (e.g., odor, duration, back, or front of property); and
 - g. Other relevant information that will enable the responding Emergency crews to quickly locate, assess and stop the SSO.

The Dispatcher then records/inputs the SSO information and creates a work order for assignment to the Emergency crew.

2. Pump station failures are monitored and received by operators on duty at the Adams Field and Fourche Creek Wastewater Treatment Plants. The operator on duty immediately conveys all information regarding alarms to the Superintendent of Facilities and Equipment to initiate the investigation.
3. SSOs detected by any personnel in the course of their normal duties are reported immediately to the Maintenance Dispatcher. Dispatching personnel record all relevant SSO information and dispatch an Emergency crew and additional response crews, as needed.
4. Maintenance emergency crew or response crew confirms the SSO. Until verified, the report of a possible spill will not be referred to as a "sewer overflow."

Maintenance Dispatcher / Project Planner enters a work order and service request within 24 hours of the sewer investigator's confirmation which will reflect a SSO has occurred. A programatic notification will be sent to the Plant Superintendent. The Plant Superintendent is responsible for reviewing, updating, and signing the final Overflow Report. Table III-1 summarizes the SSO response tracking protocol.

TABLE III-1. SSO RESPONSE TRACKING PROTOCOL

<ol style="list-style-type: none">1. Crew that locates overflow fills out overflow report2. Crew that locates overflow notifies Coordinator3. Responding Crew or Coordinator installs warning signs4. Responding Crew or Coordinator will take photographs before and after clean up5. Crew cleans and sanitizes6. Crew or Coordinator removes warning signs7. Coordinator verifies cleanup is complete in a timely manor8. Dispatcher / Project planner verifies overflow is filled out correctly9. Coordinator and Dispatcher / Project Planner down loads photographs into database10. Programatic SSO notification is sent to Plant Superintendent11. Plant Superintendent checks and signs overflow report12. Plant Superintendent sends overflow report to ADEQ and other departments	
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B. Dispatch of Appropriate Crews to Site of Sewer Overflow

Failure of any element within the wastewater collection system that threatens to cause or causes an SSO triggers an immediate response to isolate and correct the problem. Crews and equipment are available to respond to any SSO location and dispatch crews to any site of a reported SSO immediately. Also, place additional maintenance personnel “on call” in the event extra crews are needed. Appendix B summarizes the SSO Action Plan.

1. Dispatching Crews

- Dispatchers receive notification of SSOs as outlined in Section III.A “Receipt of Information Regarding an SSO” and dispatch an Emergency crew or the appropriate crews and resources as required.
- Dispatchers notify the appropriate supervisor, area forman or coordinator by phone or radio regarding SSOs and field crew locations.

2. Crew Instructions and Work Orders

- Dispatch responding crews by phone or radio. Maintenance Dispatcher receives instructions from Emergency crews or their supervisors regarding appropriate crews, materials, supplies, and equipment needed.
- Dispatchers verify that the entire message has been received and acknowledged by the crews who were dispatched. Follow all standard communications procedures. All employees being dispatched to the site of a SSO proceed immediately to the site of the overflow. Report any delays or conflicts in assignments immediately to the supervisor for resolution.
- In all cases response crews report their findings, including possible damage to private and public property to Coordinator immediately upon making their investigation. If Coordinator has not received findings from the field crew within 1 hour, Coordinator contacts the response crew to determine the status of the investigation.

3. Additional Resources

- Coordinator receives and conveys to appropriate parties requests for additional personnel, material, supplies, and equipment from crews working at the site of a SSO.

4. Preliminary Assessment of Damage to Private and Public Property

- The focus is to resolve the problem. The response crews use discretion in assisting the property owner/occupant as reasonably as they can. Be aware that LRWU could face increased liability for any further damages inflicted to private property during such assistance. The response crew shall enter private property for purposes of assessing damage. Crew will take appropriate still photographs, if possible, of the outdoor / indoor area of the SSO and impacted area in order to thoroughly document the nature and extent

5. Field Supervision and Inspection

- The Coordinator of the emergency crew or who confirmed the SSO, visits the site of the SSO, if possible, takes photos and installs warning sign to ensure that provisions of this overflow response plan and other directives are met.
- The Coordinator of the Emergency crew is responsible for confirming that the Overflow Report is provided to Maintenance Dispatcher / Project Planner within the specified time.

6. Coordination with Hazardous Material Response

- Upon arrival at the scene of a SSO, should a suspicious substance (e.g., oil sheen, foamy residue) be found on the ground surface, or should a suspicious odor (e.g., gasoline) not common to the sewer system be detected, the Coordinator or response crew should secure the immediate area; then, contact dispatch or the Environmental Health and Safety Specialist. **Remember that any vehicle engine, portable pump or open flame (e.g., cigarette lighter) can provide the ignition for an explosion or fire should flammable fluids or vapors be present. Keep a safe distance and observe caution until assistance arrives.**
- Subsequent response actions should follow existing LRWU procedures for “DETECTING POTENTIAL EXPLOSIVE OR TOXIC CONDITIONS”. These procedures are detailed in the LRWU Safety Manual and attached as Appendix C.
- Only when the Environmental Health and Safety Specialist determines it is safe and appropriate for the Coordinator and crew to proceed can they then proceed under the SSORP with the containment, clean-up activities and correction.

C. Overflow Correction, Containment, and Clean-Up

SSOs of various volumes occur from time to time in spite of concerted prevention efforts. Spills may result from blocked sewer lines, pipe failures, or mechanical malfunctions among other natural or man-made causes. LRWU is constantly on alert and ready to respond upon notification and confirmation of an overflow.

This section describes specific actions to be performed by the crews during a SSO.

The objectives of these actions are:

- To protect public health, environment and property from sewage overflows and restore surrounding area back to normal as soon as possible;
- To promptly notify the regulatory agency's communication center of preliminary overflow information and potential impacts;
- To contain the SSO to the maximum extent possible including preventing the discharge of sewage into surface waters; and
- To minimize the LRWU exposure to any regulatory agency penalties and fines.

Under most circumstances, LRWU handles all response actions with its own maintenance forces. They have the skills and experience to respond rapidly and in the most appropriate manner. An important issue with respect to an emergency response is to ensure that the temporary actions necessary to divert flows and repair the problem do not produce a problem elsewhere in the system. For example, repair of a force main could require the temporary shutdown of the pump station and diversion of the flow at an upstream location. If the closure is not handled properly, sewage system backups may create other overflows.

Circumstances may arise when the LRWU could benefit from the support of private-sector construction assistance. This may be true in the case of large diameter pipes buried to depths requiring sheet piling and dewatering should excavation be required. LRWU may also choose to use private contractors for open excavation operations that might exceed one day to complete.

1. Responsibilities of Response Crew Upon Arrival

It is the responsibility of the first personnel who arrive at the site of a SSO to protect the health and safety of the public by mitigating the impact of the SSO to the extent possible. Should the SSO not be the responsibility of LRWU, Little Rock Code Enforcement will be contacted and notified of the problem by the Utility. Upon arrival at an SSO, the response crew:

- Determines the cause of the overflow, e.g. sewer line blockage, pump station mechanical or electrical failure, sewer line break, etc.;
- Identifies and requests, if necessary, assistance or additional resources to correct the overflow or to assist in the determination of its cause;
- Determines if private property is impacted. If yes, inform the dispatcher so the Pulaski County Environmental Protection Services may be contacted (501.280.3378).
- Takes immediate steps to stop the overflow, e.g. relieves pipeline blockage, manually operates pump station controls, repairs pipe,

etc. Extraordinary steps may be considered where overflows from private property threaten public health and safety (e.g., an overflow running off of private property into the public right-of-way); and

- Requests additional personnel, materials, supplies, or equipment that will expedite and minimize the impact of the SSO.

2. Initial Measures for Containment

Initiate measures to contain the overflowing sewage and recover where possible sewage which has already been discharged, minimizing impact to public health or the environment.

- Determine the immediate destination of the SSO, e.g. storm drain, street curb gutter, body of water, creek bed, etc.;
- Identify and request the necessary materials and equipment to contain or isolate the overflow, if not readily available; and
- Take immediate steps to contain the overflow, e.g., block or bag storm drains, recover through vacuum truck, divert into downstream manhole, etc. if conditions allow as determined by LRWU Maintenance Department.

3. Additional Measures Under Potentially Prolonged Overflow Conditions

In the event of a prolonged sewer line blockage or a sewer line collapse, set up a portable bypass pumping operation around the obstruction.

- Take appropriate measures to determine the proper size and number of pumps required to effectively handle the sewage flow.
- Implement continuous or periodic monitoring of the bypass pumping operation as required.
- Address regulatory agency issues in conjunction with emergency repairs.

4. Cleanup

SSO sites are to be thoroughly cleaned after an overflow. No readily identified residue (e.g., sewage solids, papers, rags, plastics, rubber products) is to remain.

- Where practical, thoroughly flush the area and clean of any sewage or wash-down water. Solids and debris are to be flushed, swept, raked, picked-up, and transported for proper disposal.
- Secure the overflow to prevent contact by members of the public until the site has been thoroughly cleaned. If posting is required, refer to Section IV.
- Where appropriate, disinfect and deodorize the overflow site.
- Where sewage has resulted in ponding, pump the pond dry and dispose of the residue in accordance with applicable regulations and policies.
- If a ponded area contains sewage which cannot be pumped dry, it may be treated with bleach. If sewage has discharged into a body of water that may contain fish or other aquatic life, do not use bleach or other appropriate disinfectant and contact the Arkansas Game & Fish Commission for specific instructions.
- Use of portable aerators may be required where complete recovery of sewage is not practical and where severe oxygen depletion in existing surface water is expected.

D. Overflow Report

Emergency crew or response crew completes an Overflow Report Form (See Figure III-1). Emergency crew or response crew promptly notifies Maintenance Coordinator when the SSO is eliminated. Information regarding the SSO includes the following:

- Indication that the SSO reached surface waters, i.e., all SSO where sewage was observed running to surface waters, or there was obvious indication (e.g. sewage residue) that sewage flowed to surface waters.
- Indication that the SSO reached and discharged without containment into a storm drain, ditch, drop inlet, or catch basin.
- Indication that the SSO had not reached surface waters. Guidance in characterizing these overflows to include:
 - a. SSO to covered storm drains (with no public access) where personnel verify, by inspection, that the entire volume is contained in a sump or impoundment and where complete clean up occurs leaving no residue.

- b. Preplanned or emergency maintenance jobs involving bypass pumping if access by the public to a bypass channel is restricted and subsequent complete clean up occurs leaving no residue. Any preplanned bypass under these circumstances will not be considered an overflow; and
 - c. SSOs where observation or on-site evidence clearly indicates all sewage was retained on land and did not reach a surface water and where complete cleanup occurs leaving no residue.
- Determine the start time of the SSO by one of the following methods:
 - a. Date and time information received and/or reported to have begun and later substantiated by the Emergency crew or response crew;
 - b. Visual observation; or
 - c. Pump station and lift station flow charts and other recorded data.
 - Determine of the stop time of the SSO by one of the following methods:
 - a. When the blockage is cleared or flow is controlled or contained; or
 - b. The arrival time of the Emergency crew or response crew, if the SSO stopped between the time it was reported and the time of arrival.
 - Visual observations

An estimation of the rate of SSO in gallons per minute (GPM)

by one of the following criteria

- a. Direct observation of the overflow. See Appendix D for guidance on estimating sewer overflow rates.
 - b. Measurement of actual overflow from the sewer main.
- Determination of the volume of the SSO:
 - a. When the rate of overflow is known, multiply the duration of the overflow by the overflow rate; or
 - b. When the rate of overflow is not known, investigate the surrounding area for evidence of ponding or other indications of overflow volume.
 - Photographs of the event, before and after cleanup, when possible.

- Assessment of any damage to the exterior areas of public/private property. Personnel shall enter private property for purposes of estimating damage to structures, floor and wall coverings, and personal property.

E. Customer Satisfaction

The supervisor, coordinator, dispatcher or response crew confirming the SSO follows up in person or by telephone with the citizen(s) reporting the SSO. The cause of the SSO and its resolution will be disclosed.

IV. PUBLIC ADVISORY PROCEDURE

This section describes the actions LRWU takes, in cooperation with ADEQ and the Arkansas Department of Health to limit public access to areas potentially impacted by unpermitted discharges of pollutants to surface water bodies from the wastewater collection system. Temporary and permanent public notice will be provided as indicated below. A sample of both notices is provided in Appendix E.

A. Temporary Public Notice

LRWU has primary responsibility for determining when to post notices of polluted surface water bodies or ground surfaces that result from uncontrolled wastewater discharges from its facilities. The postings do not necessarily prohibit use of recreational areas, unless posted otherwise, but provide a warning of potential public health risks due to sewage contamination.

Table IV-1 outlines the decision process to recommend to the Manager that posting of a confirmed SSO be undertaken or that there is reasonable potential for an SSO to occur thus the need to post in advance. If posting is deemed necessary, the Pulaski County Environmental Health Unit and the ADEQ shall be notified.

B. Permanent Public Notice

LRWU shall place a permanent notice at manholes located on City owned property that may experience SSO's more than once in any twelve-month period. A list of applicable manholes has been provided in Appendix A, Table A-1.

Table IV-1

Decision Process to Post Temporary Signage

Category	Step	Event
Reported Overflow	1	Maintenance Division Supervisor or Response Crew confirms SSO that is not posted has resulted in ponded wastewater (ground surface or ditch ponding), or direct discharge to body-contact recreational waters between May 1st and September 30th.
	2	Maintenance Division Supervisor notifies Director of Engineering Services Division and provides relevant SSO information. <ul style="list-style-type: none"> a) SSO Location b) Remedial actions being taken
	3	Director of Engineering Services dispatches investigator to consult with Maintenance Division on remedial actions and need and extend of posting
	4	Dispatched Investigator notifies Director of Engineering of assessment and makes recommendation on posting
	5	Director of Engineering consults Manager for final decision on posting
	6	If Manager decides posting is required, Manager directs Maintenance Division to post warning sign(s) and notifies Communication Specialist of intent to post and location
	7	Warning sign(s) is/are posted by Maintenance Division
Potential Overflow	1	Reasonable potential for SSO that will result in ponded wastewater (ground surface or ditch ponding), or direct discharge to body-contact recreational waters between May 1st and September 30th identified.
	2	Director of Division identifying potential SSO consults with Manager for final decision on posting
	3	If Manager decides posting is required, Manager directs Maintenance Division to post warning signs and notifies Communication Specialist of intent to post and location
	4	Warning sign(s) is/are posted by Maintenance Division

C. Other Public Notification

If the Manager determines additional public notification is needed, the Environmental Health, Safety, and Communication Department will make said notifications under the Manager's direction.

V. REGULATORY AGENCY NOTIFICATION PLAN

The Regulatory Agency Notification Plan establishes procedures that LRWU follows to provide formal notice to the ADEQ as necessary in the event of SSOs. The reporting criteria below explains to whom various forms of notification should be made, and lists agencies/individuals to be contacted.

Agency notifications will be performed in parallel with other internal notifications. The procedures for providing notification to the media of an SSO is presented in Section VI - Media Notification Procedure. Internal notification and mobilization of personnel are detailed in Section III - Overflow Response Procedure.

A. Immediate Notification

When an SSO is confirmed, the Maintenance Dispatcher / Project Planner collects and records data. Once data is entered a programatic SSO notification is then sent to Adams Fields Plant Operations Superintendent. The Adams Field Plant Superintendent then notifies and reports the SSO to ADEQ in compliance with LRWU's Adams Fields NPDES Permit. For convenience, the applicable NPDES Permit reporting requirements are reprinted below.

“The permittee shall report all overflows with the Discharge Monitoring Report (DMR) submittal. These reports shall be summarized and reported in tabular format. The summaries shall include: The date, time, duration, location, estimated volume, and cause of overflow; observed environmental impacts from the overflow; action taken to address the overflow; and ultimate discharge location if not contained (e.g. storm sewer system, ditch, tributary). Overflows, which endanger health or the environment, shall be orally reported to this department (Enforcement Section of Water Division) within 24 hours from the time the permittee becomes aware of the circumstance. A written report of overflows which endanger health or the environment, shall be provided within 5 days of the time the permittee becomes aware of the circumstance.”

The Operations Secretary is responsible for meeting the 24-hour oral or fax notification requirement. The name, mailing address, e-mail address, telephone and fax number for the primary ADEQ contact is provided below:

Ms. Amy Web
Arkansas Department of Environmental Quality
P.O. Box 8913
Little Rock, Arkansas 72219-8913
Telephone: 501.682.0633
Facsimile: 501.682.0910

B. Secondary Notifications

After those parties identified in *Section A. Immediate Notification* have been contacted, the Environmental Health, Safety, and Communication Department will notify other federal, state, and local agencies, as well as other interested and possibly impacted parties as directed by the Manager.

VI. MEDIA NOTIFICATION PROCEDURE

When a SSO has been confirmed and is a threat to public health, take the following actions, if necessary, to notify the media:

- A.** Sewer investigator or response crew verifies overflow and reports back to the Maintenance Coordinator.
- B.** The Maintenance Coordinator informs the Environmental Health, Safety, and Communications Department. The primary contact should be the Communication Specialist. Table VI-1 provides contact names and numbers for the Environmental Health, Safety, and Communications Department.
- C.** After hours and weekend SSOs should also be reported to the Environmental Health, Safety, and Communications Department at the numbers listed in Table VI-1.
- D.** All media requests reported to the dispatcher should be referred to the Communications Department.
- E.** The following personnel are authorized to be interviewed by the media and are the designated spokespersons:
 - 1. Reggie Corbitt, P.E., Manager
 - 2. Fredricka Sharkey, Communication Specialist
 - 3. John Jarratt, Director of Environmental Health, Safety & Communications
 - 4. Thad Luther, Director of Engineering

5. Rick Barger, P.E., Director of Operations

6. Mack Vought, Director of Maintenance

Table VI-1

Little Rock Wastewater Utility Media Contacts

Contact	Contact Name	Office	Mobile	Home
Primary	Fredricka Sharkey Communications Specialist	501.688.1468	501.352.2961	501.407.9190
Backup	John Jarratt, Director of EHS and Communications	501.688.1410	501.352.0512	501.758.7859
Backup)	Kevin Hall, Environmental Health Specialist	501.688.1466	501.765.7046	501.766.0630

VII. DISTRIBUTION AND MAINTENANCE OF SSORP

Annual updates to the SSORP reflect all changes in policies and procedures as may be required to achieve its objectives.

A. Submittal and Availability of SSORP

Distribute copies of the SSORP and any amendments to the following departments and functional positions:

<u>Functional positions</u>	<u>Departments</u>
Manager, General Counsel	Administration
Director	Finance
Director	Engineering
Director, Superintendents	Maintenance
Director, Superintendents	Operations
Director, Communications Specialist	EHS & Communications
Director, Lead Systems Analyst	Technical Services
Director	EAD

Familiarize all other personnel who may become incidentally involved in responding to overflows with the SSORP.

B. Review and Update of SSORP

Review the SSORP annually and amend as appropriate. LRWU should:

- Update the SSORP with the issuance of a revised or new NPDES permit or state waste discharge permit;
- Conduct annual training sessions with appropriate personnel; and
- Review and update, as needed, the various contact person lists included in the SSORP.

C. Practical Resources

There will be small laminated pocket guides printed and furnished to all employees that are involved with the SSO Response Plan, which will provide an overview of the of procedures as well as essential phone numbers. There will also be a quick reference for estimating sewer overflow volumes.

D. Training

Each division will be responsible for training their own personnel. The training should consist of any employee involved in or possible involvement in the SSO process is furnished a copy of the SSO Response Plan and said plan gone over in depth with them. This training should take place annually or when revisions occur, so that all personnel are brought up to date of any changes that may occur. Each division should also review their response efforts at these annual-training sessions and take suggestions to revise procedures. These suggestions will then be submitted to all divisions for review to determine if revisions are required

APPENDIX A. Procedure to Track Sanitary Sewer Overflows

The procedure to track the frequency and location of SSOs will be as defined below:

- A. All SSOs will have a work order and SSO service request prepared within our work order database, which currently is Hansen version 7.7.
- B. SSOs will be defined as capacity or non-capacity, which within the database will be setup with the activity codes of SONC for non-capacity and SOC for capacity. The definition of a non-capacity will be one that overflows due to an obstruction in the main line or equipment failures. The definition of a capacity related overflow is one that has insufficient carrying capacity to handle inflow and/ or infiltration during a storm event. Engineering shall maintain and update a list of capacity related SSOs. Other Activities include SONCO – overflow due to vandalism or broken by outside source, SONCP – overflow from a private facility / Non-LRWU owned asset.
- C. The work order will remain with an open status until all clean-up is completed.
- D. The work order will also include the asset number to identify the overflow locations, which will always be the upstream manhole number of the sewer main asset. The SSO service request will reflect the manhole or location where the overflow occurred.
- E. Monthly reports will be prepared giving the number of capacity and non-capacity SSOs, which our reports run from the 1st through the end of the month. The actual number reported will be based upon occurrence date rather than completed date.
- F. Reports within the database will have the capability of pulling SSO locations based upon dates, assets and occurrences within a set time frame.
- G. An initial list of reported capacity related SSOs has been developed for inclusion in the Permanent Signage phase of this SSORP. This list shall be maintained and annually updated as conditions and overflow mitigation efforts work to improve capacity related deficiencies in the collection system. The follow list, Table A-1, contains those SSO sites that are to be equipped with the permanent signage as detailed in Appendix E.

Table A-1***SSOs Eligible for Permanent Signage***

SSO Manhole Number	Subbasin Number	Maintenance Crew Area
2H018	30040	HWST
3E143	31000	HWST
3K058	30700	HCNT
3K059	30700	HCNT
4B001	10090	HWST
4N016	30400	HCNT
5H004	21303	HCNT
5H086	21303	HCNT
5H104	21303	HCNT
6C002	10090	HWST
6G011	21303	HCNT

- H. A second list has been developed, and shall be maintained, by Engineering that defines each potential capacity related SSO manhole by its respective Storm Level. Three such levels have been defined for simplicity in tracking the collection system's response to varying rainfall intensities. Storm Level A indicates an event that exceeds one inch of rainfall in a 24-hour period. These SSO manholes are early indicators of the collection system's response to wet weather conditions. The next tier, Level B, are SSO manholes that have the propensity to trigger when rainfall amounts exceed the one year or greater frequency, i.e. 3.5 inches over a 24-hour period. The last tier, Level C, are SSO manholes that only trigger in excess of a two year frequency storm event, i.e. 4.1 inches over a 24-hour period. Rainfall amounts, recorded by the SCADA network at various stations throughout the collection system, are continuously reported to the SCADA monitoring stations and individual computers supported by the SCADA viewing software. Engineering shall be responsible for monitoring existing rainfall conditions and notifying Maintenance when Level B and Level C have been reached. The following list, Table A-2, provides the known, or suspected, SSO manholes that have the potential to discharge during wet weather events.

Table A-2. Capacity Related SSOs by Storm Level

Storm Level	Status	Manhole	Subbasin	Maint. Area
A	Active	-8-A006	60200	HWST
A	Active	-8-B002	60301	HWST
A	Active	10J149	20700	HEST
A	Active	11G138	10901	HEST
A	Active	15G001	10010	HEST
A	Active	16H002	10010	HEST
A	Active	1B012	11502	HWST
A	Active	1B017	11502	HWST
A	Active	2D041	11501	HWST
A	Active	2H018	30040	HWST
A	Active	2H019	30040	HWST
A	Active	2K143	30700	HCNT
A	Active	2Q021	40703	HSTH
A	Active	3D119	11501	HWST
A	Active	3E143	31000	HWST
A	Active	3I038	30030	HCNT
A	Active	3I046	30030	HCNT
A	Active	3K059	30700	HCNT
A	Active	3N004	30501	HSTH
A	Active	3N005	30501	HSTH
A	Active	3N006	30501	HSTH
A	Active	3N007	30501	HSTH
A	Active	4B001	10090	HWST
A	Active	4M014	30300	HCNT
A	Active	4M016	30300	HCNT
A	Active	4N013	40030	HSTH
A	Active	4N016	30400	HCNT
A	Active	4N017	40702	HSTH
A	Active	4N030	40702	HSTH
A	Active	4N031	40702	HSTH
A	Active	4N089	30501	HSTH
A	Active	5C076	11400	HEST
A	Active	5G046	21303	HCNT
A	Active	5G161	21303	HCNT
A	Active	5H004	21303	HCNT
A	Active	5H086	21303	HCNT
A	Active	5H104	21303	HCNT
A	Active	5I033	21302	HCNT
A	Active	5J007	21302	HCNT
A	Active	5K002	21301	HCNT
A	Active	5L024	21301	HCNT
A	Active	5L027	21301	HCNT
A	Active	5M006	40702	HSTH
A	Active	6C001	10090	HWST
A	Active	6C002	10090	HWST
A	Active	6E127	11102	HEST
A	Active	6G011	21303	HCNT
A	Active	6J031	21200	HCNT
A	Active	6J172	21200	HCNT
A	Active	6J178	21200	HCNT
A	Active	6K060	21200	HCNT
A	Active	6N016	40701	HSTH
A	Active	7E055	11102	HEST

A	Active	7E065	11102	HEST
A	Active	7G107	10903	HCNT
A	Active	7K088	21100	HCNT
A	Investigate	3D108	11501	HWST
A	Investigate	6E024	11102	HEST
A	Pending	4F039	31000	HWST
A	Pending	5J802	21302	HCNT
B	Active	0B069	11502	HWST
B	Active	0D019	31700	HWST
B	Active	0E051	31700	HWST
B	Active	0E052	31700	HWST
B	Active	0G121	31300	HWST
B	Active	15M108	30200	HEST
B	Active	1B018	11502	HWST
B	Active	1B025	11502	HWST
B	Active	2F108	31100	HWST
B	Active	2F115	31100	HWST
B	Active	3K058	30700	HCNT
B	Active	5G048	21303	HCNT
B	Active	5G142	21303	HCNT
B	Active	5I107	21302	HCNT
B	Active	5J090	21302	HCNT
B	Active	5K003	21301	HCNT
B	Active	5M007	40702	HSTH
B	Active	5M015	40701	HSTH
B	Active	6D050	11102	HEST
B	Active	6G046	21303	HCNT
B	Active	6G138	21303	HCNT
B	Active	6J033	21200	HCNT
B	Active	6N015	40701	HSTH
B	Active	7K007	20020	HEST
B	Active	7K069	21100	HCNT
B	Investigate	15J045	20010	HEST
B	Investigate	3N055	30400	HCNT
B	Investigate	5J091	21302	HCNT
B	Investigate	6D065	11102	HEST
B	Investigate	7E044	11102	HEST
B	Investigate	7E045	11102	HEST
B	Investigate	7E128	11102	HEST
B	Pending	0E162	31700	HWST
B	Pending	0E163	31700	HWST
B	Pending	0E165	31700	HWST
B	Pending	10G171	10902	HEST
B	Pending	10J128	20700	HEST
B	Pending	3E073	31000	HWST
B	Pending	3E145	31000	HWST
B	Pending	3F028	31000	HWST
B	Pending	3F029	31000	HWST
B	Pending	3F034	31000	HWST
B	Pending	3F038	31000	HWST
B	Pending	3F052	31000	HWST
B	Pending	3F053	31000	HWST
B	Pending	3G066	31000	HWST
B	Pending	3G071	31000	HWST
B	Pending	3G099	31000	HWST
B	Pending	3G157	31000	HWST
B	Pending	3G165	31000	HWST

B	Pending	3G168	31000	HWST
B	Pending	3H022	31000	HWST
B	Pending	3H023	31000	HWST
B	Pending	4F024	31000	HWST
B	Pending	4F113	21303	HCNT
B	Pending	4F114	21303	HCNT
B	Pending	5G045	21303	HCNT
B	Pending	5G071	21303	HCNT
B	Pending	5G100	21303	HCNT
B	Pending	5G131	21303	HCNT
B	Pending	5G151	21303	HCNT
B	Pending	5H008	21303	HCNT
B	Pending	5J005	21302	HCNT
B	Pending	5J006	21302	HCNT
B	Pending	6K058	21200	HCNT
C	Active	-8-A012	60200	HWST
C	Active	0F146	31700	HWST
C	Active	5E127	11102	HEST
C	Active	5S059	40504	HSTH
C	Investigate	-1F074	31801	HWST
C	Investigate	-2E003	31802	HWST
C	Investigate	-2E029	31802	HWST
C	Investigate	-2E033	31802	HWST
C	Investigate	-5C092	60200	HWST
C	Investigate	-5D010	60200	HWST
C	Investigate	15J021	30100	HEST
C	Investigate	2K077	30700	HCNT
C	Investigate	3D111	11501	HWST
C	Investigate	3I022	30900	HCNT
C	Investigate	4H038	21302	HCNT
C	Investigate	4H052	21302	HCNT
C	Investigate	4L015	30300	HCNT
C	Investigate	5F116	21303	HCNT
C	Investigate	5F158	21303	HCNT
C	Investigate	8D010	10060	HEST
C	Investigate	8E046	11101	HEST
C	Investigate	8E063	11101	HEST
C	Investigate	8F003	11101	HEST

Status provides an indication of the confidence level in the potential for this manhole to experience an SSO. “Active” means a confirmed SSO was experienced, “Investigate” means non-verified information has lead to the inclusion on this listing and shall require field conformation, while “Pending” indicates a rehabilitation effort has been conducted with field conformation to follow to conclude positive mitigation. Subbasin and Maintenance Crew Work Area (Maint. Area) are for internal Engineering and Maintenance Department tracking and work area assignment.

- I. An annual report will be prepared by Engineering, which shall include a review of all capacity related overflows, as well as determine updates to the two tables above for permanent signage and potential capacity related SSO manholes. These updated capacity related SSO lists shall be included for amendment to this SSORP.

APPENDIX B. SSO ACTION PLAN

Dispatching Crews

Dispatchers receive notification of SSOs from two sources public and internal crews.

Notification during working hours

Dispatchers receive notification of a possible SSO from public at which time they collect all relevant information as outlined in Section III A, which at this point they dispatch one of our emergency crews to the site to verify if an SSO has occurred.

Responding Crew determines if SSO has occurred and attempt to resolve problem then contacts the Coordinator within 1-hour of being notified by dispatcher. Responding Crew takes photographs before clean-up is started and places warning sign at site as well as adjacent homes if required.

Crews will cleanup and sanitize site. When cleanup is completed, Crew will take photographs and remove warning signs.

Coordinator is to visit overflow site to verify cleanup has been completed.

Notification after hours

Emergency crews receive notification of possible SSO from public at which time they collect all relevant information as outlined in section III A and proceed to location. (Emergency crew mans emergency phone after hours)

Emergency crew determines if SSO has occurred and attempts to resolve problem then takes photographs before cleanup and places warning signs at site as well as adjacent homes if required. Crew is to fill out SSO report and turn in with their paper work at the beginning of the next workday.

Emergency crew then starts clean-up and sanitize site, which when completed crew is to take photographs and remove warning signs.

Coordinator is to visit overflow site to verify cleanup has been completed on the first work day after overflow.

APPENDIX B. SSO ACTION PLAN (continued)

Internal Notification

Personnel in the field find a SSO are to contact the Dispatcher and give him the relevant information as outlined in Section III A. The same procedure as shown for public notification under working hours will be used.

Rain events that are one-inch or greater will trigger our crews to investigate possible recurring SSO sites to verify if an overflow has occurred. These crews will be furnished a list of possible SSO sites (see Table A-2), which has been determined as being locations that have potential to overflow. Crews that locate SSOs during these investigations will contact the Coordinator and then continue on with the review of their list until all locations have been visited. The Coordinator will follow the same procedure as outlined under public notification during working hours. After crews have gone through their list, then they will start clean-up at each site and contact the Coordinator when completed.

Crews will also be setup to walk lines and open manholes to check for any blockage or surcharged lines before an SSO exist. These crews will use an activity code of CRWL on their dailies for all segments that they walk. The crew will create work orders for line segments that appear to have minor blockage to have them cleaned and checked. The line segments that they find with severe blockage will be called into the dispatcher so a crew can be sent immediately to prevent an overflow from occurring. If the crews find a SSO, then they follow the same procedure as shown in public notification during working hours.

Main line blockages (severe) will be addressed immediately and will be cleaned within three (3) working days and a follow-up TV work order to be completed within an additional two (2) working days. After TV work has been completed the Maintenance Coordinator will review the TV video to determine line condition, inspect for any problems, recommend a possible solution to prevent reoccurrence and set/or adjust PM schedules. All main line stoppages are put on a PM schedule, cleaning type to be determined by the response crews findings.

APPENDIX C. DETECTING POTENTIAL EXPLOSIVE OR TOXIC CONDITIONS

Purpose:

To ensure that all affected LRWU employees are notified of potential health or safety hazards in the LRWU collection system.

Procedures:

The following procedures must be followed when detecting potential health or safety hazards in the LRWU collection system:

Step 1

The LRWU employee(s) or crew discovering the potential health or safety hazard must notify dispatch (via Radio or 223-1509) or the Environmental Health & Safety Office (688-1410 or 688-1466) to report the potential problem.

A. Information included in the report:

1. Name of the employee making the report
2. Street address or location of potential hazard
3. Manhole number (if known)
4. Brief description of findings (see attached form)

B. If the health or safety hazard was reported to dispatch: dispatch should contact the Environmental Health & Safety Office and report the above information.

Step 2

Environmental Health & Safety will then investigate the report.

Step 3

If EHS confirms the report, EHS will notify dispatch to ALERT all affected field crews via RADIO that the reported area is "Off Limits" until further notified. EHS will notify ALL other affected LRWU & LRMWW department supervisors of the reported area.

Step 4

Dispatch will draft a notice with the location of the ALERTED areas and place a copy on all Safety News Bulletin Boards and Backdoors at our Clearwater Complex. Dispatch will also forward a copy of the notice to EHS for placement on other Safety News BB's throughout the utility.

APPENDIX C. DETECTING POTENTIAL EXPLOSIVE OR TOXIC CONDITIONS

(continued)

Step 5

EHS will notify LRMWW dispatch of the Potential Hazardous Area.

Step 6

If the investigation suspects a Natural Gas Leak, EHS will contact ARKLA to report the situation.

Step 7

EHS will keep ALL affected LRWU & LRMWW departments informed of the situation and monitor their (Arkla) findings.

Step 8

Once the health or safety hazard has been corrected, EHS will perform a follow-up investigation and when NO HAZARDOUS conditions exist, EHS will remove the Safety ALERT and notify all affected departments.

Step 9

If gasoline, solvents, paint, or other foreign material is suspected and the hazardous area is located in an Industrial/Commercial Area, EHS will contact the Environmental Assessment Department (EAD) and transfer the report for further action.

Step 10

Industrial investigations resulting from explosive or toxic conditions will be performed by EAD pretreatment staff members using procedures from the pretreatment procedures manual. Findings will be provided to EHS upon completion of the investigation.

After Hours Reporting

If a hazardous atmosphere is detected after normal working hours, the employee must report the area the next working day prior to his/her normal working hours. After this report is made the process will begin with step one.

APPENDIX D. SSO FLOW and VOLUME DETERMINATION

As indicated previously in this SSORP, each SSO actively discharging during the investigation phase of this response plan's tasks shall be evaluated for flow and ultimately total volume discharged, each of which is to be included as part of the reporting requirements. The Engineering Department has defined a three tiered flow estimating system that is derived from the reaction of the manhole lid in relation to the flow exiting the collection system. This system is easily field estimated without the need for measuring devices, which in most instances, would fail to achieve a proper signal due to the lack of sufficient depth of flow.

It has been determined that the majority of actively discharging SSOs reported by a response crew would be non-capacity related. Therefore a criteria for determining flow should concentrate on these conditions for gravity sewer collection systems. The three-category rating system is outlined below:

0 – 10 gpm (gallons per minute)

This rate covers the light discharge experienced in the upper reaches of the collection system, usually with a small number of residential connections. The visual indicator would be a light flow (about the rate of a standard faucet) from around the manhole lid with no visible release of debris or solids, and no movement or lifting of the lid itself.

10 – 100 gpm

This rate covers the moderate discharge experienced in the lower reaches of the collection system, usually along the larger collector or outfall type sewer mains (typically 10" and larger mains) and in some capacity related SSOs. The visual indicator would be a noticeable flow from around the manhole lid, slight debris or solids release, and a rocking or slight lifting of the manhole lid.

➤ 100 gpm (greater than 100 gpm)

This rate covers the heavy discharge experienced along the major outfall sewers and larger capacity related SSOs. The visual indicator is the definite release of debris or solids, and the complete lifting or displacement of the manhole lid.

SSO volumes are derived from the above category multiplied by the duration of discharge. If the exact length of discharge is unknown, criteria for determining an estimated time has been established in the Section III.D, Overflow Report.

SIGNAGE FOR OVERFLOWS

The following language shall be used on signs located on existing SSO sites during cleanup and on notices attached to homes adjacent to SSO sites:

NOTICE OF SANITARY SEWER OVERFLOW

Please avoid contact with this
sanitary sewer facility due to
the possibility of adverse health effects
until cleanup can be completed

For Additional Information
Contact 688-1468

The following language shall be used on signs located on potential SSO sites that occur more than once in a twelve-month period:

NOTICE OF

SANITARY SEWER OVERFLOWS WHICH MAY OCCUR AT THIS LOCATION

Please avoid contact with this
sanitary sewer facility during an
Overflow condition due to the
possibility of adverse health effects
until cleanup can be completed

For Additional Information
Contact 688-1468

TV Procedures

GENERAL GUIDELINES

- Work will be performed in order of priority.
- Requester should check Hansen to determine last TV date if any, and make every effort to recover the tape on an existing inspection to eliminate re-televising.
- Tapes will be stored for a 5 year period, at that time will be taped over with new inspections.
- Person requesting inspections should :
- Physically view site where work orders are to be generated for requested inspections.
- Check maintenance database for prior cleaning intervals and last date cleaned. If probable cleaning needs to be performed prior to inspections, cleaning should be coordinated with the Cleaning & Inspection (C & I) Coordinator prior to submitting inspection work orders.
- Requester should give a complete description of any special requests desired during the inspection procedure i.e. services dye tested for service status, above ground locations marked etc.

- Requester should submit an Arc-View or map page map highlighting segments to be inspected with all requested projects.(multiple segments)
- Routine and Investigative TV work that reveal problems in the main or the service connection will be handled through generated work orders as shown in the following section, “exceptions” would be Hydro or Hand rod work needed to finish the TV job and the posting of grease notices, where large or excessive grease amounts are found by the TV crew (*see attached A-18*)

WORK ORDERS

- TV work orders are to be entered into Hansen by the person or department requesting inspections to be performed.
- When they are entered into Hansen the work order numbers should be forwarded via e-mail to the Cleaning & Inspection Coordinator along with a brief description of the work to be performed.
- The C & I Coordinator will distribute work orders according to priority.

ACTIVITY CODES

Activity codes to be used on IMS TV work orders.

TVC- To be used on all Contract TV inspections.

TVF- To be used on all Final inspections.

TVI- To Be used on all investigative work orders, emergency call
Follow-ups, rehab projects, etc.

TVO- To be used primarily by TV operators for equipment
cleaning and up-keep as well as private facilities such as
storm sewers.

TVR- To be used for televising behind cleaning crews for quality
control checks.

TVS- To be used on all service line inspections.

Tape Distribution

- As TV tapes are completed and turned back in, line information will be uploaded into Hansen from diskettes logged by the operator.
- Tapes will be logged for tracking by C & I coordinator. **(To include Type work, date and destination.)**
- Requester will be responsible for keeping up with all tapes forwarded to them.

Work Order Priority

Priority 5

Work orders to be completed within 1 to 5 days.

Customer complaints, which have lost service or potential danger to the public.

Sewer on the ground.

Service line stoppages

Main lines with severe deterioration or pipe failure which service can not be maintained without repairs.

Main lines which cleaning can not be performed or maintained through PM's.

Priority 4

All customer complaints not covered under priority 5.

CDBG Projects which require completion ahead of city contractors.

Main Line or service line problems which are severe and can not be maintained for more than 90 days.

Construction work orders to be completed within 90 days and cleaning work orders to be completed within 30 days.

Utility locates.

Priority 3

Projects, Mainlines or Service lines which can maintain service for an extended amount of time but less than 12 months.

All PM work orders

Work orders to be completed within a 12 month period.

Priority 2

Projects, mainlines or service lines that can maintain service for more than 12 months.

Final inspections.

Rehabilitation projects.

Priority 1

All projects, mainlines or service lines which do not fall under any of the above priority's

Operator Procedures

- The intent of the operator is to provide quality video inspection to the requesting party.
- Included, the operator should define all line defects, wye locations and/or any other requested information.

- Every attempt should be made to ensure complete quality inspections of entire line lengths even if reverse setup, plugging, etc are required.
- All service connections should be laterally viewed to determine status of service (**where 360 degree cameras are used**).
- If an inspection is to be aborted for any reason the operator should contact C&I coordinator or supervisor via radio to communicate reason and possible alternatives or solution with requesting party.

Final Inspections

- All assets will be defined and entered into IMS prior to initiating TV inspection work orders for final inspections. It will therefore be the responsibility of Engineering to determine if any changes occurred during the installation of all assets in conjunction with preliminary project plans. (**manholes added, excluded, etc.**)
- All line lengths must be verified before entered into IMS due to the fact that defect and/or line information can not be entered at any length greater than line length.
- Any final inspection which has to be aborted due to debris filled lines.
 1. TV crew will pull off the project.
 2. TV crew will notify supervisor or coordinator of problem.

3. Supervisor or coordinator will notify engineering.
4. Engineering will notify contractor that lines require cleaning and contractor to pay a \$500.00 fee prior to TV crew returning to complete inspections.

Defect Codes

- On the Following page is a set of defect codes to be used by operators during the inspection to denote defects and/or occurrences along the pipe.
- Codes will be recorded onto diskette in conjunction with the corresponding line segment, submitted with the tape and uploaded into Hansen for access by the requester.
- Codes are divided into nine categories:

Alignment

Structural

I & I

Debris

Roots

Joint

Crack

Laterals

Unknown

Operator keyboards are color coded for ease of use as is the Hansen inspection program. The set of codes on the following page represents these colors.

UTILITY AND BARRICADE PROCEDURES

The location of barricades and the need for traffic control in right of ways of the city, state, or county streets and roads are determined by the following groups:

Engineering Department

Technical Services

Engineering Support

Design Construction

The Engineering Department uses the Utility & Barricade Crew as support on stake-outs, surveys, service relays, and are included as what will be needed on larger construction design jobs they have planned and scheduled for the upcoming year.

Construction / Repairs

The Construction / Repairs section of the utility depends on the Utility & Barricade crew to handle all the traffic control and barricades needed for repairs, relays and major in-house projects that are in or adjacent too a city, state, or county roadways or right of ways.

Cleaning / Inspection

The Cleaning / Inspection section of the utility depends on the Utility & Barricade crew to handle all the traffic control and barricades needed to clean and televise any utility asset that are in or adjacent too a city, state, or county roadways or right of ways.

The foreman or a supervisor from any of these departments needing traffic control should try to schedule the work with the traffic control supervisor or his utility worker 24 hours prior to the work being done . This allows the traffic control supervisor ample time to draw up a barricade plan and submit it to the city department for traffic control and emergency vehicles so it can be approved and signed by them. In the event of an emergency dig-up or a line stoppage where it must be done immediately as soon as one call has been made or the cleaning crew (if stoppage is the problem) arrives at the work site, contact the traffic control supervisor and provide him with the location and any other information he may need to make out a request to the City department of traffic control.

These same rules would apply for a state road or highway except that the permit must be signed in advance of the work and the request is sent to the State Highway Department.

NOTE>>>> 24hrs may not be enough notice for a state permit, that is not an emergency.

The utility crew also handles line locates for dispatch, these are the marking of our main lines for other entities or utilities who are performing excavations or underground bores in areas where we have main lines in close proximity to the work being performed. The crew will paint the top of the area in green paint to indicate the location of our main lines, this work is performed under the ***GLLM activity code in Hansen.***

Equipment and Vehicle Procedures

GENERAL GUIDELINES

- Each crew are assigned vehicles and equipment that they are responsible for checking fluid levels, tires, batteries, lights, & alarms (**where applicable**). At the first of each month the foreman of the crew designates a crew member to come in 30 minutes early each workday to fuel and check the vehicles and equipment for their crew.
- A check list card is given for each vehicle and another card for the different equipment (*see attachment, A-16*) that the crew has. The cards are given out by and collected by the Maintenance Coordinator at the first workday of a new month.
- The designated crew member who's responsible for following the checklist must record the starting mileage of the vehicles and initial the card each time new mileage is recorded.
- When a problem is discovered during the check list process, the vehicle or equipment is tagged out and the garage personnel (**Fleet maintenance division**) are notified. The crew member will fill out a hand written work order request form and leave the vehicle keys with the Fleet maintenance personnel. A work order number will be assigned to the request form in Hansen for tracking purposes.
- Once our garage personnel issues their work order number the work will fall under their procedures as stipulated by rules and regulations set forth by the Fleet maintenance Supervisor .

Little Rock Wastewater Utility

Collection System Management Plan (CSMP)

Table of Contents

Letter of Transmittal

<u>Volume</u>	<u>Tab</u>	<u>Description</u>
1	A	Major Goals of CSMP
	B	Personnel Responsible for Implementing CSMP
2		Legal Authority of LRWU:
	A	Control of Private Inflow Sources
	B	Design/ Construction of Sewers & Connections
	C	Installation, Testing, & Inspection of New & Rehabilitated Sewers
	D	Address Flows from Satellite Municipal Collection Systems
	E	Implementation of Prohibitions of National Pretreatment Program
3		Lift Station Maintenance Division General Procedures
4		Collection System Maintenance Division General Procedures <i>The following are included within Volume 4:</i> <ul style="list-style-type: none">• Maintenance Procedures to Prioritize Collection System Activities• Collection System Preventive Maintenance• Identification, Prioritization, Rehabilitation of Structural Deficiencies• Equipment and Replacement Inventories• Sanitary Sewer Overflow Response Plan
5	A	Geographic Information System (GIS)
	B	Computerized Maintenance Management System
	C	Collection System Employee Training
6		Standard Specifications for Installation and Testing of New Collection System Facilities (Draft)
7		Trap Control Program
8		Typical Specifications for Rehabilitation of Collection System Facilities
9		System Evaluation and Capacity Assurance Plan <i>The following is included within Volume 9:</i> <ul style="list-style-type: none">• Current Capacity of Collection System and Treatment Facilities

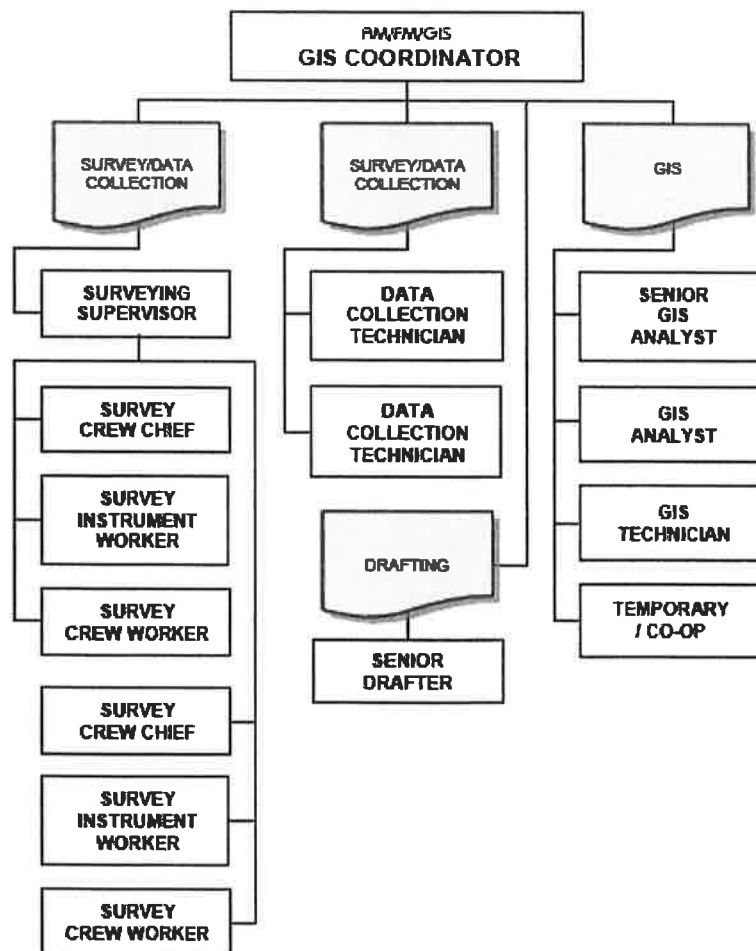
Little Rock Wastewater Utility Collection System Management Plan (CSMP)

Volume 5, Tab A - Geographic Information System (GIS)

LRWU utilizes an extensive Geographical Information System (GIS) to manage the inventory of the collection system assets and support Utility operations. The GIS consists of dedicated staff, data shared through the Pulaski Area Geographic Information System (PAGIS Consortium), Utility developed data, applications and products.

GIS Staff

The Utility has developed the AM/FM/GIS Section, an internal work group, dedicated to the development and maintenance of its GIS. This staff consists of various professional and technical level positions providing services supporting the GIS and internal needs of the Utility. An organizational chart and general description of responsibilities of this work group is provided below:



GIS Coordinator - Responsible for overall supervision of work group in support of Utility operations and serves as administrative liaison to the PAgis organization.

Surveying Supervisor – Responsible for daily operation of survey crews, preparation and inventory of easements, and expansion and maintenance of survey control network.

Survey Field Crews – Responsible for collection of data supporting design projects and establishment of survey control.

Data Collection Technicians – Responsible for the collection and verification of collection system asset data, collection system project as-built surveys, and collection system data investigations.

Senior Drafter – Responsible for inventory and conversion of treatment plant, pump station and large diameter as-built drawings.

Senior GIS Analyst – Responsible for the data base and software administration and applications development. Serves as technical liaison to the PAgis organization.

GIS Analyst – Responsible for the development of applications, data conversion, maintenance and quality control and inventory of digital as-built images.

GIS Technician – Responsible for the maintenance of the collections system inventory data base and up-dates to map books.

PAgis Data

The Utility's GIS is supported by the Pulaski Area Geographic Information System (PAgis). PAgis maintains and provides approximately 60 data layers to its members. The data are classified under the following categories:

- Addressing
- Built-up
- Census Geography
- Hydrology
- Hypsography
- Local Government Boundaries
- Photogrammetry
- Survey
- Transportation

A detailed description of the various data sets is available on their web site at <http://www.pagis.pulaski.ar.us/>.

Up-dates are provided by PAgis via an ftp download. The most dynamic data sets are updated monthly.

The Utility maintains a full data base from PAgis for its use. However, for routine daily operations the Utility utilizes 24 of the data layers, along with the WATERMAINS and WATERVALVES data from Central Arkansas Water.

Utility Developed Data

The Utility's GIS data base consists of a complete inventory of collection system assets. i.e. – manholes, mainlines, pump stations, etc. along with numerous ancillary data sets to support Utility operations. The data base was developed utilizing Utility personnel with processes and procedures implemented to insure data integrity and maintenance of the data set.

GIS Data Base

The GIS data base is developed and maintained within an ESRI – Arc GIS structured data base. The GIS data base stores the basic data needed to define each geographical element and joined with the Hansen Infrastructure Management System which houses the asset definition and attribute information for all collection system assets.

The core GIS data base consists of the following data:

GIS Table Name	Data Description	Table Elements
MANHOLE	Point feature Identifying all nodes on underground collection system assets. Nodes include manholes, tees, bends, pump stations, air release and blow off valves, etc.	X_COORD – State Plane Coordinate Y_COORD - State Plane Coordinate UNITID – Unique asset ID SERVSTAT – Status of data collection MHDEPTH – Invert Depth UNITTYPE – Asset Type SEWER.MAINHOLES_VIEW.AREA – Sub-basin
SEWER LINE	Polyline feature Identifying all underground collection system conduits including both gravity and force main pipe segments.	UPS_MH – Upstream node asset # DWN_MH – Downstream node # UNITID – FROM node ID UNITID2 – TO node ID PIPELEN – Pipe length PIPEDIAM – Diameter of pipe UNITTYPE – Gravity/Force Main SHAPE.LEN – Internal GIS line length

MAPSHEETS	Polygon Feature Grid based map sheet system providing unique ID's for Public Land System quarter sections. Serves as prefix for assignment of unique asset numbers for all collection system assets.	MSH – Unique grid cell ID PLSC – Public Land System ID Code QUARTER – PLS ¼ section designation SEC – PLS Section # TWN – PLS Township TWNDIR – PLS Township Direction RNG – PLS Range RNGDIR – PLS Range Direction
SUBBASIN	Polygon Feature Defined Sewersheds identifying subsystems of the collection system	TILE_NAME – Unique Identifier AREA_CODE – Unique Numerical Code ACRES – Calculated Acreage DISTRICT – Name of Major Watershed contained within HANDROD – Maintenance District HYDROCLN – Maintenance District
ASBUILTS	Polygon Feature Defines image area of plan portion of as built drawing. Provides graphical link to stored scanned as built images	ASBUILT – As built drawing number IMAGE – Directory path name to image location
PROJECTAREA	Polygon Feature Defines the general boundary of area affected by the capital project.	PROJECTNUM – Project Number UNITTYPE – Type of Construction Code CPLXDESC – Project Name ADDRQUAL – Comment Field SERVSTAT – Status of project progress OWN – Project Manager

Maintenance of the GIS data base consists of three primary functions:

1. Correction of errors and inconsistencies
2. Maintenance Modifications
3. Construction as-builts

The correction of errors and inconsistencies and Collection System modifications due to Maintenance operations is directed through the GIS Technician who then makes the corrections or initiates an investigation by the Data Collection Technicians to gather information to properly make the corrections and or modifications to the data base.

Construction as-builts for all developer funded projects are governed directly by the Utility specifications. Upon completion and acceptance of the project by the Utility, the final as-built plans are forwarded to the GIS Technician for processing.

In-house construction as-built surveys are performed by the Data Collection Technicians. Upon completion of the project work Data Collection Technicians perform all field measurements to complete the as-built drawings and update the GIS and Hansen IMS data bases. All field data is forwarded to the Engineering Technicians for completion of the as-built drawings. Upon completion of the as-built drawings they are forwarded to the GIS technician for final review and processing.

Applications

GIS applications are an integral part of the daily operations of the Utility. The Utility provides a suite of desk top applications to support maintenance and management of the collection system as well as applications customized to maintain the GIS data base. The Utility also provides an extensive suite of GIS functions within the Utility's web site located at <http://www.lrwu.com/sewerLineLocate.asp>.

All applications are developed and maintained by GIS staff. The Senior GIS Analyst is the primary lead for all applications development and deployment.

GIS Products

The GIS Section provides a limited set of standard products. Most of the GIS products produced within the Utility are done by the end users utilizing the desk top GIS applications. This leaves the GIS section to focus on data development and maintenance. The GIS Analyst is the primary lead for the development of advanced map products and analysis which can not be developed within the desk top applications.

Standard products include a large format map book (1"=200' scale – 18"x 18"), small format map book (1"=300' scale – 11"x 17"). The small format map book is maintained in both a paper and digital format.

The large format map books are maintained at the treatment plants, Maintenance complex and Administrative offices. These map books are updates twice each month.

The small format map books are issued to Utility field crews and a limited number of City field crews. The digital version of the small format map book is available to any outside customer available upon request. These map books are updated three times a year. An example of the small format map sheet is attached.

MapSheet 7J

QUARTER SW

SECTION 8

TOWNSHIP 1 NORTH

RANGE 12 WEST

Little Rock



Wastewater Utility



LEGEND

- Diameter Unverified
- 4" - 8"
- 10" - 21"
- 24" - 42"
- 48" - 72"
- MH'S NEEDING TRAVERSE
- COMP. MH'S W/ ATTRIBUTES
- MAINT. TIED MH'S NO ATTRIBUTES
- MH'S NOT FOUND

800 Series Numbers Designate Private Manholes
600 Series Numbers Designate Private Manholes Maintained By LRWU

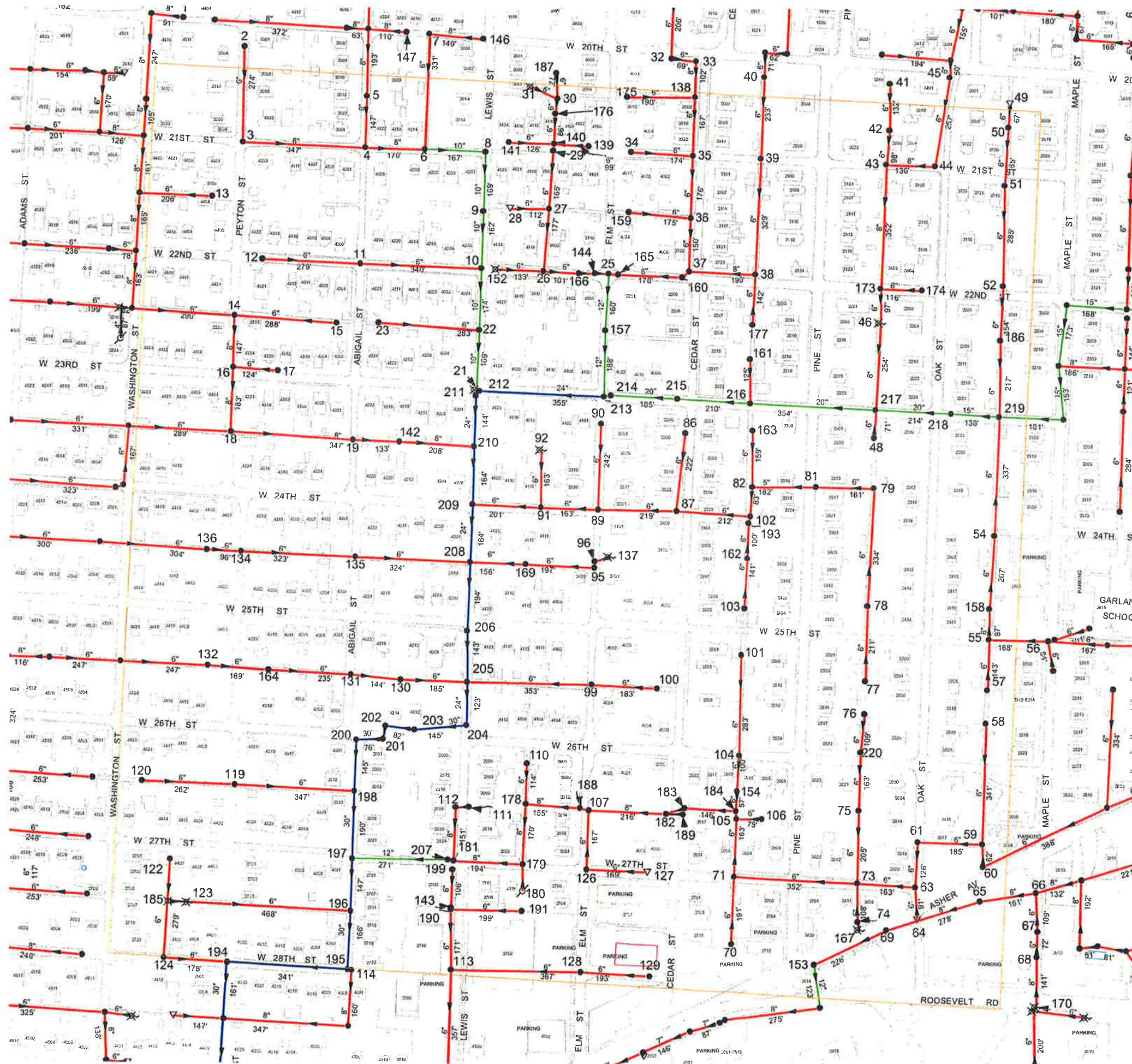


5/8/2006

6I	7I	8I
6J	7J	8J
6K	7K	8K

7J

The data contained herein was compiled from various sources for the sole use and benefit of the Pulaski Area Geographic Information System (PAGIS) and the public agencies it serves. Any use of the data by anyone other than PAGIS is at the sole risk of the user, and, by acceptance of this data, user does hereby hold PAGIS harmless and without liability from any claims, costs or damages of any nature against PAGIS including costs of defense arising from improper use of data, or use by another party.
 Acceptance or use of this data is done without any expressed or implied warranties.



Little Rock Wastewater Utility Collection System Management Plan (CSMP)

Volume 5, Tab B – Computerized Maintenance Management System

Little Rock Wastewater Utility operates and maintains an Infrastructure Management System, Hansen Information Technologies, Inc. With this system LRWU coordinates and administers the on-going spot maintenance and preventative maintenance programs. It tracks all maintenance and enhancements to thousands of assets owned and operated by the Utility. The Hansen IMS system partners with an Oracle relational database and provides a streamlined approach for initiating, tracking, and finalizing work orders on all Utility collection system assets, as well as, all equipment necessary to enhance and maintain those assets.

LRWU also maintains a Geographic Information System(GIS) that maps over 1,000 miles of pumping and collection system infrastructure. This system is utilized by almost all segments of the Utility from Senior Mgmt to the Utility construction crew. It is maintained by in-house GIS professionals, as well as, a partnership with the Pulaski Area Geographic Information System(PAGIS) organization.

Little Rock Wastewater Utility Collection System Management Plan (CSMP)

Volume 5, Tab C - Collection System Employee Training

Paul Melton- Safety Specialist

The following is a brief description of the safety and health training provided for Little Rock Wastewater Utility employees working in the collection system. Training rotates annually, based on training needs and state/federal regulations. The following describes all reoccurring training topics for our employees.

Emergency Action Response Plan – 1 hour – annual

The purpose of this training is to educate employees on recognizing potential fire hazards and avenues to reduce those risks. Our training also outlines evacuation procedures for employees to follow as well as procedures to help aid in the safe evacuation of visitors.

Bloodborne Pathogens – 2 hr New Employee & 1 hr Annual Refresher

This training educates our employees on possible health risks associated with working for a wastewater utility. It provides the necessary information to each employee on proper procedures to reduce those risks, i.e. proper personal protective equipment, engineering solutions, Hepatitis B Vaccinations, as well as personal hygiene practices.

Confined Spaces – 3 hr New Employee – 1 hr Annual Refresher

Employees are taught how to recognize and classify confined spaces. They are instructed on permit procedures, personal protective equipment, how to use gas monitors and perform non-entry rescues. Employees are made aware of responsibilities of the entrant, attendant and entry supervisor.

Hazard Communication – 2 hr New Employee – 1 hr Annual Refresher

This training teaches employees how to work safely with hazardous and non-hazardous materials. Employees are taught how to read and understand material safety data sheets, where hazardous materials are stored, proper storage and disposal methods. Employees are provided information regarding personal protective equipment uses.

Defensive Driving – 6 hours New Employee & 6 hr CDL Continuation

Defensive driving is a training requirement for all LRWU employees that operate a utility vehicle. Employees are trained on various driving techniques to help avoid crashes and eliminate serious and fatal injuries. Each employee receives 4 hours of classroom training and 2 hours of practical hand on training (driving).

Workzone Safety – 6 hours initial employment – 1 hour annual

Employees responsible for working in or around traffic and held accountable for flagging operations on jobsite(s) are required to attend this training. Each employee that successfully completes this course is certified to flag traffic according to ASTTA. Many of our day to day operations include working in or around the flow of traffic. Employees are required to pass a 2 stage test, 80 % on the written portion and 100 % on the demonstration phase.

Trenching/Excavation Competent Person – 8 hr New Employee and 1 hour Annual Refresher

Employees complete a NUCA certified 8hr program regarding safe working conditions, soil testing, protective systems, trenching logs and hazard identification. Employees that complete this course are as certified as Competent Persons by NUCA.

Chlorine Safety – 2 hours phase I – 2 hours phase II, quarterly drills phase III

Each employee with the potential to come into contact with chlorine while working for LRWU is required to attend Phase I of the training. Any employee (responder) that has the potential to fix a minor or major chlorine leak is required to attend Phase II of the training and conduct quarterly chlorine drills. Phase I training includes basic information, i.e., evacuation procedures, health risks associated with chlorine, MSDS information, personal protective equipment. Phase II includes all the above information as well as respirator training and fit tests, responder responsibilities, evacuation duties, etc. Phase III includes mock drills, chlorine leaks, repairs and evacuation procedures.

Power Ind. Trucks (Forklifts) – 5hr New Employee & 3 year Requal.

Employees are made aware of hazards associated with operating heavy equipment. Training includes safe operation, daily, weekly, monthly inspections, battery charging station safety, propane safety, and hazardous driving conditions. Each employee must complete 4 hours of classroom training and a 1 hour hands on session. Operators are trained on each type of forklift they are required to operate. If PIT operators are observed operating a PIT in an unsafe manner, re-training is required.

AHA: First Aid & CPR w/ AED – New Employee & 2 year Requalification

Employees attend an American Heart Association CPR session. Employees are trained on risk factors, warning signs, emergency procedures and personal safety associated with heart

attacks, stroke, cardiac arrest and choking. Employees must pass a hands on demonstration before leaving the session or receiving a CPR card.

Respiratory Protection – 2 hours annual

Employees required to wear respirators are instructed on the proper donning and doffing procedures. Hazard recognition and avenues to eliminate those hazards if possible. Employees are instructed on confined spaces and hazards that can be associated with the spaces. Employees are required to complete medical information annually and complete annual fit tests.

Open Water Safety – 1 hour

All employees working around open water surfaces will be trained on fall protection procedures and well as life saver protocol. Treatment plants have many open water areas that can be hazardous to employees in the area.

Little Rock Wastewater Utility

Collection System Management Plan (CSMP)

Table of Contents

Letter of Transmittal

<u>Volume</u>	<u>Tab</u>	<u>Description</u>
1	A	Major Goals of CSMP
	B	Personnel Responsible for Implementing CSMP
2		Legal Authority of LRWU:
	A	Control of Private Inflow Sources
	B	Design/ Construction of Sewers & Connections
	C	Installation, Testing, & Inspection of New & Rehabilitated Sewers
	D	Address Flows from Satellite Municipal Collection Systems
	E	Implementation of Prohibitions of National Pretreatment Program
3		Lift Station Maintenance Division General Procedures
4		Collection System Maintenance Division General Procedures <i>The following are included within Volume 4:</i>
		<ul style="list-style-type: none">• Maintenance Procedures to Prioritize Collection System Activities• Collection System Preventive Maintenance• Identification, Prioritization, Rehabilitation of Structural Deficiencies• Equipment and Replacement Inventories• Sanitary Sewer Overflow Response Plan
5	A	Geographic Information System (GIS)
	B	Computerized Maintenance Management System
	C	Collection System Employee Training
6		Standard Specifications for Installation and Testing of New Collection System Facilities (Draft)
7		Trap Control Program
8		Typical Specifications for Rehabilitation of Collection System Facilities
9		System Evaluation and Capacity Assurance Plan <i>The following is included within Volume 9:</i>
		<ul style="list-style-type: none">• Current Capacity of Collection System and Treatment Facilities

**Little Rock Wastewater Utility
Collection System Management Plan (CSMP)**

**Volume 6 – Standard Specifications for installation and
Testing of New Collection System Facilities (DRAFT)**

The following “Standard Specifications for Installation and Testing of New Collection System Facilities” is presented as “draft” pending formal adoption by the Little Rock Sanitary Sewer Committee. The current standard specifications for new construction within the collection system is presented in Volume 2.

**STANDARD SPECIFICATIONS FOR
SEWER CONSTRUCTION IN THE CITY OF LITTLE ROCK**

DRAFT COPY



**Little Rock
Wastewater
Utility**

**PREPARED BY
LITTLE ROCK WASTEWATER UTILITY
LITTLE ROCK, ARKANSAS**

JANUARY, 2006 EDITION

LITTLE ROCK WASTEWATER UTILITY

SANITARY SEWER COMMITTEE

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UTILITY MANAGERS

MACK M. VOUGHT – MAINTENANCE, ENGINEERING AND CONSTRUCTION

JAMES A. BARHAM - FINANCE AND ADMINISTRATION

STAN MILLER. - OPERATIONS

SECTION 01100
REQUIREMENTS FOR DEVELOPER FUNDED PROJECTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This part of these specifications stipulates general requirements for the preparation of reports, drawings, specifications, inspections, and final approval of any proposed sanitary sewer lines, appurtenances, or other structures that are within the jurisdiction of the Little Rock Wastewater Utility. Any deviations from the requirements set forth herein will be approved only by written authorization from the Little Rock Wastewater Utility. Special conditions may arise on any project that are not covered in these specifications or that may require special consideration. In such cases complete details as to materials, methods of construction, or other procedures shall be submitted to the Little Rock Wastewater Utility for their review and approval prior to the start of any construction.
- B. Standard construction details are incorporated and made a part of these specifications in **Section 05000** and shall become a part of the standard requirements for the construction of manholes, sewer lines, building sewers, and special structures.
- C. Where reference is made to a particular industry specification (ASTM, etc.), it is hereby understood that reference is made to the latest revision in effect.

1.02 DEFINITIONS

- A. Little Rock Wastewater Utility - The sewer collection system, treatment facilities, operational equipment and staff of the Wastewater Utility under

the jurisdiction of the Sanitary Sewer Committee of the City of Little Rock, Arkansas, hereinafter referred to as "Utility".

- B. Chief Executive Officer - The chief executive officer of the Little Rock Wastewater Utility.
- C. Developer - Individual, partnership, corporation, or other legal entity such as a improvement district desiring to construct sanitary sewer facilities for immediate or contemplated future inclusion in the Little Rock Wastewater Utility.
- D. Engineer of Record - Individual registered to practice engineering in the State Of Arkansas responsible for the design and construction inspection of the project..
- E. Paxis - The Pulaski Area Geographic Information System, a computerized geographic information system developed by the City of Little Rock, Little Rock Municipal Water Works, and Little Rock Wastewater Utility.
- F. ASTM - American Society for Testing and Materials
- G. AASHTO - American Association of State Highway and Transportation Officials.
- H. ANSI - American National Standard Institute
- I. Resident Inspector - Individual with at least 2 years experience in the following: 1) Construction of Sanitary Sewers, 2) Field supervision of the surveying associated with constructing sewers.

1.03 CONFORMITY

All drawings, specifications, and construction procedures shall conform to the standards as established by the Little Rock Wastewater Utility. All drawings and specifications shall be completed under the supervision of a Professional Engineer registered in the State of Arkansas. The Engineer's seal shall be on all drawings and specifications submitted as approval drawings or as As Built drawings.

PART 2 - JURISDICTION

2.01 AREA OF JURISDICTION

These general requirements for sanitary sewer lines shall be required for the area within the city limits of Little Rock, Arkansas, as may be changed from time to time and those areas outside the city limits whose sewage is to be treated by the Little Rock Wastewater Utility treatment facilities or may at some time in the future become a part of the Little Rock Wastewater Utility.

PART 3 - DRAWINGS AND SPECIFICATIONS

3.01 DESCRIPTION

This part of the specifications covers the requirements of submission to the Little Rock Wastewater Utility of drawings and specifications in order to obtain approval of a Developer Funded Project.

3.02 DESIGN STANDARDS

All projects submitted to the Little Rock Wastewater Utility shall be designed according to the following criteria:

$$Q(\text{Max}) = [P \cdot A \cdot D \cdot 100 \text{gpcd}] + [1500 \text{gpda} \cdot A]$$

WHERE:

- $Q(\text{Max})$ = Design Flow
- P = Ten State Standards Peaking Factor
- D = Projected Population Density of the fully developed watershed (Persons/Acre)

- A = Total acreage of the upstream watershed
 - 100 gpcd = 100 gallons per person per day domestic flow (Ten State Standards)
 - 1500 gpda = 1500 gallons per day per acre of watershed for Infiltration/Inflow
- Population projections should be based upon proposed “zoning” of the development. In areas where “zoning” information is not available population densities less than eight (8) persons per acre will not be accepted without supporting documentation.

3.03 PRELIMINARY REPORT

- A. When requested by the Utility, the Engineer shall prepare and submit a preliminary engineering report prior to approval of construction plans. The report shall conform to accepted engineering criteria including the “Recommended Standards for Sewage Works”, published by the Great Lakes - Upper Mississippi Valley Board of State Sanitary Engineers, latest revision. This publication is commonly referred to as “The Ten States Standards”.
- B. The size, scope, and contemplated land use of the proposed development will determine the need for a preliminary report.

3.04 SPECIAL DESIGN REQUIREMENTS

- A. All public gravity mains and force mains constructed within the jurisdiction of the Little Rock Wastewater Utility shall be constructed in such a way that all manholes and access points are accessible by a paved surface. Accessible by a paved surface will be defined as within 6 feet of a paved surface constructed to handle Utility Cleaning and Inspection Vehicles with a minimum turning radius of thirty seven feet. Such paved surfaces located in areas other than public right of ways will be constructed within

easements restricting the construction of any fence, wall or gate that would restrict Little Rock Wastewater Utility's free access to the paved surface at all times.

- B. If in the design of a residential, commercial, or industrial facility in compliance with Section 3.04 A. above the need for individual pump stations systems are required for a portion or all of the development, Little Rock Wastewater Utility will allow such individual pump stations. Prior approval of type of pump station from Little Rock Wastewater Utility is required. The individual pump stations will be owned by the Owner of the Property served and will be the Owner's responsibility in the future for operation and maintenance of the system.

3.05 SUBMITTAL REQUIREMENTS FOR CONSTRUCTION PLAN APPROVAL

- A. A Letter of Transmittal shall be submitted detailing all items submitted to the Utility for review and approval of the project. The project name and the date submitted to the Utility shall be shown on the Letter of Transmittal. The Owner's name and total acreage of the project shall also be included in the Letter of Transmittal.
- B. An 8 1/2 x 11 copy of a quad-sheet showing the drainage basin being served by the proposed main extension. The total number of acres served should be shown on the drawing.
- C. A preliminary unit cost breakdown which must match plan quantities submitted on the construction drawings.
- D. Three sets of D size (24x36) construction drawings containing the following:
1. An Overall Project Map including the following items:
 - Vicinity Map

- Lot breakdown and proposed lots to be served. All lots to be served shall be capable of obtaining service by means of gravity flow through individual service lines. If any lot cannot be served by gravity flow it should be noted on the plans and approval must be obtained from the Utility. A lot will be considered to be served by gravity when the ground level of the proposed residence or commercial building can be served by gravity without the aid of any pumping apparatus. No service line to a lot shall cross any adjoining lot without approval from the Utility.
 - Location and size of existing sewers
 - Location, size, length, and grade of proposed sewer segments.
 - Bar scale and north arrow
 - Title block containing project name, project number, and date.
 - Location of all storm water detention facilities required for the project
2. Plan Profile sheets of sewers including the following items:
 - Vertical scale of 1" = 10' or 1" = 5'
 - Plan scale of 1" = 100' or larger
 - Elevations based on Mean Sea Level (NGVD-29 Datum)
 - Location of other Utilities and storm drainage on both the plan and the profile
 3. Standard Little Rock Wastewater Utility Detail Sheets are incorporated in this document. Reference will be made on the plans to incorporate these Detail Sheets as part of the Engineer of Record's Plans for the project.
 4. In lieu of the submittal of three sets of plans the Engineer may submit a set of plans on disk to the Utility in a format compatible with the Utility's latest version of AutoCad.

- E. Two (2) sets of specifications on construction procedures, materials, and testing, or a statement by the Engineer contained on the drawings that the work will conform to Little Rock Wastewater Standard Specifications.
- F. A review fee of 1.0% of the estimated cost of the proposed sanitary sewer work with a maximum of \$500.00 and a minimum of \$50.00.
- G. All submittals not conforming to these requirements shall be returned to the Engineer for corrections and resubmittal.
- H. Preliminary sanitary sewer drawings located in the City of Little Rock public rights of way must be submitted to the City of Little Rock, Director of Public Works for review and approval, if required by the City of Little Rock Standards.

3.06 CONSTRUCTION PLAN APPROVAL LETTER

- A. Upon approval of the project by the Utility, one (1) set of drawings will be returned to the Engineer along with an approval letter stating any specific items that must be adhered to for the Utility's approval of the project. The drawings shall be stamped by the Utility as reviewed and accepted for construction. Any items that are required to be added or changed will be shown on the drawings. The project shall be constructed in accordance with the approved drawings. Any portion of the project constructed in any way other than shown on the approved drawings shall not be accepted by the Utility unless prior written approval is given by the Utility for any major change in alignment, grade, elevation, or type of pipe. Minor field changes that do not change the original concept of the project may be made with the approval of the Engineer of Record. If the plans are submitted to the Utility on disk, the plans with any corrections required shown on a separate layer, will be returned to the Engineer of Record on disk.
- B. No construction shall begin on the project until the Approval Letter is signed by the Owner of the Project and returned to the Utility.

- C. If applicable the owner shall be eligible to enter into a Reimbursement Agreement (See Section 01120 of these Specifications) at the end of the construction period. A representative of the Engineering Services Department of the Utility will be available to meet with the owner of the project and the Engineer of Record to discuss the procedure for entering into a Reimbursement Agreement prior to final acceptance of the project. Reimbursement Agreement must be entered into by the owner of the project within 30 days of the date of acceptance by the Little Rock Wastewater Utility.
- D. The approval letter shall be in force for a period of one (1) year. If construction of the project has not begun within the one (1) year period the Utility's approval of the project will expire. The project will be resubmitted to the Utility for its review when the project is ready for construction. Resubmittal of an expired project must follow the same procedure as if the project had never been submitted previously, including a new review fee.

PART 4 - INSPECTION AND LAYOUT OF THE PROJECT

4.01 ENGINEER RESPONSIBILITY

The Engineer of Record who prepared and submitted the construction drawings and specifications and to whom the approval letter was sent shall be responsible for construction layout, general supervision, and resident inspection of the project. Continuous project responsibility shall be an expressed condition of project approval. The Engineer of Record's responsibility shall extend through submittal of "as built" drawings and final acceptance of the project by the Utility. Should the Engineer of Record be removed from the project by the Owner for any reason, no construction will be performed on the project until the Owner has acquired the services of another Engineer and notified the Utility in writing of such action.

Construction of any portion of a project without the assistance of an Engineer of Record shall be cause for rejection of that portion of the project by the Utility.

4.02 CONSTRUCTION LAYOUT

The layout and staking of the construction work shall be completed by trained and qualified survey personnel under direct supervision of the Engineer of Record. Such layout and staking shall consist of all items necessary to attain proper alignment and grade of the project.

4.03 GENERAL SUPERVISION

All Developer Funded Projects shall be constructed under the general supervision of a Professional Engineer registered in the State of Arkansas. General supervision shall consist of, but not limited to, periodic visits to the project to determine if the work is proceeding in accordance with the approved plans and specifications and with the standards set forth by the Little Rock Wastewater Utility. Any defects, deficiencies or irregularities in the project found by the Engineer of Record or reported to the Engineer of Record by his inspector shall be reported to the Little Rock Wastewater Utility. Actions shall be taken to correct any and all deficiencies and the Engineer of Record shall notify the Utility of any action taken.

4.04 RESIDENT INSPECTION

- A. Project inspection is an integral part of the Engineer of Record's responsibility. The Engineer of Record may choose between providing full time resident inspection or periodic inspection, but whichever he chooses it shall be his duty through his inspector to ensure that the project complies with the approved drawings and specifications. The Engineer of Record

nor his inspector shall give permission for any major changes in the approved drawings without obtaining written permission from the Utility.

- B. All projects within the jurisdiction of these requirements shall at all times be subject to the general inspection by the Little Rock Wastewater Utility. The frequency of visits and the number of hours required for Utility personnel at the project site shall be determined by the nature of the project being constructed.

PART 5 - EXISTING UTILITIES

5.01 PROXIMITY

All drawings shall be drawn in such a manner that all known utilities are shown using the best available information including utility maps, field surveys, or other sources of information. Sanitary sewer lines shall be kept a minimum horizontal distance of five (5) feet from all underground utilities including storm drains except water lines. Relation to water lines shall be as stated in Section 5.02. No sewer main will be constructed underneath or within ten feet of the top bank of any storm water detention pond.

5.02 SEWER MAIN IN RELATION TO WATER LINES

- A. Whenever possible, sewers should be laid at least ten (10) feet, horizontally, from any existing or proposed water main. Should local conditions prevent a lateral separation of ten (10) feet, a sewer may be laid closer than ten (10) feet to the water line if:
1. It is laid in a separate trench.
 2. Approval is obtained from the Little Rock Wastewater Utility and the Arkansas Department of Health.

3. In all cases the elevation of the crown of the sewer must be at least eighteen (18) inches below the invert of the water main.
- B. Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least eighteen (18) inches below the bottom of the water main. When the elevation of the sewer cannot be buried to meet the above requirement, the sewer main shall be constructed using ductile iron pipe for a distance of ten (10) feet on each side of the water main. One full Joint of the ductile iron sewer main should be centered under the water main so that both joints will be as far from the water as possible.
 - C. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer main shall be constructed of mechanical joint ductile iron pipe. All construction shall be subject to review and inspection by both the Little Rock Wastewater Utility and Central Arkansas Water.

PART 6 - RULES AND REGULATIONS

6.01 LAWS, REGULATIONS AND ORDINANCES

All Federal, State, County, or City Laws, Regulations, or Ordinances shall be complied with on all sewer projects. This shall include, but not be limited to the obtaining of approval from the Arkansas State Health Department and the Arkansas Department of Pollution Control and Ecology. Responsibility for submission to and approval by the Arkansas State Health Department and the Arkansas Department of Pollution Control and Ecology shall be the Engineer of Record, including payment of any applicable fees.

6.02 PERMITS AND LICENSES

- A. All permits and licenses required by any Federal, State, County, or Local Governing Body shall be obtained in strict accordance with the requirements of the governing agency. When required by the licensing agency, the Little Rock Wastewater Utility will assist in application for permits and licenses, but the cost of any permit, fee, or bond required will be borne by the Developer.
- B. Any installation of sewer lines or sewer facilities related thereto proposed by Developer may be subject to connection fees, additional charges, or approval by adjoining or nearby property owners or third parties, such as a sewer improvement district. Such an improvement district is a separate, distinct legal entity which the Little Rock Wastewater Utility and/or the Little Rock Sanitary Sewer Committee does not operate or control. Little Rock Wastewater Utility and the Little Rock Sanitary Sewer Committee hereby disclaim any duty, obligation, or liability of any nature whatsoever to determine the existence, status or amount of any fees which may be due third parties such as improvement districts which may be owed in addition to those fees due to Little Rock Wastewater utility for Sewer lines and/or sewer facilities installation proposed by Developer.

PART 7 - PROJECT ACCEPTANCE BY THE UTILITY

7.01 GENERAL

This part of the specifications covers the requirements for final inspection and acceptance of the sanitary sewerage facilities upon completion of the project. No connection of customer facilities or other utilization of sewer main extensions will be permitted by the Utility until a letter of acceptance is issued. The following

sections describe the requirements that must be met before an acceptance letter can be issued by the Utility.

7.02 LEAKAGE TEST

- A. Methods of testing the sewer mains and manholes are outlined in Section 02734 of these specifications. All leakage and vacuum tests shall be conducted in the presence of a representative of the Engineer of Record. The Engineer of Record will be required to certify in writing that the required leakage and vacuum tests have been performed on all line segments and manholes and that all test passed. Little Rock Wastewater Utility will require the Engineer of Record to submit documented proof of the leakage and vacuum test performed on each line segment. The form used in this submittal must be acceptable to Little Rock Wastewater Utility.
- B. When leakage and vacuum tests are being conducted by the Engineer of Record he will be required to notify the Little Rock Wastewater Utility. The Little Rock Wastewater Utility may send a representative to witness the test periodically.
- C. When the proposed sewer mains and manholes have successfully completed all the required Leakage and Vacuum Tests, Utility personnel will conduct a Preliminary Inspection of the project and complete a "Punch List" of all deficiencies found on the project. This list of deficiencies will be forwarded to the Engineer of Record for the project.

7.03 VISUAL INSPECTION/TELEVISION

After the leakage and vacuum test has been successfully completed and As Builts submitted to the Little Rock Wastewater Utility, the Utility will internally televise sections of the project to assess installed quality. All sections using PVC pipe will be televised by the Utility. Any defects caused by poor materials or workmanship

will be cause for rejection. The video will be reviewed by the Utility's Engineering Services Section and will be kept on file as a reference. A list of defects will be forwarded to the Engineer of Record for the project. Televising the project by the Utility will be placed on the televising schedule as soon as possible after the leakage and vacuum test has been completed and acceptable As Builts have been submitted to the Little Rock Wastewater Utility. Each project will be televised according to the Utility's schedule. The Utility will endeavor to televise each project as soon as possible, but delays may occur depending on the amount of projects scheduled at any one time. **Any return trips necessary to retelevise a project due to dirty sewer mains (mud,rocks,etc.) or defects in the sewer mains shall be completed by the Developer of the project. Any Contractor used by the Developer for this purpose must be able to televise the sewer mains in accordance with Section 02762 of these specifications.** The Utility's Inspector must be present at the time the televising of the mains is being performed. The project will not be accepted until mains have been televised to Utility's satisfaction and the Little Rock Wastewater Utility has been submitted a video confirming that the construction conforms with these specifications.

7.04 AS BUILT DRAWINGS

- A. After completion of the project, two sets of As Built Drawings shall be furnished the Little Rock Wastewater Utility. One (1) complete set of paper As Built Drawings and One (1) set of mylar reproducible As Built Drawings shall be furnished to the Little Rock Wastewater Utility for record purposes by the Engineer of Record for the project. As in the submittal of a project, the Engineer of Record may elect to submit the As Built Drawings on disk to the Utility. If so the mylar reproducible will not be required. One (1) set of paper as built drawings must be submitted to the Utility for review after the completion of all leakage and vacuum tests in order for the Utility to place the project on the schedule to be televised.

Upon acceptance of the paper copy, and notification by the Utility, the Engineer of Record will submit the mylar or digital copy.

- B** The size and scale of the drawings shall be the same as described in Section 01100 Part 3.05 of these specifications for construction plan approval. The size and type of pipe for each section of sewer main shall be shown on the as built. Manhole stations shall be shown on all As Built drawings including the Overall Project Map.
- C.** The following items shall be shown on the as built drawings and shall be checked by Utility personnel before accepting the as built as complete:
1. The length and slope of each section of the project shall be shown on the as built drawings.
 2. Elevations of all manhole rims and pipe inverts shall be shown on the as built drawings. All elevations shall be tied to the National Geodetic Vertical Datum 1929 Adjustment (NGVDD29) and tied into PAGIS Geodetic Control Network to Third Order accuracy.
 3. All manholes shall be located with coordinates using the Arkansas State Plane Coordinate System - North Zone - NAD-83 Adjustment with a maximum allowable positional error of 1.0 foot. Copies of As Built field notes and calculations showing how each manhole was located will be submitted to the Utility with the As Built.
 4. All sanitary sewer service lines shall be shown on the as built drawings both in distances from manholes and in distance from property corners along the street right of way or along lot lines. The depth of the end of the service below natural ground shall be clearly shown on the as built drawings. The exact location of all sanitary sewer service lines shall be accurately identified in the field at the property line in order that the location can be easily found when the connection is made. Service lines should be installed to provide sufficient clearance from other utilities and provide sewer service by means of gravity flow for each property within the project.

- D. All the horizontal and vertical data supplied with the as built drawings shall be tied into an approved PAGIS geodetic control network monument. This may be accomplished by tying directly into a PAGIS monument or tying the manholes to property corners within a subdivision that has been tied to the PAGIS geodetic control network.
- E. Only sewer mains as they were constructed shall be on the as built drawings. The as built drawings shall be clean of all unnecessary items and shall show only the sewer lines and services as they were constructed.

7.05 FINAL INSPECTION

- A. Before sanitary sewer extensions are accepted by Little Rock Wastewater Utility and new service line connections to these extensions approved, a final inspection will be made by Utility personnel. The final inspection will not take place until the as built drawings are submitted to the Utility and have been reviewed by Utility personnel.
- B. The final inspection shall not be scheduled until requested by the Engineer of Record for the project. The final inspection shall be scheduled by the Engineer of Record with Utility at least twenty four (24) hours in advance. Prior to the Engineer of Record scheduling the final inspection the Engineer of Record shall assure himself that all discrepancies noted on the video tapes and on the preliminary inspection performed by the Utility have been corrected.
- C. A list of workmanship and material defects, if any, will be forwarded to the Engineer of Record. Defects noted must be corrected before acceptance.
- D. Improvements found not as depicted on the submitted as built drawings shall not be accepted. No portion of a project will be accepted prior to acceptance of the entire project.

7.06 FINAL PAY ESTIMATE

Upon completion of the project the Engineer of Record shall submit one (1) copy of the final construction pay estimate to the Little Rock Wastewater Utility. The estimate should clearly match the as built quantities and unit prices. If Lump Sum Payment is used a letter stating the Contractor was paid on a Lump Sum Basis will be required and shall include the as built quantities for the project.

7.07 SEWER MAINTENANCE BOND

- A. Upon completion of the project and after all defects have been corrected in accordance with the final inspection, a maintenance bond in an amount equal to 50% of the construction cost as indicated on the final pay estimate shall be forwarded to the Little Rock Wastewater Utility.
- B. The period of the bond shall be for one year and shall cover all defects in materials and workmanship. The bond shall be binding on the developer or the contractor.
- C. If, in the judgment of the Little Rock Wastewater Utility, construction of a sewer main, which totals less than eight hundred (800) linear feet or the total construction cost is less than \$10,000, and meets the applicable specifications stated herein the maintenance bond may be waived.
- D. An inspection of the project may be made by the Little Rock Wastewater Utility before the expiration of the maintenance bond. A list of all defects in material or workmanship found during this inspection will be forwarded to the contractor and if the contractor fails to act on the list of defects a notice will be sent to the bonding company. As soon as all defects found are corrected, the Little Rock Wastewater Utility will release the maintenance bond.

7.08 EASEMENTS

- A. Where sanitary sewer lines are not placed in public rights of way or platted easement in a platted subdivision, a permanent easement shall be acquired for the Little Rock Wastewater Utility and dedicated for the purpose of maintaining the sewer lines. The easement shall be an exclusive sanitary sewer easement and common utility easements shall not be accepted.
- B. Sanitary sewer easements shall have a minimum width of 10' or the maximum depth to the sewer flowline whichever is greater. Where practicable, easements of maximum width possible will be provided to allow access to all manholes.
- C. All easements shall be on the standard Little Rock Sanitary Sewer Easement form. All easements for sanitary sewer lines shall be in favor of the City of Little Rock, Arkansas for the use and benefit of the Sanitary Sewer Committee.
- D. A final plat of the subdivision that contains the sewer mains may be filed with the Utility in lieu of easements. The final plat must meet all requirements of the City of Little Rock's Ordinance concerning final plat's (latest revision). All easements used for the installation of sewer mains on the plat shall be shown as "Utility Easements".
- E. Easements or Final Plats may not be filed with the Utility until construction of the project is complete and the project has met all other requirements for acceptance listed in these specifications.

7.09 BILL OF SALE

- A. Upon completion of the project the Developer shall complete a Bill of Sale. The form used for the Bill of Sale will be the Utility's Standard Bill of Sale. The Bill of Sale shall transfer ownership of the project to the City of Little Rock for the use and benefit of the Little Rock Sanitary Sewer Committee

and be signed by the Developer (Owner) and notarized by a Notary Public prior to delivery to the Utility.

- B. No project will be accepted by the Utility for connection to the Utility's system until such time as the Bill of Sale has been delivered and accepted by the Utility.

7.10 AFFIDAVIT OF COMPLETION

- A. Upon completion of the project the Developer and the Engineer of Record shall complete an Affidavit of Completion. The Affidavit of Completion shall be delivered to the Utility after the Owner and the Engineer of Record have completed the appropriate sections of the document.
- B. The total sum of the project as shown on the Affidavit of Completion shall match the Final Cost Estimate prepared by the Engineer of Record and submitted to the Utility.
- C. No project will be accepted by the Utility for connection to the Utility's system until such time as the Affidavit of Completion has been delivered and accepted by the Utility.

7.11 ACCEPTANCE LETTER

- A. All projects will be issued an acceptance letter from the Little Rock Wastewater Utility when they have completed or submitted all items listed above. No portion of a project shall be put into service without approval from the Little Rock Wastewater Utility.

- B. Approval of the use of a completed portion of a project will only be given in the best interest of the Utility and such approval for the use of completed portions of the project does not constitute acceptance of the entire project by the Utility.**

END OF SECTION 01100

SECTION 01120

FEES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section stipulates fees charged by the Little Rock Wastewater Utility for connection of any facility to the City Sewer.
- B. Connection of any facility shall be preceded by payment of all applicable fees.

1.02 DEFINITIONS

- A. Little Rock Wastewater Utility - The sewer collection system, treatment facilities, operational equipment and staff of the Wastewater Utility under the jurisdiction of the Sanitary Sewer Committee of the City of Little Rock, Arkansas, hereinafter referred to as "Utility".
- B. City Sewer - A public sanitary sewer in which all owners of abutting properties have equal rights and is maintained and controlled by the Little Rock Wastewater Utility. No sewer smaller in diameter than six (6) inches shall be considered a city sewer.
- C. Permit - Authorization issued to a plumber or contractor upon request allowing installation of a building sewer to connect to the Little Rock Wastewater Utility system of city sewers.

PART 2 - FEES

2.01 TAPS

All sewer main taps shall be performed by the Contractor. All taps made on Little Rock Wastewater Utility Sewer Mains must be inspected by Utility personnel.

2.02 CONSOLIDATED FEE SCHEDULE

Attached as part of this section is the latest update of the Little Rock Wastewater Utility Consolidated Fee Schedule.

2.03 CAPACITY CONTRIBUTION FEES

- A. Capacity Contribution Fees are calculated specifically for each project.
- B. The procedure for calculating the Capacity Contribution Fees are as follows:
 - 1. For the basin, the collection system's maximum flow capacity is determined.
 - 2. Given a location in the basin and the proposed area served, a design capacity (GPM/acre) is determined.
 - 3. The proposed development is evaluated on the basis of its flow contribution to the existing system.
 - 4. Capacity needed in excess of the design capacity is charged to the development based on the current cost to restore that capacity.
- C. Capacity Contribution Fees must be paid by the Developer prior to any construction taking place on a project.

2.04 REIMBURSEMENT FEES & CAPITAL RECOVER FEES COLLECTED BY THE UTILITY

The Utility is required to collect pro-rata acreage fees for connection to specific projects that have entered into an Extension Reimbursement Agreement with the Utility or for certain projects installed by the Little Rock Wastewater Utility. These charges will vary depending on the specific project and its location. This information is available from the Utility upon request. All such charges will be paid by the Developer prior to construction. No construction may begin on any project unless all pro-rata acreage charges are paid by the Developer.

2006 CONSOLIDATED FEE SCHEDULE

1. FINANCE AND ADMINISTRATION DIVISION

1.1 Billing Fee \$5.00

Bills sent to customers by Little Rock Wastewater Utility

1.2 Bad-Check Return Fee..... \$15.00

Customer bad-checks returned on Little Rock Wastewater Utility bank accounts

1.3 Illegal Sewer Connection Fee \$150.00

Illegal sewer connections to Little Rock Wastewater collection system

1.4 Late-Payment Fee 10% (Two days past due date)

Late-payment on bills sent to customers by Little Rock Wastewater Utility

2. ENGINEERING SERVICES DIVISION

Connection of any facility to the city sewer shall be preceded by payment of all applicable fees.

2.1 Connection Fee.....See Categories Below

The following fees are applicable to all new facilities connecting a building sewer to the Little Rock sewer system.

2.1.1 Single Family Residential, Commercial, Industrial, or other Non-residential:

(Based upon water meter required. Any new connections or additions to existing facilities which are currently served by the sewer system, but which will not require installation of any additional or larger water meter shall pay a connection fee equivalent to the meter required for the additional load as determined by the Utility. If a connection fee has been paid in the past for the water meter now in service, no additional connection fee is required.)

5/8" or 3/4"	water meter (each)	\$100.00
1"	water meter (each)	\$250.00

1 ½"	water meter (each)	\$500.00
2"	water meter (each)	\$800.00
3"	water meter (each)	\$1,600.00
4"	water meter (each)	\$2,500.00
6"	water meter (each)	\$5,000.00
8"	water meter (each)	\$8,000.00
10"	water meter (each)	\$11,500.00

2.1.2 Multi-Unit Residential Developments (each)..... \$100.00
 (Condominiums, Apartments, Mobile Home Parks, and other mutli-family)

2.1.3 Hotels and Motels:

- (a) First Unit (each)..... \$100.00
- (b) All Additional Units (each)..... \$50.00

2.2 Building Sewer Inspection Fee \$50.00

Building sewer inspection fees for residential, commercial, industrial, all other connections shall be \$50.00. The above mentioned fees shall pay for one field inspection. All additional field inspections as required shall cost \$25.00 each.

2.3 Building Sewer Seal Fee (each) \$150.00

Before any dwelling or other building being served by public sewer is moved or demolished, the building sewer serving must be disconnected from the public sewer at the property line to prevent the entrance of stormwater, groundwater, and debris into the public sewer.

2.4 Plan Review Fee.....\$50.00 Minimum to \$500.00 Maximum

Accompanying the final construction plans and preliminary cost estimate shall be a review fee of 1.0% of the estimated construction cost of the project with a maximum of \$500.00 and a minimum of \$50.00. Approval will not be given for construction plans submitted until the above review fee is paid.

2.5 Capacity Contribution Fee

In addition to standard connection fees, new commercial or industrial users will be assessed Capacity Contribution Fees if their estimated discharge rate exceeds a per acre allowance. These fees are calculated specifically for each project. The

procedure for determining the amount of the capacity contribution generally is as follows:

- 2.5.1 For the basin, the collection system's maximum flow capacity is determined.
- 2.5.2 Given a location in the basin and the proposed area served, a design capacity (GPM/acre) is determined.
- 2.5.3 The proposed development is evaluated on the basis of its flow contribution. Capacity needed in excess of the design capacity is charged to the development based on the current cost to restore that capacity.

2.6 Street (R-O-W) Excavation Fee

LRWU has a program through which customers can have building sewers, or portions thereof, located under pavement in the right-of-way of public roadways and alleys repaired or replaced at a reasonable cost. No building sewer larger than four (4) inches in diameter is eligible for this program. Fees are as follows and must be paid in advance.

- 2.6.1 Single Family Residential Units..... \$350.00
(Includes owner occupied and rental dwellings)
- 2.6.2 Commercial Units..... \$500.00
(Includes duplexes and larger rentals)

2.7 Reimbursement Fee

LRWU collects reimbursement fees to offset private and public investment in larger diameter collector lines that are required to provide capacity for future development. The fees are specific to certain areas that are typically defined by natural drainage boundaries. Fees are collected on per acre basis and vary depending on the specific area in question. Specific areas where reimbursement fees are being collected and the corresponding per acre charge are shown in Attachment A. Reimbursement fees are adjusted annually.

2.8 Capital Recovery Fee

LRWU collects Capital Recovery Fees on mains constructed with Utility funds. It is the policy of LRWU to not extend sewers to new customers through the construction of new mains. In cases where the construction of new mains has

been mandated for this purpose by an outside agency, the Utility collects an acreage based recovery fee. Areas subject to Capital Recovery Fees and corresponding per acre charges are shown in Attachment B.

3. ENVIRONMENTAL ASSESSMENT DIVISION

3.1 Permitted Industrial Wastewater Discharge Fees

3.1.1	New Permit Application Fee (each facility).....	\$500.00
3.1.2	Permit Modification or Permit Transfer Fee (each action).....	\$250.00
3.1.3	Categorical Discharger (CIU) - Annual Permit Fee (each outfall).....	\$1,500.00
3.1.4	+Non-Significant CIU (1-100 GPD)- Annual Permit Fee*	\$750.00
3.1.5	+Significant "CIU Zero" Discharger -Annual Permit Fee*	\$750.00
3.1.6	+Non-Significant "CIU Zero" Discharger Annual Permit Fee*	\$500.00
3.1.7	+Categorical "Zero" Discharger (Domestic Only) Permit Fee*	\$250.00
3.1.8	Significant Industrial User - Annual Permit Fee*	\$750.00
3.1.9	Other Regulated Industrial Users - Annual Permit Fee*	\$500.00
3.1.10	Other Regulated Industrial Users "Zero" Discharge-Annual Permit Fee*.....	\$250.00
3.1.11	Noncompliance Inspection, Sampling, and/or Testing (each occurrence).....	\$Cost
3.1.12	Late Reporting Fee (each occurrence)	\$50.00

* each outfall

3.2 Trap/Interceptor (T/I) Control Program - Landowner/Lessee/Tenant Fees

3.2.1	Review Fee - Redevelopment to Determine Adequacy of Existing T/I.....	\$50.00
3.2.2	T/I Variance Request from Approved Specifications.....	\$200.00
3.2.3	T/I Follow-up Noncompliance Inspection (1 st occurrence).....	\$100.00
3.2.4	T/I Noncompliance Past LRWU Requirement (each past 1 st occurrence)	\$200.00
3.2.5	+T/I Overflow Investigation (Active Overflow of Interceptor)	\$300.00
3.2.6	T/I Noncompliance Sampling and/or Testing (each occurrence).....	\$Cost

3.3 Domestic Septage Disposal Fees (Accepted Only From Approved Sources)

- 3.3.1 HLW Disposal Fee <1000 Gallon Tanker Capacity (each load)..... \$30.00
- 3.3.2 HLW Disposal Fee ≥1000 Gallon Tanker Capacity (each load)..... \$60.00

3.4 Permitted Domestic Septage Waste Hauler/Owner/Operator Fees

- 3.4.1 New Permit Application Fee (each facility)..... \$500.00
- 3.4.2 Permit Modification or Permit Transfer Fee (each action)..... \$250.00
- 3.4.3 Domestic Septage Waste Haulers - Annual Permit Fee \$500.00
- 3.4.4 Domestic Septage Waste Hauler Tanker Fee - (each truck or tanker)..... \$50.00
- 3.4.5 Noncompliance Inspection, Sampling, and/or Testing (each occurrence).....\$Cost
- 3.4.6 Late Reporting Fee (each occurrence) \$50.00

3.5 Permitted Landfill Owner/Operator Fees

- 3.5.1 New Permit Application Fee (each facility)..... \$500.00
- 3.5.2 Permit Modification or Permit Transfer Fee (each action)..... \$250.00
- 3.5.3 Landfill Operator - Annual Permit Fee \$250.00
- 3.5.4 Noncompliance Inspection, Sampling, and/or Testing (each occurrence).....\$Cost
- 3.5.5 Late Reporting Fee (each occurrence) \$50.00

3.6 Permitted Landfill Leachate Hauler Fees

- 3.6.1 New Permit Application Fee (each facility)..... \$500.00
- 3.6.2 Permit Modification or Permit Transfer Fee (each action)..... \$250.00
- 3.6.3 Landfill Leachate Hauler - Annual Permit Fee..... \$500.00
- 3.6.4 Landfill Leachate Tanker Fee - (each truck or tanker)..... \$50.00
- 3.6.5 Noncompliance Inspection, Sampling, and/or Testing (each occurrence).....\$Cost
- 3.6.6 Late Reporting Fee (each occurrence) \$50.00

3.7 Permitted Mobil Pressure Wash Owner/Operator Fees

- 3.7.1 Mobil Pressure Wash Operator New Permit Application..... \$150.00
- 3.7.2 Mobil Pressure Wash Operator - Annual Permit Fee \$150.00
- 3.7.3 Mobil Pressure Wash Operator Tanker Fee - (each truck or tanker)..... \$50.00

3.7.4	Disposal Fee <1000 Gallon Tanker Capacity (each load)	\$30.00
3.7.5	Disposal Fee ≥1000 Gallon Tanker Capacity (each load)	\$60.00
3.7.6	Noncompliance Inspection, Sampling, and/or Testing (each occurrence).....	\$Cost
3.7.7	Late Reporting Fee (each occurrence)	\$50.00

3.8 Diversion and Sewer Meter Inspection Fees

3.8.1	New Meter Installation - Review, On-site Inspection, and Approval	\$120.00
3.8.2	Annual Inspection (each meter and meter type).....	\$60.00

3.9 Fees for Other Approved Wastewater Sources

When a customer requests approval to discharge a wastewater source which has not been classified above in Section 3, the Director shall have the authority to set discharge fees within the guidelines set forth below.

The Director shall assess whether the wastewater discharge request is compatible with the treatment works. Also, the Director shall assess the complexity of the discharge request and adjust the disposal fee accordingly. When the Director establishes a new wastewater source classification under this Section, the same discharge fee shall be uniformly applied to future customer requests under this fee schedule.

Wastewater sources approved for discharge will be issued a "Restricted Short Term Authorization to Discharge Wastewater" or a "Special Discharge Permit." These shall apply regardless of whether the approved discharge is delivered to the Adams Field Treatment Plant for disposal or discharged directly into the sanitary sewer collection system.

3.9.1	New Restricted Short Term Authorization - Application Fee	\$250.00
	(Duration of the Short Term Authorization must be less than one year.)	
3.9.2	New Special Discharge Permit - Application Fee	\$500.00
3.9.3	New Special Discharge Permit - Annual Permit Fee (each outfall).....	\$500.00
3.9.4	Special Discharge Wastewater Disposal Fee per Gallon	\$0.05 - \$0.20
3.9.5	Compliance Inspection, Monitoring, and Testing (each).....	\$Cost

- 3.9.6 Noncompliance Inspection, Sampling, and/or Testing (each occurrence).....\$Cost
- 3.9.7 Special Discharge Late Reporting Fee (each occurrence)..... \$50.00
+ “signifies added/changed fee amounts from 2005”

END OF SECTION 01120

SECTION 02000
PUMP STATION SPECIFICATIONS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section stipulates features, design considerations, and other requirements for utilization of pumping facilities receiving sewage from gravity sewers 18" in diameter or less. Pumping facilities receiving sewage from larger diameter sewers will be reviewed by the Utility's Engineering Services Division on a case by case basis.
- B. No pump station of the size indicated above shall be allowed unless constructed in conformance with these specifications.
- C. Shop drawings and the Engineer of Record's design calculations must be approved by the Little Rock Wastewater Utility prior to ordering materials and construction of the pump station.

1.02 GENERAL REGULATIONS

- A. Pumping stations may be installed only where gravity sewer service is not feasible in the opinion of the Utility and then only with written approval from the Little Rock Wastewater Utility.
- B. Any pumping station that is serving two or more parcels of property shall be owned and/or maintained by the Little Rock Wastewater Utility.
- C. Clear title conveyance of the pump station and associated property to the Little Rock Wastewater Utility shall be provided upon acceptance of the project. (Temporary stations may revert to the Developer upon abandonment.)

- D. The operation and maintenance expenses for the pump station must be paid in addition to the monthly sewer service charges paid by the benefiting customers. The Developer must pay, in advance, the present value of the estimated operation and maintenance costs for the estimated service life of the pump station. The amount of payment shall be determined by Little Rock Wastewater Utility based on historical records of similar facilities within the Utility's System. The minimum estimated service life of the pump station shall be ten (10) years.
- E. A deposit equal to the estimated expense the Utility will incur for the purchase and installation of remote pump station monitoring equipment shall be provided before project acceptance. Should the deposit exceed the Utility's expense to install the remote pump station monitoring equipment, the remaining funds will be returned to the Developer. If the expenses exceed the Utility's estimate, the additional expense will be billed to the Developer.

1.03 DESIGN

- A. The design of pump stations to be owned, operated, and maintained by the Little Rock Wastewater Utility shall comply with the following general requirements:
 - 1. Pump Station structures and electrical and mechanical equipment shall be protected from physical damage by the one hundred (100) year flood. Stations should remain fully operational and accessible during the twenty five (25) year flood.
 - 2. The pump station shall be readily accessible by maintenance equipment during all weather conditions. Sufficient area for vehicular parking and turnaround shall be provided at the pump station site. "All weather" surfacing shall be provided on parking area as well as the access drive.

3. Fencing shall be provided around pump station structures and electrical and mechanical equipment. Fencing shall be six (6) foot chain link with three (3) top strands of barbed wire. Alternate fencing types may be used upon approval of the Engineering Services Division of the Little Rock Wastewater Utility. The minimum acceptable width for access gates shall be sixteen (16) feet.
4. An automatic night light ("Night Watcher" or similar) and a potable water supply shall be provided at the pump station site. Backflow prevention requirements on the potable water supply shall comply with the requirements of Central Arkansas Water.
5. Three phase electrical power free of rate encumbrances must be provided. Electrical systems and components (e.g. motors, lights, cables, conduits, switch boxes, etc.) located in raw sewage wet wells or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present, shall comply with the "National Electrical Code" requirements for Class 1 Group D, Division 1 locations. All wiring must be in accordance with the latest revisions of the "National Electrical Code" and the "City of Little Rock Electrical Code". A fused disconnect switch located above ground shall be provided for the pump station. When such equipment is exposed to weather, it shall meet the requirements of weatherproof equipment (NEMA 3R). All electrical enclosures subject to weather or corrosive gases shall be constructed of corrosion resistant material. Provide NEMA rated motor starters.
6. The pump station shall be of the submersible or wet well/dry well type. Other types of stations may be approved by the Engineer Services Division of the Little Rock Wastewater Utility where circumstances justify their use.
7. The pump station must contain at least two pumps designed for pumping sewage. Except where grinder pumps are used, the pumps

must be capable of passing spheres of at least three (3) inches in diameter. Pump suction and discharge piping shall be at least four (4) inches in diameter. Grinder pumps shall not be allowed if pump station design capacity exceeds ninety (90) gallons per minute. Pumps shall be under a positive suction head during normal operation.

8. Control systems shall be of the air bubble type or the encapsulated float type. Within a float type design, provide Anchor Scientific Roto Floats or approved equal. Control systems shall be designed for the use intended, factory wired, fully adjustable, and capable of providing fail safe operation. Control systems shall minimally have five (5) set points (Low level alarm, All "Off", Lead "On", Lag "On", High Level alarm). Within a float type design, low level float switch arrangement shall be normally closed. Provisions shall be made to automatically alternate the "Lead" pump. Provide Siemens alternator part #47AB10AF or approved equal. The electrical equipment shall comply with Section 1.03.A.5.
9. Control systems shall provide a separate terminal strip for future connection of SCADA equipment. Dry, isolated, Form C contacts shall be wired to the terminal strip to monitor the following functions and react as characterized.
 - A. Low Wet Well Alarm – provided contact shall remain closed during an alarm silence event.
 - B. High Wet Well Alarm – provided contact shall remain closed during an alarm silence event.
 - C. Pump Running – for each pump, provide auxiliary motor starter contact, or power relay connected to motor starter output.
 - D. Pump Failure – for each pump, provide factory installed pump circuit breaker contact, or power relay connected to breaker output.

- E. Pump OOS (Out of Service) – provide panel mounted DPDT switch for each pump.
 - F. Intrusion Alarm – provide normally closed magnetic switch on MCC enclosure door.
 - G. Power Failure – provide power/phase monitor, Square D part #8430 or approved equal, to monitor incoming power service. Provide relay output to monitor MCC control voltage fuses. Parallel these outputs to a single normally open connection to terminal strip for overall MCC power indication.
10. The wet well size and control setting shall be appropriate to avoid heat buildup in the motor due to frequent starting and to avoid septic conditions due to excessive detention times.
 11. The wet well floor and pump intakes shall be designed to prevent deposition of solids. The wetwell floor shall have a minimum slope of one to one to the hopper. The horizontal area of the hopper bottom shall not be greater than what is necessary for proper installation of inlets or submersible pumps.
 12. All metal fasteners, bolts, nuts, and supports located in the wet well shall be constructed of stainless steel.
 13. A sign identifying the Pump Station name and Little Rock Wastewater Utility as the Owner shall be provided and clearly displayed.
 14. Temporary pump stations serving sanitary sewers that will be connected to future gravity lines shall be designed in a way that will allow conversion with minimum construction.
- B. Submersible pump stations shall comply with the general provisions set forth in Section 1.03.A. Submersible pumps shall be designed specifically for raw sewage use, including totally submerged operation during a portion of each pump cycle. An effective method to detect shaft seal failure or potential failure shall be provided, and the motor shall be of squirrel cage type design without brushes or other arc producing mechanisms. Pump

motor power cables shall be specifically designed for submersible pump applications and shall be properly sealed and insulated. Motor control centers for submersible pumps shall be located outside the wet well and be protected by a conduit seal to prevent the atmosphere of the wet well from gaining access to the control center. Submersible pump stations shall, as a minimum, include the following accessories:

1. Check valves and resilient seat gate valves on the discharge line of each pump. The check valve shall be installed between the gate valve and the pump and shall be suitable for the material handled. Check valves and gate valves shall be located in a separate valve pit drained to the wet well. Separate valve pits will not be required for grinder stations.
2. Ductile iron influent line.
3. Stainless steel guide rails.
4. Wet well vent to atmosphere.

C. Wet well/dry well pump stations shall comply with the provisions set forth in Section 1.03.A. Dry wells, including their super structure, shall be completely separated from the wet well. Provision shall be made to facilitate removal of pumps, motors, and other mechanical and electrical equipment. Suitable and safe means of access shall be provided to dry wells, and to wet wells containing mechanical equipment that requires inspection and maintenance. As a minimum, the following accessories shall be included in wet well/dry well stations:

1. Check valves and resilient seat gate valves on the discharge line of each pump. Check valves shall be located between the pump and the gate valve.
2. Resilient seat gate valve on the suction line of each pump.
3. Float controlled dry well sump pump discharging into the wet well.
4. Adequate lighting switched at the dry well entrance.
5. Thermostatically control electric heat.
6. Dehumidifier

7. Ductile Iron influent line.
 8. Intermittent mechanical ventilation of dry well providing 30 complete air changes per hour. "On" switch for ventilation shall also be located at dry well entrance.
 9. Wet well vent to atmosphere.
- D. Design of force mains shall comply with the following requirements:
1. Minimum pumping rate shall result in a velocity of at least two (2) feet per second and not greater than five (5) feet per second.
 2. The physical elevation of the force main should not exceed the hydraulic grade line at any location along the force main's length.
 3. Automatic air relief valves designed for use with sewage shall, at a minimum, be installed at high points of the force main. Air relief valve assemblies shall include inlet and outlet ports for backflushing, and isolating valves to facilitate inspection and repair.
 4. Friction losses through force mains shall be based on the Hazen-Williams formula and actual pipe diameters. Hazen-Williams "C" values of 120 and 100 for PVC and Ductile Iron, respectively, shall be used for design. When initially installed force mains will have significantly higher "C" values. Designs should be checked at "C" values of 150 and 130 for PVC and Ductile Iron, respectively, to determine power and net positive suction head requirements.
 5. A ten (10) foot horizontal separation shall be maintained between potable water mains and sewage force mains. Where water mains and force mains cross, force mains shall be laid to provide a distance of eighteen (18) inches between the outside of force main to the outside of the water main. Both joints of the force main shall be located as far as possible from the water main.
 6. Force main materials, installation and testing shall comply with applicable provisions in Sections 02220, 02610, 02730, and 02734.

END OF SECTION 02000

SECTION 02100
SPECIAL STRUCTURES FOR BUILDING SEWERS

PART 1 - GENERAL

1.01 WORK INCLUDED

Section 02100 covers the construction of special structures used in sanitary building drains/sewers. The intent of Section 02100 is to meet or exceed the requirements of the State of Arkansas's Plumbing Code. When technical requirements, specifications, or standards contained in the Arkansas Plumbing Code conflict with Section 02100, the more restrictive shall apply. Specifically, the Arkansas Plumbing Code shall apply in those instances where Section 02100 does not provide technical requirements, specifications, or standards. Section 02100 shall apply in those instances where the Arkansas Plumbing Code does not provide technical requirements, specifications, or standards. Should the Arkansas Plumbing Code and Section 02100 each provide technical requirements, specifications, or standards on any single matter in terms so distinct that determining which is more restrictive is not readily apparent, then Section 02100 shall apply. LRWU's Director of the Environmental Assessment Division, hereinafter "Director" in Section 02100, shall render determinations of applicability under Section 02100.

1.02 AUTHORITY

The City of Little Rock Ordinance 17,966, hereinafter Ordinance 17,966 (or its successor ordinance), § 7.1 (F) allows provisions to make rules and regulations in regard to the construction, use, and operation of sanitary sewers to be connected to, or connecting into, the public sewer of the Little Rock Wastewater Utility's sewerage system. Ordinance 17,966 § 2.1 prohibits the discharge to Publicly Owned Treatment Works any waste capable of creating stoppages, causing abnormal corrosion, abnormal deterioration,

damage or hazard to structures, equipment, or workers of the POTW. Ordinance 17,966 § 3.2 requires Users to install, operate, and maintain pretreatment devices to protect the sewerage system. The LRSSC annually adopts a "Consolidated Fee Schedule" which owners and users shall pay to LRWU for services provided and when owners/users fail to comply with LRWU requirements (non-compliance).

The United States Code of Federal Regulations (40CFR), Part 403 and the State of Arkansas - Arkansas Pollution Control and Ecology Commission, Regulation No. 3 are Federal and State regulations which require local governments to be responsible to control pollutants which pass through or interfere with the sewerage system.

1.03 RELATED WORK

- A. Section 02605 - Manholes
- B. Section 02610 - Pipe and Fittings
- C. Section 02730 - Sanitary Sewer Pipelines
- D. Section 02732 - Sanitary Sewer Service Lines

1.04 SPECIALIZED DEFINITIONS

- A. Approved - Describing a method or design acceptable to LRWU.
- B. Biological Additives - The use of biological additives as a supplement to interceptor maintenance, including the addition of microorganisms, may be authorized by the Director, and approval shall be obtained, in writing, prior to the use of such additives. The use of biological additives is prohibited, unless written approval from the Director is obtained.

- C. Catch Basin - A trap control device used to separate and retain solids such as large sediment, trash, debris, gravel, plaster, broken glass, or other materials detrimental to the Grease Interceptor, Sand/Oil Interceptor or sewerage system.
- D. City Sewer - A public sanitary sewer in which all owners of abutting properties have equal rights, and is maintained and controlled by the Little Rock Wastewater Utility. No sewer line smaller than six (6) inches in diameter is a city sewer.
- E. Cleanouts - A small sewer access hole through which equipment may be lowered for trouble-shooting or maintenance work. Cleanouts provide access so the sewer can be cleaned without having to disassemble.
- F. Director - For the purposes of Section 02100 shall mean the Director of the Environmental Assessment Division at Little Rock Wastewater Utility.
- G. Food Courts - Designated areas that contain several food-service facilities with different owners sharing seating space and plumbing facilities which are predominately found in shopping centers, malls or amusement parks
- H. Food Service Facility - Any facility which prepares and/or packages food or beverages for sale or consumption, on or off-site, including but not limited to food courts, food manufacturers, food packagers, restaurants, cafeterias, grocery stores, delicatessens, meat processors, bakeries, bagel shops, caterers, lounges, nightclubs, hospitals, hotels, sandwich shops, coffee shops, ice cream/custard/yogurt shops, care facilities, churches, and schools. Food Service Facilities are primarily engaged in activities of preparing, serving, or otherwise making available for consumption foodstuffs and use one or more of the following preparation activities:

cooking by frying (all methods), baking (all methods), grilling, sautéing, rotisserie cooking, broiling (all methods), boiling, blanching, roasting, toasting, or poaching. Also included are infrared heating, searing, barbecuing, and any other food preparation activity that produces a hot/cold, drinkable/non-drinkable food product in or on a receptacle that requires washing.

Exceptions: Private single family residential structures or residential duplexes.

- I. Garbage Grinder or Disposal - A device which shreds or grinds up solid or semisolid waste materials into smaller portions for discharge into the sanitary sewer collection system.

- J. Grease - A material either liquid or solid, composed primarily of fat, oil, and grease from animal or vegetable sources. The terms "fats, oils and grease (FOG)", "oil and grease", or "oil and grease substances" shall be deemed as grease by definition.

- K. Grease Interceptor - A large trap control device located underground and outside of a food service facility designed to collect, contain, and remove food wastes, settleable solids, and oil and grease from the wastewater while allowing the balance of the liquid waste to discharge to the city sewer system by gravity.

- L. Grease Recycling Container - A large metal receptacle with a lid placed outside of the Food Service Facilities used to collect and recycle oil and grease from fryers and grills.

- M. Grease Trap - A small trap control device located inside a food service facility or under a sink designed to collect, contain, or remove food wastes

and grease from the wastestream, while allowing the balance of the liquid waste to discharge to the city sewer system by gravity. (Note: LRWU does not allow grease traps to be installed, unless there are no other feasible alternatives to installing a properly sized grease interceptor.)

- N. Lint Interceptor - A trap control device with a stainless steel wire basket and two screens to collect, contain, and remove solids (0.5 inches or larger in size), strings, rags, buttons, or other materials from the wastestream trap, while allowing the balance of the liquid waste to discharge to the city sewer system by gravity. Wire baskets and screens shall be removable for cleaning.
- O. LRSSC – Little Rock Sanitary Sewer Committee
- P. LRWU - Little Rock Wastewater Utility
- Q. Oil - A liquid or semi-solid material, composed primarily of petroleum or mineral sources.
- R. Oil and Grease - Organic polar compounds derived from animal and/or plant sources that contain multiple carbon chain triglyceride molecules. These substances are detectable and measurable using analytical test procedures established in 40 CFR 136, as may be amended from time to time. All are sometimes referred to herein as “Grease” or “Greases”.
- S. Owner - Shall mean the facility owner, tenant, lessee, governmental agency, or their duly appointed agent of same, to include but not limited to, a project architect, engineer, designer, and/or duly licensed master plumber.

- T. Person - Shall mean any and all persons, natural or artificial, including any individual, firm, company, municipal or private corporation, association, governmental agency, other entity, duly appointed agent, servants, or employees.
- U. Prohibited Additives - Products having a composition of a strong acid, strong base, enzymes, surfactants, solvents, or other chemical mixture, added directly or indirectly to the sanitary building drain/sewer, for the purpose of emulsifying grease and/or oils in a trap control device.
- V. Public Sewer - Shall mean a sewer owned and operated by the LRWU which is tributary to treatment facilities operated by the LRWU.
- W. Replacement - Shall mean expenditures for designing, obtaining, and installing equipment, accessories, and appurtenances that are necessary during the useful life of the trap control device and to maintain the capacity and performance for which such trap control devices were designed and constructed.
- X. Residential - Shall mean all single family or two family (duplex) dwelling units. Multifamily or multiunit buildings consisting of 3 or more dwelling units shall be classified as commercial.
- Y. Sampling/Inspection Manhole - A special purpose manhole installed in the sanitary building sewer downstream of the trap control device discharge prior to connection of the domestic waste line(s) specifically designed to facilitate sampling and inspection of the wastewater discharge to assure compliance with Federal, State, and Local sampling requirements. The sampling/inspection manhole shall have a LRWU standard manhole lid

and frame for easy access. The inlet line shall be at least 8 inches and no more than 24 inches higher than the outlet service line.

- Z. Sand/Oil Interceptor - A large trap control device designed to collect, contain, or remove sand, grit, petroleum oil, and grease from the wastestream, while allowing the balance of the liquid waste to discharge to the city sewer system by gravity. Exterior sand/oil interceptors shall have three chambers each having a standard 24-inch manhole access to facilitate inspection, cleaning, and maintenance. Interior sand/oil interceptors shall have three chambers with the second and third chambers having a standard 24-inch manhole and the first chamber a heavy duty traffic grate and frame.

- AA. Sanitary Building Drain – The part of the lowest piping of a drainage system that receives the discharge from soil, waste, and other drainage pipes that carry sanitary sewer (wastewater) inside and extends to 30 inches beyond the building exterior wall and conveys drainage to the sanitary building sewer.

- BB. Sanitary Building Sewer - That part of the drainage system that extends from the building drain and conveys the sanitary sewer (wastewater) to the public sewer. Sometimes refer to as “sanitary sewer service lines.”

- CC. Sanitary Sewer - Shall mean a sewer that conveys domestic wastewater or industrial waste or a combination of both, and into which storm, surface, and ground waters or unpolluted industrial wastewater are not intentionally passed/discharged.

- DD. Shared Grease Interceptor - A grease interceptor to which grease wastes are directed from more than one food service facility having different

owners/tenants or types of operations. Only allowed by Variance, when the food court shares a common eating area, and space for installing multiple grease interceptors is limited.

- EE. Solids Interceptor - A device equal to Zurn Z-1183 or Wade 5760 to collect, contain, and remove hair, solid residuals debris from garbage grinders and dishwashers, or other materials detrimental to the grease interceptor or public sewer.

- FF. Trap Control Device - Devices required to reduce the amount of pollutants; eliminate pollutants; or alter the nature of pollutant properties in wastewater prior to, or in lieu of, introducing such pollutants into the city sewer. This reduction or alteration is obtained by physical processes, settling, floatation, screening, or by other means, except by diluting the concentration of the pollutants.

- GG. User - Any person, including those located outside the jurisdictional limits of the Town, who contributes, causes, or permits the contribution or discharge of wastewater into the public sewer, including persons who contribute such wastewater from mobile sources, such as those who discharge hauled wastewater.

PART 2 – SUBMITTAL REQUIREMENTS

Part 2 contains the submittal requirements for the construction of special structures used in sanitary building drains/sewers.

Detailed plans showing the type of trap control device, capacity, and operating procedures shall be submitted to LRWU for review, and shall be approved by LRWU before construction of the trap control device. LRWU's review of such plans and operating

procedures shall in no way relieve the User from the responsibility of modifying or replacing a trap control device as necessary to produce an effluent discharge acceptable to LRWU. Any subsequent changes in the trap control device or method of operation shall be reported to and be approved by LRWU prior to the User's initiation of any changes.

All trap control devices shall be designed, sized, constructed, installed, and maintained such that they shall comply with: (A) All applicable Federal, (B) State, and (C) LRWU regulations, policies, and procedures.

Submitted plans must contain the following information for new construction, modifications to existing structures, and replacement structures. Submittals to LRWU as part of the project acceptance shall comply with the following:

1. All documents submitted shall be legible,
2. Engineering details for all trap control devices,
3. Fixture unit analysis,
4. Building and improvements footprint,
5. Name of the duly licensed master plumber who has been hired as the contact plumber,
6. Location of trap control device and sampling/inspection manhole,
7. Location of service line from building foundation to public sewer,
8. Floor plan showing all fixtures with sanitary building drains locations and drainage piping size(s), including condensate drain lines piped to a storm water discharge location,
9. Mechanical plans,
10. Plumbing riser diagram showing the water, gas, sanitary building drains and vent piping details,
11. Water meter size and maximum flow capacity in gallons per minute,
12. Spill control measures for bulk chemical storage, and
13. Pre-construction drawings signed, dated, and stamped by an Arkansas licensed architect/engineer, contract plumber. (See LRWU's example drawing specifications LRWU EAD 2.0.A – 2.13).

Submit the construction plans to the following address:

Little Rock Wastewater Utility
Attn.: Permits Desk
11 Clearwater Dive
Little Rock, Arkansas 72204

Once the construction plans have been approved, LRWU will issue an approved trap control device sizing form to inform of the minimum size required. This sizing form will also list other requirements consistent with current LRWU regulations, policies, and procedures. The owner, or authorized agent, shall provide a copy of the trap control device sizing form to all contractors and the appropriate sub-contractors.

Should owner propose to make any changes to the sanitary building drains/sewer piping after the approved trap control device sizing form has been issued by LRWU, those changes must be approved by LRWU before constructing the modifications or change order. Adding additional drainage fixtures may increase the minimum size trap control device required by LRWU. This requirement is only related to the sanitary building drains and sewer piping, and any type of trap control device required by LRWU. If at any time, LRWU determines that owner failed to complete construction in accordance with all the requirements listed on this approved trap control device sizing form, LRWU reserves the right to require owner to make the necessary modifications and pay all costs associated with making the required modifications.

The trap control device(s) and sampling/inspection manhole must be installed and fully operational prior to placing into service any of the plumbing fixtures shown on the construction plans. Should construction plans be revised or construction of the facility not be completed by the "due date" noted on the Sizing Form, the latest version of the construction plans must be submitted for LRWU to determine whether the size of the grease interceptor remains applicable. The Sizing Form is not transferable to a new Owner/Tenant/Lessee or other location without prior written approval from LRWU.

Prior to grease interceptor installation, a Building Sewer Permit must be obtained from the LRWU Engineering Permits Desk located at 11 Clearwater Drive, Little Rock Arkansas 72204.

In approving the owner's trap control device design, LRWU does not accept any liability for the failure of a system to adequately treat wastewater to achieve the requirements specified under the Authority of Section 02100. It is the responsibility of the owner to insure the appropriate level of treatment necessary to achieve compliance with LRWU's requirements, regulations, policies, and procedures is obtained.

PART 3 – PRODUCTS

All Products contained in Part 3 shall be designed, manufactured, and installed in accordance with the provisions herein, the LRWU Engineering Standards, most current edition, and other applicable State and Local regulations, policies, and procedures. Design, manufacture, and installation of all Products shall be approved by the Director or designee. The owner shall only use Products that are contained in Part 3 or approved by Director. The owner shall be responsible for the full costs associated with replacement of Products installed that do not meet LRWU's standards and specifications. Alternative Products shall be subject to written approval by the Director.

LRWU does not accept any liability for the design, engineering, installation, or construction of Products used to achieve compliance specified under Section 02100. The Product manufacturer shall assume all liability related to the Product supplied to the owner. The owner shall assume all liability associated with site specific application of the Product(s) with respect to its use in the design, engineering, installation, construction, and use to achieve compliance with LRWU's requirements, regulations, policies, and procedures.

Applicability - The requirements contained in Part 3 are applicable to all designated commercial facilities defined below, including those that are undergoing:

1. New construction.
2. Interior remodeling to accommodate expansion or operational modifications.
3. Changes of ownership/occupancy.
4. Any facility which may be experiencing difficulty achieving compliance with LRWU's requirements because of poor design, repair maintenance, cleaning frequency, or deteriorating condition beyond normal effective repairs of the trap control device.

3.01 MANHOLES

- A. Manholes shall be required at the junction of two or more five (5) inch or larger lines. In consideration of building sewer length and waste characteristics, a manhole may be required on the upper end of a building sewer greater than four (4) inches in size.
- B. Manholes shall be constructed at spacing not to exceed four hundred (400) feet and at changes in alignment or grade on building sewer larger than four (4) inches unless the requirements of Section 02732 Paragraph 3.03.F. of these specifications are met.
- C. Connection of a building sewer larger than four (4) inches to a City Sewer shall be accomplished by means of a manhole.
- D. Manholes are to be constructed as per LRWU's Standard Details.

3.02 SAMPLING/INSPECTION MANHOLES

- A. Sampling/Inspection Manholes shall be installed downstream of the discharge line exiting all Grease Interceptors, Interior Sand/Oil Interceptors, and Exterior Sand/Oil Interceptors, but prior to the

connection of any domestic waste. (See minimal specification drawing numbers LRWU EAD 2.0.A, 2.0.B, 2.6, 2.11, and 2.12)

- B. Sampling/Inspection Manholes shall conform to either the fiberglass or concrete LRWU specification. (See minimal specification drawing numbers LRWU EAD 2,5, 2.7 and 2.8)
- C. The Sampling/Inspection Manhole manufacturer and owner are fully responsible for selection of either the fiberglass or concrete Sampling/Inspection Manhole for their specific application. This includes the safe placement of same for foot/vehicular traffic and other appropriate safety precautions.
- D. Sampling/Inspection Manhole shall be installed in a manner which provides easy access at all times for proper cleaning, maintenance, repairs, inspections, and replacements.
- E. When a Sampling/Inspection Manhole is required by LRWU, the owner shall comply with the instructions contained in PART 2–SUBMITTAL REQUIREMENTS.

3.03 CLEANOUTS

- A. Cleanouts used in conjunction with a trap control device shall conform to those minimal specification drawing numbers LRWU EAD 2.3, 2.4, 2.6, 2.9, 2.11, 2.12, and 2.13
- B. Cleanouts shall be located before and after the trap control devices to facilitate cleaning of line blockages and as required by the Arkansas

Plumbing Code and LRWU. (See minimal specification drawing numbers LRWU EAD 2.0.A, 2.0.B, 2.1, 2.6, 2.9, 2.11, 2.12, and 2.13)

- C. Cleanouts located outside of the building shall be 4" x 4" Combination Cleanouts with Brass Countersunk Plugs. The Cleanout must include a protective concrete pad to prevent damage from vehicular traffic. (See minimal specification drawing numbers LRWU EAD 2.1, 2.3, 2.4, 2.6, 2.9, 2.11, 2.12, and 2.13)
- D. Routine maintenance for cleanouts shall include replacing cleanout caps with a type and method specified above to assure LRWU that broken or missing caps are installed to completely exclude the possibility of storm water entering the public sewer. Storm water is prohibited by the City of Little Rock Pretreatment Ordinance 17,966 for discharge to the public sewer. The owner shall ensure that cleanouts are water tight and in general good repair.
- E. When Cleanouts are required by LRWU, the owner shall comply with the instructions contained in PART 2–SUBMITTAL REQUIREMENTS.

3.04 CATCH BASIN

- A. A Catch Basin(s) shall be installed upstream of all Exterior Sand/Oil Interceptors. Also, on sanitary building drain lines receiving discharges, castings from clay, sand, grit, or other prohibited or objectionable pollutants deemed appropriate by the Director. Catch Basin(s) shall be constructed and installed in accordance with LRWU's Catch Basin Details. (See minimal specification drawing numbers LRWU EAD 2.4, 2.9 and 2.10)

- B. Where required, Catch Basin(s) shall be installed in each bay area with a connection to the building sanitary drain and at the end of trench drains that are longer than six (6) feet. (See minimal specification drawing number LRWU EAD 2.9)
- C. Joint wrap shall be installed on all exterior joints to seal out ground and storm waters (See minimal specification drawing number LRWU EAD 2.2)
- D. By Manufacturer reference, Zurn Z1187-SI and Wade 5810 shall be acceptable Catch Basins to LRWU. All other proposed equals must be approved by the Director. The specific Zurn or Wade model to be installed is determined as follows:

Outlet Pipe Size, inches	Zurn Model – Size	Wade Model – Size	Not to Exceed Flow Capacity (GPM)
4	Z1187-SI-20	5810-20	20
For outlet pipe sizes greater than 4 inches and/or a designed flow capacity to exceed 20 GPM, call LRWU for additional requirements.			

- E. The Catch Basin manufacturer and owner are fully responsible for selection of either the concrete catch basin, Zurn Z1187-SI-20, or Wade 5810-20 for their specific application. This includes the safe placement of same for foot/vehicular traffic and other appropriate safety precautions.
- F. All Catch Basins shall be installed in a manner which provides easy access at all times for proper cleaning, maintenance, repairs, inspections, and replacements.

- G. All Catch Basins shall be routinely maintained to prevent the discharge of solids to public sewer.
- H. When a Catch Basin is required by LRWU, the owner shall comply with the instructions contained in PART 2–SUBMITTAL REQUIREMENTS.

PART 4 – TRAP CONTROL DEVICES

All Trap Control Devices contained in Part 4 shall be designed, manufactured, and installed in accordance with the provisions herein, the LRWU Engineering Standards, LRWU Specification Drawing Details (EAD 2.0 series), most current editions, and other applicable State and Local regulations, policies, and procedures. Design, manufacture, installation, or on-site construction of all Trap Control Devices shall be approved by the Director or designee. The owner shall only use Trap Control Devices that are contained in Part 4 or approved by Director. The owner shall be responsible for the full costs associated with replacement of any Trap Control Devices installed that do not meet LRWU's standards and specifications. Alternative Trap Control Devices shall be subject to written approval by the Director.

Prohibited Connections: No owner or user shall install, through direct or indirect means, sanitary building drains/sewers to the public sewer that contains a discharge from an elevator sump or condensate (all types) drains. Ordinance 17,966 § 2.1 contains a comprehensive list of prohibited discharges which are mandated by the United States Environmental Protection Agency (EPA). LRWU prohibits the discharge of unpolluted sources of water to the sanitary building drain/sewer, such as, but not limited to, ground water that could enter through compromised building foundation and condensate. LRWU prohibits the discharge of spills and leaks from petroleum based sources, such as, but not limited to, hydraulic fluid, oil, gasoline, and diesel fuel.

LRWU does not accept any liability for the design, engineering, installation, or construction of any Trap Control Device used to achieve compliance specified under Section 02100. The Trap Control Device manufacturer shall assume all liability related to the Trap Control Device supplied to the owner. The owner shall assume all liability associated with site specific application of the Trap Control Device (s) with respect to its use in the design, engineering, installation, construction, and use to achieve compliance with LRWU's requirements, regulations, policies, and procedures.

Applicability - The requirements contained in Part 4 are applicable to all designated commercial facilities defined below, including those that are undergoing:

1. New construction.
2. Interior remodeling to accommodate expansion or operational modifications.
3. Changes of ownership/occupancy.
4. Any commercial facility which may be experiencing difficulty achieving compliance with LRWU's requirements because of poor design, repair maintenance, cleaning frequency, or deteriorating condition beyond normal effective repairs of the trap control device.

4.01 SOLIDS INTERCEPTOR

- A. A Solids Interceptor shall be required immediately downstream of all food service facility's garbage grinders or disposals, but prior to the grease interceptor. If a food service facility does not install garbage grinders or disposals, then the facility shall not be required to install a Solids Interceptor.
- B. Also a Solids Interceptor shall be required on sanitary building drain line(s) receiving discharges, castings from clay, sand, grit, or other prohibited or objectionable pollutants as deemed appropriate by the Director.

- C. By Manufacturer reference, Zurn Z1183 and Wade 5760 shall be acceptable Solids Interceptors to LRWU. All other proposed equals must be approved by the Director. The specific Zurn or Wade model to be installed shall be determined as follows:

Inlet Pipe Size, inches	Zurn Model – Size	Wade Model – Size	Rate Flow Capacity (GPM)
2	Z1183-200	5760-07	7
3	Z1183-500	5760-20	20
4	Z1183-900	5760-75	75
For inlet pipe sizes greater than 4 inches, call LRWU for requirements.			

- D. The Solids Interceptor manufacturer and owner are fully responsible for their specific application. This includes the safe placement of same for foot/vehicular traffic and other appropriate safety precautions.
- E. All Solids Interceptors shall be installed in a manner which provides easy access at all times for proper cleaning, maintenance, repairs, inspections, and replacements.
- F. All Solids Interceptors shall be routinely maintained to prevent the discharge of solids to public sewer.
- G. When a Solids Interceptor is required by LRWU, the owner shall comply with the instructions contained in **PART 2-SUBMITTAL REQUIREMENTS**.

4.02 HAIR INTERCEPTOR

- A. Hair Interceptors shall be required on each sink when a hair salon/barber shop has three or more wash sinks, and at all pet grooming services. When required, they shall be installed in lieu of the individual sink 'P' trap.
- B. By Manufacturer reference, Zurn Z1175, Zurn Z1176, and Wade 5750 shall be acceptable Hair Interceptors to LRWU. All other proposed equals must be approved by the Director.
- C. All Hair Interceptors shall be installed in a manner which provides easy access at all times for proper cleaning, maintenance, repairs, inspections, and replacements.
- D. All Hair Interceptors shall be routinely maintained to prevent the discharge of large quantities of hair to public sewer.
- E. When a Hair Interceptor is required by LRWU, the owner shall comply with the instructions contained in **PART 2-SUBMITTAL REQUIREMENTS**.

4.03 SAND/OIL INTERCEPTORS

- A. Commercial facilities connected to the public sewer shall install a Sand/Oil Interceptor followed by a sampling/inspection manhole to collect, contain, or remove sand, grit, and gravel, minor amounts of petroleum waste oils and greases from the wastestream. Commercial facilities that must comply with these provisions include, but are not limited to:

1. Service facilities for cars, trucks, fleet operators, motorcycles, marine, airplanes,
2. Maintenance garages for cars, trucks, fleet operators, motorcycles, marine, off-road heavy equipment, airplanes,
3. Body Repair for cars, trucks, fleet operators, off-road heavy equipment, airplanes,
4. Dealers (new and used) for cars, trucks, fleet operators, off-road heavy equipment,
5. Washing, detailing, and accessorizing facilities for cars, trucks, fleet operators, motorcycle, off-road heavy equipment, and airplanes, or
6. Any other facility that may discharge prohibited or objectionable pollutants deemed appropriate by the Director.

B. Each Sand/Oil Interceptor shall serve only one facility. Multiple connections to a single Sand/Oil Interceptor are not permitted unless approved by the Director. The Director's approval is contingent upon the "building property owner" executing a written "Shared Sand/Oil Interceptor Installation, Maintenance, Repair, and Replacement Agreement" which must be acceptable to LRWU.

C. All Interior and Exterior Sand/Oil Interceptors shall be designed and installed under the following conditions:

1. Shall be designed using a single tank with three equally divided compartments and shall be capable of separation and retention of sands and oils and storage of settled solids.
2. Excavation, backfilling, and compaction requirements shall be in accordance with LRWU Engineering Specifications found in Section 02220.

3. Each Sand/Oil Interceptor shall be engineered to withstand the internal and external loads anticipated to be exerted on the interceptor.
4. Shall be installed in a manner which provides easy access at all times for proper cleaning, maintenance, repairs, inspections, and replacements. If the Sand/Oil Interceptor is going to be placed in a paved area, bollards must be constructed to prevent parking on top of the manhole lids.
5. Sand/Oil Interceptor shall be water and gas tight. Joint wrap shall be installed on all exterior joints to seal out ground and storm waters (See minimal specification drawing number LRWU EAD 2.2)
6. Sand/Oil Interceptor shall be vented in accordance with the Arkansas State Plumbing Code.
7. The date of the manufacture and the name or trademark of the manufacturer, shall be clearly marked on each pre-cast section of the Sand/Oil Interceptor.
8. Top of the manhole casting located in the pavement, shoulder areas, and sidewalks shall be set flush to grade.
9. The top of the manhole casting located outside these areas shall be placed 6 inches above grade prior to landscaping.
10. The interceptor shall be filled with clean water prior to start up of the system.
11. All other required Sand/Oil Interceptor design standards and specification are shown on the minimal specification drawing numbers LRWU EAD 2.11 and 2.12.

D. The Exterior Sand/Oil Interceptor is to be used in conjunction with one or more catch basins, i.e. as in a covered vehicle wash or service garage with three or more bays as per the *LRWU Typical Covered Vehicle Wash*

Piping Layout with Exterior Sand/Oil Interceptor & Catch Basins Details. (See minimal specification drawing number LRWU EAD 2.9) The Exterior Sand/Oil Interceptor must be constructed as shown in the LRWU *Exterior One Tank – Three Compartment Sand/Oil Interceptor Details* (See minimal specification drawing number LRWU EAD 2.11)

- E. The Interior Sand/Oil Interceptor shall be used as an inter-bay single sand removal device, i.e. a large roof covered tractor/trailer wash bay. The Interior Sand/Oil Interceptor must be constructed as shown in the *LRWU Interior One Tank – Three Compartment Sand/Oil Interceptor Details*. (See minimal specification drawing number LRWU EAD 2.12) The Interior Sand/Oil Interceptor or any open grating must be located so as to completely exclude the possibility of rainwater entering the sewer.
- F. The Sand/Oil Interceptor manufacturer and owner are fully responsible for their specific application. This includes the safe placement of same for foot/vehicular traffic and other appropriate safety precautions.
- G. All Sand/Oil Interceptors shall be routinely maintained to prevent the discharge of oil, sand, grit, and gravel to public sewer.
- H. Trap Control Additives, as defined by prohibited and biological additives, shall not be added, directly or indirectly to Sand/Oil Interceptor. The use of hot water (greater than 140° F) to emulsify grease and allow it to pass through a Sand/Oil Interceptor is also prohibited.
- I. Sand/Oil Interceptor Sizing Criteria - LRWU will size the Sand/Oil Interceptor based on the water meter installed by Central Arkansas Water to service the facility. The table below lists typical water flow volumes from water meter. The data was provided by Central Arkansas Water.

Meter Size Inches	Maximum Intermittent Flow GPM	Retention Time Minutes	Calculated Sand/Oil Interceptor Volume Gallons	Must Use Interceptor Volume Gallons
3/4	30	30	900	1250*
1	50	30	1500	1500
1-1/2	100	30	3000	3000
2	160	30	4800	5000
3	200	30	6000	6000

* 1250 Gallon Sand/Oil Interceptor is the minimum size commercially available that meets LRWU's requirements

The minimum capacity of any Sand/Oil Interceptor shall be 1,250 gallons.

- J. When a Sand/Oil Interceptor is required by LRWU, the owner shall comply with the instructions contained in **PART 2-SUBMITTAL REQUIREMENTS**.

4.04 GREASE INTERCEPTORS

- A. Food Service Facilities connected to the public sewer shall install a Grease Interceptor followed by a Sampling/Inspection Manhole to collect, contain, and provide for proper removal/disposal of grease from the sanitary building sewer.

Exception: Grease Interceptors shall not be required for private single family residences or residential duplexes.

- B. Food Service Facilities that must comply with this provision include, but are not limited to:
1. Convenience stores with food preparation facilities,
 2. Restaurants, delis, cafes, fast food outlets, and cafeterias,
 3. Food preparation industries (retail and wholesale),
 4. Meat distributors (retail and wholesale),

5. Grocery stores with any of the following: meat cutting, food preparation, bakeries, deli, or food service areas,
6. Bakeries (retail and/or wholesale),
7. Caterers,
8. Ice cream, custard, or yogurt retail stores,
9. Childcare facilities where the enrollment is greater than 10 children and meals are served,
10. Hospitals, Nursing Homes, Schools, Colleges, University Kitchens and Cafeterias,
11. Churches, Synagogues, Mosques, Temples, and/or Shelters where food service facilities are provided
12. Any other food service facility where the Arkansas Department of Health standards require the use of a three compartment sink, and
13. Other commercial facilities when, in the opinion of the Director, a Grease Interceptor is necessary for the proper handling of such wastes to protect the sewerage system.

C. Grease Interceptors, followed by a Sampling/Inspection Manhole shall be located in the food service facility's sanitary building sewer where designated drainage fixtures may introduce grease into the public sewer. Such drainage fixtures shall include, but not be limited to, sinks, dishwashers, garbage disposals, automatic hood wash units, floor sinks, floor drains in food preparation and storage areas, and any other fixture which is determined to be a potential source of grease. All other sanitary building drainage, i.e., restroom facilities and other similar fixtures, shall be connected downstream of the Sampling/Inspection Manhole. (See minimal specification drawing numbers LRWU EAD 2.0.A and 2.0.B)

D. Each Grease Interceptor shall serve only one food service facility. Multiple connections to a single Grease Interceptor are not permitted unless a

conditional variance is approved by the Director. The Director's approval is contingent upon the "building property owner" executing a written "Shared Grease Interceptor Installation, Maintenance, Repair, and Replacement Agreement" which must be acceptable to LRWU.

E. All Grease Interceptors shall be designed and installed under the following conditions:

1. Shall be designed using a single tank with two compartments. The first compartment shall contain two-thirds of the tank volume, and the second chamber shall contain the final third and shall be capable of separation and retention of grease and storage of settled solids.
2. Excavation, backfilling, and compaction requirements shall be in accordance with LRWU Engineering Specifications found in Section 02220.
3. Each Grease Interceptor shall be engineered to withstand the internal and external loads anticipated to be exerted on the interceptor.
4. Shall be installed in a manner which provides easy access at all times for proper cleaning, maintenance, repairs, inspections, and replacements. If the Grease Interceptor is going to be placed in a paved area, bollards must be constructed to prevent parking on top of the manhole lids.
5. Grease Interceptor shall be water and gas tight. Joint wrap shall be installed on all exterior joints to seal out ground and storm waters (See minimal specification drawing number LRWU EAD 2.2).
6. Grease Interceptor shall be vented in accordance with the Arkansas State Plumbing Code.

7. The date of manufacture and the name or trademark of the manufacturer, shall be clearly marked on each pre-cast section of the Grease Interceptor.
 8. The top of the manhole casting located in the pavement, shoulder areas, and sidewalks shall be set flush to grade.
 9. The top of the manhole casting located outside these areas shall be placed 6 inches above grade prior to landscaping.
 10. The interceptor shall be filled with clean water prior to start up of the system.
 11. All other required Grease Interceptor design standards and specification are shown on the minimal specification drawing number LRWU EAD 2.6.
- F. The Grease Interceptor manufacturer and owner are fully responsible for their specific application. This includes the safe placement of same for foot/vehicular traffic and other appropriate safety precautions.
- G. All Grease Interceptors shall be routinely maintained to prevent the discharge of grease, oils, and settleable solids to public sewer.
- H. Grease Recycling Container Requirements - All Food Service Facilities that use either a deep fat/oil fryer or grill shall have an outside Grease Recycling Container for the proper management of these greases, and shall be under contract with a Recycler or Rendering Company to routinely service the container. Or, the Food Service can submit an alternate plan on the method they will employ to properly manage their greases, which shall be subject to approval from LRWU.

Collection of used oils/greases, such as from fryers, should never be poured down the sanitary building drain/sewer. The used oil should be

collected and recycled. Used cooking oil is a valuable material that can be processed into products. Accounts may be arranged with reputable FOG or bio-diesel collectors to periodically pick up used oil.

- I. Strip Mall Type Centers - New Construction Requirements - All new strip centers containing two or more tenant spaces and designated for commercial enterprise use, shall provide a stub-out for a separate grease waste line for future installations of Grease Interceptors and Sampling/Inspection Manholes. The owner of a new strip center shall consider suitable physical property space and sewer gradient that will be conducive for the installation of an exterior, in-ground Grease Interceptor(s) followed by a Sampling/Inspection Manhole for any flex space contained within the strip center. Physical property restrictions and sewer gradient shall not be a defense for failure to install an exterior, in-ground grease interceptor. (See minimal specification drawing number LRWU EAD 2.1)

- J. Trap Control Additives, as defined by prohibited and biological additives, shall not be added, directly or indirectly to Grease Interceptor. The use of hot water (greater than 140° F) to emulsify grease and allow it to pass through a Grease Interceptor is also prohibited.

- K. Grease Interceptor Sizing Criteria - LRWU will size the Grease Interceptor based on the number of fixture units (F.U.) shown on the plans. The maximum F.U. shall be a total of all fixtures connected to the Grease Interceptor. Common Fixture Unit Values are shown in the following table:

<u>Kind of Fixture</u>	<u>Fixture Unit (F.U.)</u>
Floor Drain (2")	2
Floor Drain (3")	5
Floor Drain (4")	6
Trench Drains (2" Pipe Outlet)	3
Trench Drains (3" Pipe Outlet)	5
Trench Drains (4" Pipe Outlet)	6
Hub Drain	3
Sink, Floor	1
Sink, Bar (1 compartment)	1
Sink, Bar (2 compartment)	2
Sink Bar (3 compartment)	3
Sink, Wash (4 compartment)	4
Sink, Hand Wash	1
Sink, Mop / Service	3
Can Wash	3
Grinder, Disposer, or Disposal	3
Constant Flow	2/GPM
Dishwashers	6

For those plumbing fixtures which do not have a specific assigned value in the table shown above and have a flow which is not constant, a value will be assigned by dividing the fixtures' maximum flow in gallons per minute (GPM) by 7.5 and rounding the number up to the nearest whole number. For those fixtures which have a constant flow through the work day, the F.U. shall be computed by assigning two (2) fixture units for each gallon per minute (GPM) of flow.

All garbage grinders or disposals shall be connected to the Grease Interceptor and are assigned a fixture unit value of three (3) each as shown in the above table. All garbage grinders or disposals attached to a Grease Interceptor shall have a Solids Interceptor in the discharge line between the garbage grinder and the Grease Interceptor. (See minimal specification drawing numbers LRWU 2.0.A and 2.0.B) The Solids Interceptor is required by the Arkansas State Plumbing Code.

Floor Drains, Hub Drains, and Trench Drains of the same size are listed and counted as one fixture.

To compute the minimum size of the Grease Interceptor, take the total fixture unit value to be connected to the interceptor and multiply by 7.5 GPM to figure the maximum possible flow to the trap. LRWU requires a minimum of twelve (12) minutes of detention time for a properly operating grease interceptor.

When a Grease Interceptor of the calculated size is not commercially available, the Director may authorize a reduction only when the next smaller size is within 15% of the calculated size, or the owner shall install the next larger Grease Interceptor that is commercially available.

Where sufficient capacity to meet LRWU's minimal Grease Interceptor size requirement cannot be achieved with a single interceptor, installation of Grease Interceptors connected in series will be allowed. However, the largest capacity Grease Interceptor shall be installed upstream of the smaller Grease Interceptor if two interceptors are of un-equal volume.

- L. When a Grease Interceptor is required by LRWU, the owner shall comply with the instructions contained in **PART 2–SUBMITTAL REQUIREMENTS**.

4.05 LINT INTERCEPTORS

- A. Commercial, institutional, and general service laundries, laundromats, and dry-cleaners, connected to the public sewer, shall install a Lint Interceptor. Lint Interceptor shall be designed to collect, contain, and provide for proper removal/disposal of lint, silt, settleable solids, buttons, strings, garment/linen fragments, or other materials detrimental to the public sewer, or where deemed appropriate by the Director. General service laundries shall include, but are not limited to, facilities such as hotels, motels, hospitals, and apartment complexes with a shared laundry.

Exceptions: Lint Interceptors shall not be required for private single family residences or residential duplexes. Industrial Laundries are not regulated under Section 02100, but are regulated under the LRWU's Industrial Pretreatment Program. Call LRWU for our requirements.

- B. A Lint Interceptor is commonly referred to as a “lint trap”, typically located outside of the building and buried below grade. The principle advantage is the cooling effect obtained from the earth. The buried interceptor is constructed of pre-cast concrete, providing years of continuous service. (See minimal specification drawing number LRWU EAD 2.13) Inlet and outlet piping shall be four (4) inches. For facilities requiring a carrying capacity greater than a four (4) inch sanitary building drain from the bank of washers, the sanitary building drain shall be subdivided into two or more four (4) inch building drains, each with its own lint interceptor. The building sewer shall be combined after the multiple

lint interceptors for carrying capacity needed for the sanitary building sewer to reach the public sewer.

- C. Lint Interceptors are to be constructed in accordance with LRWU's Standard Details. (See minimal specification drawing number LRWU EAD 2.13) or prior approved equal.
- D. Excavation, backfilling, and compaction requirements shall be in accordance with LRWU Engineering Specifications found in Section 02220.
- E. The Lint Interceptor manufacturer and owner are fully responsible for their specific application. This includes the safe placement of same for foot/vehicular traffic and other appropriate safety precautions.
- F. All Lint Interceptors shall be installed in a manner which provides easy access at all times for proper cleaning, maintenance, repairs, inspections, and replacements. Joint wrap shall be installed on all exterior joints to seal out ground and storm waters (See minimal specification drawing number LRWU EAD 2.2)
- G. All Lint Interceptors shall be routinely maintained to prevent the discharge of lint, silt, settleable solids, buttons, strings, garment/linen fragments, or other materials detrimental to the public sewer.
- H. When a Lint Interceptor is required by LRWU, the owner shall comply with the instructions contained in **PART 2-SUBMITTAL REQUIREMENTS.**

4.06 INSPECTION OF INSTALLED TRAP CONTROL DEVICES

- A. A minimum of 48 hours notice shall be given to the LRWU's Permits Desk before requesting an inspection of any trap control device. Call 501-376-2903 and ask for the Permits Desk.
- B. A LRWU Plumbing Inspector will inspect the interceptor(s) before and after the installation to assure compliance with LRWU Engineering specifications (cracks, proper dimension, plumbing specifications, etc.).
- C. To supply their devices within the service area of LRWU, all trap control device manufacturers shall be pre-approved by LRWU. A designated LRWU representative will periodically inspect all manufacturers of trap control devices to assure adherence with LRWU's Engineering specifications. For on-site trap control construction, the architect/engineer shall submit plans to LRWU, and such plans shall be approved by LRWU prior to construction. The quality of all materials shall be subject to inspection and approval by the LRWU.
- D. All Products and Trap Control Devices that have been damaged after delivery will be rejected and, if already installed, removed and replaced, entirely at the owner's expense.
- E. All newly installed Products and Trap Control Devices shall be clean of any accumulation of silt, debris, or foreign matter of any kind, and shall be free from such accumulations at the time of the final inspection.
- F. After all required improvements have been installed, the owner's project architect, engineer, designer shall submit certification to the LRWU that

the improvements have been constructed according to approved plans and with LRWU's Engineering specifications.

- G. Non-compliance with approved plans or specifications or evidence of faulty materials or workmanship observed by LRWU will be called to the attention of the owner's contractor. If not corrected in an expeditious manner, all work on the project will be suspended and/or the certificate of occupancy/completion withheld.

PART 5 – ABANDONMENT REQUIREMENTS

5.01 GENERAL

A duly licensed, bonded, and insured master plumber shall complete disconnection and abandonment of all trap control devices, septic tanks, and floor drains. A Sewer Seal Permit shall be required from LRWU. Submit an application form and appropriate fee to the LRWU, Permits Desk, 11 Clearwater Drive, Little Rock, Arkansas 72204-8009 (Permits Desk (501-376-2903)).

5.02 PRE-INSPECTION REQUIREMENTS

- A. Locate all existing trap control devices, septic tanks, and floor drains present on the property that are to be abandoned.
- B. All of the above components must be pumped to remove any sewage and or waste. Pumping must be performed by a licensed waste hauler, and the "trip ticket" shall be posted on site or made available for verification during the abandonment inspection.

- C. The top cover trap control devices and septic tanks shall be crushed into the empty tank or removed. (See minimal specification drawing numbers LRWU EAD 2.14, 2.15, 2.16, 2.17, and 2.19).
- D. For floor drains follow the minimal specification requirements listed on drawing number LRWU EAD 2.18.
- E. The trap control devices and septic tanks shall be back filled no higher than the top vertical edges of the tank with fill material less than 3 inches in diameter and free of organic and construction debris. Examples: sand, sandy loam, pea gravel, crushed limestone base, clean class III soils.
- F. Clay soils should be avoided due to their high shrink/swell characteristics.

5.03 ABANDONMENT INSPECTION:

- A. Once the above conditions have been met, call the LRWU's Permits Desk at 501-376-2903 to schedule an inspection.
- B. All inspections are on a "first come first serve basis". It is not necessary for the plumber/contractor or homeowner to be on site for the inspection if the trip ticket is posted and clearly visible, and access to the tank area is unrestricted.
- C. A copy of the inspection report will be left on site indicating whether the tank abandonment inspection was passed or failed. If passed, you may continue to finish covering as desired. It is recommended that finish cover be mounded slightly higher than adjacent grade to allow for settling.

PART 6 – CONDITIONAL VARIANCE AND WAIVER PROCEDURES

6.01 GENERAL

Under certain circumstances, a trap control device may need special exceptions to this Engineering Specification. These exceptions fall into two categories, a conditional variance or waiver.

6.02 REQUEST PROCEDURES

An owner seeking an exception shall submit a written request for conditional waiver or variance by sending a letter to the Director. The written request shall be accompanied by the applicable fees. The owner shall provide the following information:

1. The company name, address, contact person, and phone number of the applicant;
2. The facility's physical address of the premises for which the conditional variance or waiver is requested, if different from above;
3. The building owner's name, address, contact person, and phone number of the building owner, if different from above;
4. The property management agency's name, address, contact person, and phone number of the property management agency, if applicable and/or different from above;
5. A site plan showing property lines, easements, structures, and any other features that limit the installation of a trap control device;
6. The facility's status as either new construction, remodeling existing building, or using building as is with no remodeling of any kind;

7. Floor plan showing all fixtures with sanitary building drains locations and drainage piping size(s), (existing and future) For remodeling including condensate drain lines piped to a storm water discharge location;
8. Plumbing riser diagram showing the water, gas, sanitary building drains and vent piping details;
9. Mechanical plans;
10. Water meter size and maximum flow capacity in gallons per minute;
11. Operational times; hours/day and days/week;
12. Number of employees that work at the facility;
13. A description of facility's processes, type and number of products made/served, and cleanup procedures;
14. If a food service facility, the size of kitchen, dining room capacity, and a list of kitchen appliances, fixtures, preparation methods, and ventilating equipment;
15. The volume and type of wastewater to be discharged; and
16. Any other information deemed necessary by Director to evaluate the applicant's written request.

6.03 DETERMINATION

A conditional variance or waiver from the trap control device requirements may be granted by the Director providing the owner agrees to terms and conditions set by LRWU. LRWU will issue a determination letter advising the owner whether their request was granted or denied. These terms and conditions shall be established by the Director, consistent with the requirements of LRWU, and best construction, engineering, environmental health, and safety practices. A conditional variance or waiver shall contain terms and conditions that serve as basis for its issuance. The conditional variance or waiver shall be valid so long as the facility remains in

compliance with the terms and conditions specified in the conditional variance or waiver, unless Federal, State, or Local environmental regulations change. A conditional variance or waiver is only valid for the physical address of the requesting facility and is not transferable to a new Owner/Tenant/Lessee without prior written approval from LRWU.

6.04 REVOCATIONS

A conditional variance or waiver may be revoked at any time if any of the terms and conditions for its issuance are not satisfied, or if the conditions upon which the variance was based change to the extent that the justification for the waiver no longer exists. Should the environmental regulations change, LRWU will notify the owner of the change and additional requirements which may include the revocation of the conditional variance or waiver. The Director may, at any time, revoke a conditional variance or waiver and require the facility to install a properly sized trap control device.

PART 7 – VIOLATIONS AND ENFORCEMENTS

Violation(s) and Enforcement(s) of owners who fail to comply with the requirements contained within Section 02100 shall be adjudicated by following the procedures found in Ordinance 17,966. These enforcement actions may include, but are not limited to, fines and penalties of up to \$1,000 per day per violation and other fees adopted by LRSSC.

PART 8 – CORRESPONDENCE

Address all correspondence to:

Pretreatment Supervisor
Environmental Assessment Division
Little Rock Wastewater Utility
Attn: Trap Control Device Sizing
1001 Temple St
Little Rock, AR 72202-3363

Tel: 501-688-1532

Fax: 501-688-1540

END OF SECTION 02100

SECTION 02220

EXCAVATION, BACKFILLING, AND COMPACTING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Excavation, backfilling, and compaction for sanitary sewer pipelines, service lines, manholes and incidental construction.

1.02 RELATED WORK

- A. Section 02575 - Pavement Repair
- B. Section 02605 - Manholes
- C. Section 02730 - Sanitary Sewer Pipelines
- D. Section 02732 - Sanitary Sewer Service Lines
- E. Section 02930 - Lawns & Grasses
- F. Section 02935 - Ground Cover

1.03 QUALITY ASSURANCE

- A. Determine the moisture density relation of material in the laboratory in accordance with AASHTO Designation T-180 modified to use material passing a 3/4" sieve.
- B. Determine the field density of backfill in accordance with AASHTO Designation T-147.

1.04 REFERENCES

Not Used.

1.05 PROTECTION

- A. The Work included in this Project may require excavation and related activities in close proximity to existing buried and aerial utility lines and facilities, such as water lines, sewer lines, storm drains, natural gas lines, electrical power lines, telephone cables, and TV cables. Where their presence is known, the approximate location of such utilities should be shown on the Drawings, but all such utilities and individual service lines are not known. The Contractor shall be aware of the potential for such utility lines to conflict with intended construction efforts, and the Contractor shall use appropriate precautionary measures to locate and protect such utility lines and services so as to avoid damage and interruptions to service.
- B. The Contractor shall contact the owners of the various existing utilities lines and services as may be affected by the construction and solicit their assistance in identifying, locating, marking, and protecting these facilities prior to the beginning of any excavation or other work which might endanger the existing utilities. If such utilities are damaged or impaired because of the Contractor's actions or omissions, the Contractor shall be responsible for the cost of repairs or replacements of the affected or damaged utility or service line.
- C. The Contractor shall comply with the Arkansas One-Call System and shall alert potentially conflicting utility systems accordingly.
- D. In all cases, the Contractor is responsible for protecting public and private property; and, protecting any person or persons who might be injured as a result of the Contractor's work.

PART 2 - PRODUCTS

2.01 EMBEDMENT MATERIALS - GENERAL

- A. Embedment materials are restricted to Class I materials as described below and in accordance with ASTM D 2487, latest edition.

- B. Gravel material for select backfill across streets, roads, driveways, and for placement of "gravel" surfaced areas, shall be Class 7 material conforming to the Standard Specifications of the Arkansas Highway & Transportation Department, latest edition.

2.02 CLASS I EMBEDMENT MATERIAL

- A. Class I embedment material shall conform to class 1A embedment materials in accordance with ASTM D 2321, latest edition. Material shall meet the grading requirements of ASTM C 33, gradation 67, commonly referred to as ASTM #67 or 3/4" concrete aggregate. Maximum aggregate size shall be 3/4 inch. This includes materials such as crushed stone or rock, broken coral, crushed slag, cinders, or crushed shells.

2.03 SELECT NATIVE BACKFILL MATERIAL

- A. Select native material shall be good earth, sand, or gravel that is free from large rocks or hard lumpy materials. Never use materials of perishable, spongy or otherwise unsuitable nature as select material.

2.04 FLOWABLE FILL MATERIAL

- A. Flowable fill material for select backfill across streets, roads, and driveways shall be Flowable Select Material conforming to the Standard Specifications of the Arkansas Highway & Transportation Department, latest edition. Flowable Fill material will only be used when written permission is obtained from the Little Rock Wastewater Utility.

PART 3 - EXECUTION

3.01 EXCAVATION - GENERAL

- A. All excavation shall be carried accurately to the line and grade shown on the Plans and as established by the Engineer of Record..
- B. When excavation is carried below or beyond that required, fill the over-excavated space with compacted Class I material, or with concrete as approved by the Engineer of Record.
- C. The Contractor shall use a trench box or provide and install shoring where necessary to protect the labor, the work, or adjacent property. Shoring shall be maintained in place until the backfill has proceeded to a point where it can be safely removed.
- D. Dewater all excavations before any construction is undertaken. Install pipe only in dry trenches. Place concrete upon dry, firm foundation material only.

3.02 DISPOSAL OF EXCAVATED MATERIALS

- A. The Contractor shall be responsible for disposal of excess material, or disposal of excavated material unsuitable for backfilling.
- B. Disposal of excess material shall only be allowed on private property with written permission of the owner of the property. A copy of the written permission must be forwarded to the Engineer of Record and the Little Rock Wastewater Utility.

3.03 SEWER FLOW CONTROL

- A. **Plugging or Blocking:** A sewer line plug shall be inserted into the line upstream of the section or sections being worked. The plug shall be so designed that all or any portion of the sewerage can be released. After the work has been completed, flow shall be restored to normal.

- B. **Pumping and Bypassing:** The Contractor shall supply the pumps, conduits, and other equipment to divert the flow of sewage around the manhole section or sections in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm. The Contractor shall be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum.
- C. **Flow Control Precautions:** When flow in sewer line is plugged, blocked, or bypassed, sufficient precautions must be taken to protect the sewer lines from damage that might result from sewer surcharging. Further, precautions must be taken to insure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.
- D. A detail of the Sewer Flow Control plan shall be submitted to the Little Rock Wastewater Utility and written approval obtained prior to commencing work.

3.04 EXPLOSIVES

- A. Notify the Engineer of Record in advance if the use of explosives is necessary for the efficient execution of the work.
- B. All work pertaining to the use of explosives shall be performed by qualified personnel.
- C. The Contractor shall obtain all the necessary permits from all governmental bodies. Copies of permits must be submitted to the Engineer of Record and the Contractor shall keep a copy of all permits on the job site at all times.
- D. Follow all governing OSHA safety regulations.
- E. Exercise every precaution to prevent damage to adjoining improvements or property.
- F. Always use a blasting shield or mat.

- G. Any damage to private property resulting from the use of explosives is the liability of the Contractor.

3.05 TRENCH DEWATERING

- A. Dewater all trenches to the extent that sanitary sewer pipe can be placed on a dry and firm trench bottom. Never place pipe in a wet or unstable trench. The allowable dewatering methods are:

1. Well pointing; and,
2. Over Excavation and Sump Pumping.

Submit for approval other trench dewatering procedures.

- B. Well Pointing Procedure

1. Install well points where required to keep the excavation dry and the subgrade stable.
2. Install well points when the excavation is within two (2) feet of the water table.
3. Provide sufficient pumping equipment, in good working order and available at all times, to remove any water that accumulates in excavations so a stable subgrade is obtained.
4. Keep all dewatering equipment in continuous operation until backfill is completed.

- C. Pump, pipe, and drain all water resulting from dewatering operations into existing drainage structures, such as storm sewers, ditches or streams. Prevent flooding of streets or private property.

- D. Soil that cannot be properly dewatered: excavate and install Class I bedding material tamped in place to such a depth to provide a firm trench bottom.

- E. Divert surface runoff water away from the excavation. Where the excavation crosses natural drainage channels, care should be taken to prevent unnecessary damage or delays. Route diverted surface water into existing drainage structures,

such as storm sewers, ditches, or streams. Prevent flooding of streets or private property.

- F. Discharge of trench water or surface runoff into a sanitary sewer is a violation of City of Little Rock Ordinance and violators will be prosecuted as prescribed by law.

3.06 SHEETING AND SHORING

- A. Provide sheeting and shoring of trenches to:
 - 1. Protect the safety of workers;
 - 2. Provide suitable means for constructing the sewer line;
 - 3. To maintain the trench free from slides or cave-ins;
 - 4. And, to protect public or private property, including existing utilities, buildings, streets, or other structures that are close to the trench.
- B. Follow all governing OSHA safety regulations.
- C. Keep shoring in place until the backfill has proceeded to a point where it can safely be removed.

3.07 EXCAVATION – SEWER LINE TRENCHES

- A. Keep the trench widths within the limits specified below. This requirement is to avoid superimposed loading in excess of the designed and specified pipe strength; and to provide sufficient room for proper installation and bedding of sewer pipe.

Inside Pipe Diameter (Inches)	Maximum Width of Trench From Top of Pipe to <u>2' Above Top of Pipe</u>
6, 8, 10	2' - 6"
12, 14, 15, 16	3' - 0"
18, 21	3' - 6"

24, 30	4' - 0"
36	4' - 6"

- B. If necessary to prevent sliding and caving cut, the trench banks back on a slope above an elevation two (2) feet above the outside top of the pipe to reduce the earth load on the trench sides. Never exceed the specified maximum width until 2 ft. above the outside top of the pipe.
- C. Do not advance trench excavation more than three hundred (300) feet ahead of the completed pipe work and backfill.

3.08 OVER EXCAVATION

- A. Over excavate below the required subgrade only under the conditions as listed below.
 1. The soil at the bottom of the trench is mucky or in such condition that it cannot be properly shaped and graded.
 2. The subgrade material is too soft to properly support the pipe.
- B. After over excavating, provide and install a fill consisting of Class I bedding material thoroughly tamped into place in a maximum of eight (8) inch lifts up to an elevation sufficient to prepare the subgrade for the particular bedding class required.

3.09 BEDDING AND BACKFILLING - GENERAL

- A. Install all sewer pipe using Class I embedment materials. Refer to Standard Detail Drawings.
- B. It is essential that the complete backfill be done in such a manner to minimize voids in the backfill.
- C. Backfilling includes refilling and consolidating the fill in the excavation up to the surrounding ground surface or road grade.
- D. Use select native materials for backfilling in unpaved areas.

- E. Where trenches are to be located beneath existing or proposed streets, drives, and parking areas, all backfilling procedures shall be in accordance with the Standard Detail Drawings.
- F. Use mechanical compaction devices manufactured for that purpose to compact backfill materials in trenches.

3.10 BEDDING AND BACKFILLING RIGID PIPE

- A. Bed rigid pipe as described below and in accordance with the standard trench details shown in Standard Detail Drawings. The intent of the bedding is to create a uniform support which will protect the pipe from localized stress points and to provide for a well graded trench bottom.
- B. Extend the trench excavation to a minimum depth of six (6) inches below the bottom of the pipe.
- C. Install bedding material in no greater than eight (8) inch lifts.
- D. Compact all bedding material to a minimum density of 80% standard proctor as outlined in AASHTO T-99.
- E. Install pipe in accordance with Section 02730 - Sanitary Sewer Pipelines.
- F. Backfill the excavation.

3.11 BEDDING AND BACKFILLING FLEXIBLE (PVC) PIPE

- A. Bed flexible (PVC) pipe as described below in accordance with Standard Detail Drawings. The intent of this bedding is to provide uniform support for the flexible pipe.
- C. Extend the trench excavation to a minimum depth of six (6) inches below the bottom of the pipe.
- D. Install bedding materials in no greater than eight (8) inch compacted lifts. Install bedding from six (6) inches below the pipe to six (6) inches above the pipe. Shovel slice bedding beneath the pipe haunches.

- E. Compact all bedding material to a minimum density of 80% standard proctor as outlined in AASHTO T-99.
- F. The maximum depth of bury for PVC pipe is sixteen (16) feet. Any depths greater than sixteen (16) feet require rigid pipe.
- G. Backfill and compact the excavation.

3.12 MANHOLE EXCAVATION

- A. Excavate the base area no larger than necessary to provide an adequate base.
- B. Dewater all excavations if required before starting any permanent construction.
- C. Provide sheeting and shoring as required.
- D. Leave at least twelve (12) inches between the outer surface of manholes and the excavation or shoring.
- E. If over excavation occurs, bring the excavation back to proper grade with either:
 - 1. Class I bedding material compacted to 80% standard proctor; or,
 - 2. Concrete poured monolithically with the base.

3.13 BACKFILLING MANHOLES

- A. Do not backfill around manholes until adequate strength has been obtained from the manhole to support the backfill without damage to the manhole.
- B. Never backfill poured-in-place manholes until the concrete has cured 48 hours.
- C. Backfill manholes with select native material compacted to a density sufficient to prevent excessive settlement.
- D. In public streets or roads backfill and compaction requirements shall be the same as for trench crossings.

3.14 EXCAVATION, BACKFILLING AND COMPACTION FOR SEWER FORCE MAINS

- A. Excavate trenches for force mains to:
 - 1. Provide a minimum cover of thirty (30) inches over the top of pipe barrel; and,
 - 2. Allow for the proper bedding material to be installed.
- B. Excavate trenches wide enough for pipe installation and joint makeup. The trench width at the top of the pipe must never exceed the outside diameter of the pipe plus two (2) feet.
- C. Where no bedding is required, accurately grade the trench so that the pipe will be in continuous and uniform contact with undisturbed soil for the full length of the pipe.
- D. Excavate for pipe bells to ensure a smooth bearing surface.
- E. If the soil at the bottom of the trench is mucky or unstable so that it cannot properly support the pipe, over excavate and backfill as described above for gravity pipelines.
- F. Backfill the trench and compact the materials as stated above for gravity lines.

3.15 EXCAVATION, BACKFILLING AND COMPACTION FOR MISCELLANEOUS STRUCTURES

- A. Excavate a sufficient distance from walls and footings to allow for forms and for proper inspection.
- B. Leave at least (12) inches between the outer surface of miscellaneous structures and the excavation or shoring.

3.16 EXCAVATION, BACKFILLING AND COMPACTION FOR SEWER SERVICE LINES

- A. Backfilling and compaction requirements for service lines shall be the same as the requirements listed above for the type sewer pipe installed.
- B. All excavation, backfill and compaction of sewer service lines in public right-of-way shall be made in accordance with the regulations of the City of Little Rock.

END OF SECTION 02220

SECTION 02575
PAVEMENT REPAIR

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers the materials and procedures used in the repair of roads, streets, or other public rights-of-way where a sewer line or structure is proposed.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling and Compacting.

1.03 REGULATIONS AND STANDARDS

- A. All permanent repairs of streets, roads, or other public rights-of-way shall comply with the requirements shown on the Standard Detail Drawings and Tables. The Contractor is responsible for following the requirements of all local Ordinances, Regulations, or Codes governing the repairs to roads, streets, or other public rights of way. In particular:
 - 1. Repair of State Highways: per requirements of the Arkansas State Highway Commission.
 - 2. Repair of county roads: per requirements of the County Roads Department.
 - 3. Repair of City of Little Rock streets: per the requirements of City Ordinance 17512 or the latest revision of said ordinance.
 - 4. Permit for street cut and repairs shall be furnished by the Contractor.
- B. Temporary Repairs: Per requirements of the governmental agency having jurisdiction and these specifications. Must provide a minimum of a cold mix temporary patch.

PART 2 - PRODUCTS

2.01 MATERIALS: per the applicable standards referenced above.

PART 3 - EXECUTION

3.01 ASPHALT PAVEMENT REPAIRS

- A. Asphalt pavement shall be replaced in accordance with details shown in the Standard Details and all materials shall be furnished and installed in accordance with the Arkansas Highway and Transportation Department "Standard Specifications for Highway Construction." Before replacing paved surfacing, the existing pavement shall be cut, sawed, or trimmed along straight and vertical lines. The condition of the backfill and base course material, with special regard to the degree of compaction, may be checked and approved by the Owner before any surfacing is replaced.
- B. Before placement of new surface material, all excess material shall be removed to a minimum depth of ten (10) inches. A minimum of eight (8) inches of 3000 psi concrete shall be placed within two (2) inches of the street surface. Before placing asphalt, the concrete and sides of the cut shall be primed with MC-30 at the rate of 0.3 gallon per square yard.
- C. Minimum thickness of asphalt surface replacement shall be two (2) inches, unless shown otherwise. Hot mix asphalt material shall be delivered to the site in covered vehicles, at 275 deg-F (minimum), and immediately spread to a thickness to match adjacent surfaces after rolling. Compaction shall be by steel-wheel roller to a smooth, uniform surface matching adjacent surfaces.
- D. Any settlement or failure of surface replacement shall be repaired or replaced by the Contractor.
- E. All pavement repairs shall be in accordance with the Standard Detail Drawings.

- F. All pavement markings shall be restored to new conditions per the requirements of the governmental agency having jurisdiction.

3.02 CONCRETE PAVEMENT REPAIRS

- A. Concrete pavement shall be replaced in accordance with details shown on the Drawings and all materials shall be furnished and installed in accordance with the Arkansas Highway and Transportation Department "Standard Specifications for Highway Construction." Before replacing paved surfacing, the existing pavement shall be cut, sawed, or trimmed along straight and vertical lines. The condition of the backfill and base course material, with special regard to the degree of compaction, may be checked and approved by the Owner before any surfacing is replaced.
- B. Before placement of concrete street material, all excess material shall be removed to a minimum depth of eight (8) inches. A minimum of eight (8) inches of 3000 psi concrete shall be placed to match the line and grade of existing street surface.
- C. Paved walkways disturbed or damaged in the process of construction shall be replaced in kind. Walkway shall be replaced to same width and thickness as original but in no case less than 4-inches thick. Joint system in replacement shall be at same style and interval as that in the undisturbed walkway.
- D. All pavement repairs shall be in accordance with the Standard Detail Drawings.
- E. All pavement markings shall be restored to new conditions per the requirements of the governmental agency having jurisdiction.

3.04 GRAVEL SURFACING

- A. Gravel surfacing shall be replaced to at least the compacted thickness of the original surface. All excavated material shall be removed from gravel surfaces affected by construction and sufficient new gravel material shall be placed to restore the original surfaced area.

- B. Gravel material for placement of "gravel" surfaced areas, shall be Class 7 material conforming to the Standard Specifications of the Arkansas Highway & Transportation Department, latest edition.

3.05 TEMPORARY SURFACING

- A. Comply with the requirements stated above or as otherwise approved to adequately maintain traffic and proper drainage.

3.06 TRAFFIC CONTROL

- A. Whenever traffic flow restrictions of any kind are anticipated, the Contractor will be required to contact the City of Little Rock Traffic Control Division to be given permission to obstruct traffic flow.
- B. Street closing permits must be obtained from proper government agencies.
- C. Construction signs shall be placed immediately adjacent to the Work, at such locations as traffic demands.
- D. The Contractor shall notify law enforcement agencies, fire departments, and other impacted agencies and personnel.
- E. Contractor will be required to submit a barricade plan to Little Rock Public Works and the Engineer of Record.

END OF SECTION 02575

SECTION 02605
MANHOLES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers the materials and procedures used in the construction and repair of sanitary sewer manholes.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling, and Compacting.
- B. Section 02610 – Pipe and Fittings
- C. Section 02730 - Sanitary Sewer Pipelines
- D. Section 02734 – Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.
- E. Section .3300 – Cast In Place Concrete

1.03 QUALITY ASSURANCE

- A. Not Used.

1.04 SUBMITTALS

- A. Furnish Shop Drawings and Submittal Data for approval prior to the delivery of any pre-cast manhole sections to the Engineer of Record..
- B. Submit for approval any materials not listed specifically below to the Engineer of Record.

1.05 REFERENCES

- A. Not Used.

1.06 MANHOLE DIMENSIONS AND LAYOUT

- A. Construct all manholes in accordance with the Standard Manhole Details in Standard Detail Drawings.
- B. The required dimensions on manholes are:
 - 1. Cone section height: 24 inches, minimum; 30 inches, maximum.
 - 2. Throat section height: 12 inches, maximum.
- C. Locate the manhole so the centerlines of all pipelines entering and leaving pass through the center of the manhole.

1.07 PROTECTION

- A. In all cases, the Contractor is responsible for protecting public and private property, and, protecting any person or persons who might be injured as a result of the Contractor's work.
- B. All utilities shown on the plans may not represent the exact location; however, the Contractor is responsible for verifying these locations and contacting "Arkansas One Call System" before excavating.

PART 2 - PRODUCTS

2.01 WATER FOR MORTAR AND GROUT

- A. Water: Potable water free from injurious amounts of acids, alkalis, oils, sewage, vegetable matter, and dirt.

2.02 CEMENT

- A. Portland Cement, conforming to AASHTO M 85, Type I.

2.03 MANHOLE GROUT

- A. Grout: By volume, one part Portland cement to four parts sand. Add minimum amount of potable water to achieve a workable consistency.
- B. Masonry cement is prohibited.

2.04 PRECAST CONCRETE MANHOLES

- A. Conform to the latest requirements of ASTM C478.
- B. Never transport sections to the site until they have cured for at least ten (10) days.
- C. Mark each piece plainly with manhole numbers and date of manufacture so it can be installed in the proper location, as shown on the plans.
- D. Make sure factory-installed cutouts in the bottom section are appropriate for the pipe being laid.
- E. Pipe connections at manhole - Cutouts should be equipped with rubber boots to ensure a watertight connection. Material shall be equal to A-lok, Z-lok, or Z-lok XP connector, as manufactured by A-Lok Products, Inc.
- F. Joint Sealant - Flexible rubber sealant for joints in pre-cast manhole sections shall provide permanently flexible watertight joints, shall remain workable over a wide temperature range and shall not shrink, harden or oxidize upon aging. Material shall be equal to Forsheda Pipe Seal Corporation and shall meet ASTM C 443 and ASTM C 361 requirements.
- G. The frame for the lid shall be installed when cone section is cast.
- H. Heat-Shrinkable Encapsulation:
 - 1. Wrapid Seal as manufactured by Canusa CPS
 - 2. BIDCO Wrap as manufactured by NPC.

3. Or Approved Equal

2.05 CAST-IN-PLACE MANHOLES

- A. Construct with Class A concrete only as outlined in Section 03300 - Cast-In-Place Concrete.
- B. Reinforcement shall be as outlined in Section 03300 - Cast-in-Place Concrete.
- C. The frame for the lid shall be installed when the manhole is constructed.

2.06 MANHOLE – 2’ DIAMETER

- A. 2’ Diameter Manholes will only be allowed at locations specifically approved by the Little Rock Wastewater Utility.
- B. Submittal of type of 2’ Diameter Manholes is required. Little Rock Wastewater Utility will have final approval as to location and type of 2’ Diameter Manholes used in the Utility’s System.

2.07 MANHOLE DROP

- A. Drop on the outside of the manhole: Ductile iron pipe with mechanical joint fittings as specified in Section 02610 - Pipe and fittings.

2.08 STANDARD MANHOLE RING AND COVER

- A. Cover must have the words LITTLE ROCK SANITARY SEWER cast in the top. Cover shall also have the words CONFINED SPACE PERMIT REQUIRED cast in the top. Also, include two closed pick holes in top side of cover.
- B. Minimum combined weights of the manhole ring and cover is 240 pounds. Minimum cover weight is 115 pounds. Minimum ring weight is 125 pounds.

- C. All castings shall be cast with the approved foundry's name, manufacturing foundry mark, part number, and production date in mm/dd/yy format. All castings shall be manufactured in the USA.
- D. All castings: Free from porosity, blowholes, hard spots, shrinkage, distortion and other defects; smooth and well cleaned by sandblasting; manufactured true to pattern.
- E. Ring and cover dimensions: Refer to Standard Detail Drawings. Final casting dimensions may vary one-half the maximum shrinkage possessed by the metal or no more than $\pm 1/16$ inch per foot.
- F. Lid and ring bearing surface: smooth finish, non-rocking design or machined bearing surfaces to prevent rocking and rattling under traffic.
- G. Cast Iron: ASTM A 48, Class 35B.
- H. Ductile Iron: ASTM A 536, Grade 80-55-06.

2.09 WATERTIGHT MANHOLE RING AND COVER

- A. Dimensions, casting quality, material: Same as Standard manhole ring and cover.
- B. Cover: machined with dovetail groove in cover for self sealing rubber gasket.

2.10 MANHOLE STEPS

- A. Manhole steps will not be accepted in manholes constructed within the jurisdiction of the Little Rock Wastewater Utility.

2.11 RUBBER WATERSTOP GASKETS

- A. Waterstop gaskets shall be required at ALL manhole connections. Manhole seals shall be concrete manhole adapter by Fernco, or approved equal

2.12 MANHOLE GROUT

- A. Cementitious non-shrink grout for use in manholes shall be one specially formulated for stopping active infiltration and filling voids in manholes and similar locations. Grout mix shall provide a quick-setting, volume-stable, cementitious product suitable for patching the interior of manholes when mixed and applied according to the manufacturer's recommendations. Grout mix shall be Strong Seal QSR, or equal.

2.15 MANHOLE RISER RING

- A. Manhole riser rings shall be compatible with the size and type of manhole cover with which it will be used.

PART 3 - EXECUTION

3.01 MANHOLES - GENERAL

- A. Perform excavation and prepare base area in accordance with Section 02220 - Excavation, Backfilling, and Compacting for Sanitary Sewer Pipelines.
- B. Never install base in a water filled excavation.
- C. Place base per the Standard Detail Drawings and Section 03300 - Cast-in-Place Concrete. Extend base a minimum of six inches beyond finished sides of manhole.
- D. Extend all pipes entirely through the manhole wall so that a joint occurs approximately six inches, but no greater than 12 inches, outside the manhole wall.
- E. After manhole is constructed, wait no less than 48 hours, then backfill per Section 02220 - Excavation, Backfilling, and Compacting.

3.02 CAST-IN-PLACE MANHOLES

- A. Dimension shall be as per Little Rock Wastewater Utility Standard Detail Drawings. The top section or cone must be concentric with the barrel unless otherwise noted.
- B. The frame shall be set in accordance with Little Rock Wastewater Utility Standard Details.
- C. Install rubber waterstop gaskets in the walls around all pipes.
- D. Interior finish: Smooth, free of fins or sharp edges.
- E. Invert to be constructed in accordance with Little Rock Wastewater Standard Details.
- F. Care should be taken to prevent the end of the pipe from deflecting, due to loads imposed by the weight of the concrete.
- G. Construction joints on manholes of excessive depth shall be connected with reinforcement approved by the Engineer of Record.

3.03 PRECAST MANHOLES

- A. Dimension shall be as per Little Rock Wastewater Utility Detail Drawings. The top section or cone must be concentric with the barrel unless otherwise noted.
- B. The bottom section for pre-cast manholes shall be manufactured as an integral part of the manhole base slab.
- C. Install remaining sections in a truly vertical plane.
- D. Fill space between pipe and periphery of cutout entirely with grout.
- E. Grout joints between sections inside and outside.
- F. Interior finish: smooth, free of fins or sharp edges.
- G. Invert to be constructed the same as a cast-in-place manhole.
- H. Grout lifting eyes for manholes.

I. Heat-Shrinkable Encapsulation:

1. Apply an external 18" sheet of heat-shrinkable encapsulation around the manhole frame in accordance with manufacturer's specifications and Little Rock Wastewater Utility Details.
2. Apply an external 6" sheet of heat-shrinkable encapsulation around all cold joints in accordance with manufacturer's specifications and Little Rock Wastewater Utility Details.

3.04 FIBERGLASS MANHOLE – 2' DIAMETER

- A. Installation of 2' diameter manhole must be within strict accordance with the manufacturer's specifications.

3.05 DROP MANHOLES

- A. Install a drop manhole when the vertical difference between the pipe entering and leaving the manhole exceeds two (2) feet.
- B. Construct manhole base, barrel, and top per the requirements for brick, cast-in-place, or pre-cast manholes.
- C. Construct drop of ductile iron pipe with mechanical joint fittings as per Standard Details.
- D. Encase the 90-degree bend in Class A or B concrete as per Standard Details.
- E. Extend the ductile iron pipe a minimum of five (5) feet beyond the manhole excavation before changing pipe materials.

3.06 MANHOLE FRAME AND COVER

- A. Set the manhole frame in Class A concrete as shown on the Standard Details as an integral part of the manhole construction.

- B. Set manhole frame and cover top level and to the elevation shown on the Drawings. In public rights-of-way, set the ring and cover flush with pavements, sidewalks, or other paved surfaced areas

3.07 MANHOLE INVERT

- A. Invert depth at the flow line: Approximately one-half the pipe diameter.
- B. In curved inverts, make curves with the longest possible radius to facilitate smooth flow.
- C. Invert shape: Semicircular.
- D. Invert materials and finish: Class A Concrete, smooth finish.
- E. Invert grade: Constant, smooth grade; no offsets.
- F. Bench: Slope grout upward from the edge of the invert to the manhole wall.
- G. Form a flow channel in the bench for any services stubbed into manhole. Form invert and finish per above.
- H. Cut the upper half of any pipe extending inside the manhole wall flush with the wall. Smooth rough edges with grout.

3.08 MANHOLE REPAIRS

- A. Make all repairs in accordance with these specifications.
- B. Use manhole grout in patching around new taps.
- C. Plaster all brickwork with mortar.

3.11 MANHOLE RISER RING

- A. Manhole riser rings may be used to raise manhole covers to grade.
- B. The throat section height shall not exceed 12 inches. The throat section shall be defined as the distance from the bottom of the integral cast manhole ring to the top of the manhole cover.

- C. Manhole riser rings may be constructed of concrete, polyethylene, or approved equal.

END OF SECTION 02605

SECTION 02607
UTILITY LINE BORES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Provide encasement pipe jacked through bored tunnel for crossing of utility pipe lines under roadways where necessary.
- B. Pulling or jacking carrier pipe through encasement pipe.
- C. Providing brick closures at ends of encasement pipe.

1.02 RELATED WORK

- A. Section 02220 – Excavating, Backfilling, and Compacting For Sanitary Sewer Pipelines
- B. Section 02730 - Sanitary Sewer Pipelines

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM A139 Specification for Electric-Fusion (Arc) - Welded Steel Pipe (sizes 4" and over).
 - 2. ASTM A211 Specifications for Spiral-welded Steel or Iron Pipe.
- B. American Welding Society (AWS):
 - 1. AWS D1.1 Structural Welding Code.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Encasement pipe: Smooth wall steel pipe conforming to ASTM A139 (Grade B), ASTM A211, or AWWA C202 (Grade B), with ends prepared for welded joints.
- B. Welding materials: Type required for materials being welded and conforming to applicable AWS Specifications.
- C. Sand: Clean, industrial sand, concrete sand, masonry sand, or other type approved by Engineer.
- D. Skids or chocks: Pressure treated wood shaped to fit outer circumference of carrier pipe and inner circumference of encasement pipe.
- E. Furnish stainless steel bands to secure skids or chocks to carrier pipe.
- F. Brick: New or used dry brick: or concrete brick.
- G. Mortar: Type "M".

2.01 MINIMUM THICKNESS

- A. Minimum thickness for encasement shall be as follows:

<u>Diameter of Casing Pipe</u>	<u>Minimum Thickness</u>
12" OR LESS	.2500"
OVER 12" – 18"	.3125"
OVER 18" – 22"	.3750"
OVER 22" – 28"	.4375"
OVER 28" – 34"	.5000"
OVER 34" – 42"	.5625"
OVER 42" – 48"	.6250"

PART 3 - EXECUTION

3.01 EXCAVATION

- A. Highway Bore: Do not set up equipment or begin excavating pit on state highway without permission of Arkansas Highway and Transportation Department District Engineer or his authorized representative.
- B. Railroad Bore: Do not set up equipment or begin excavating pit on or near railroad property without permission of the respective railroad company.
- C. Railroad permits will be obtained by the Engineer of Record. Engineer of Record shall coordinate with Little Rock Wastewater Utility on obtaining Right-of-way permit from Arkansas Highway and Transportation Department and shall conform to all requirements there in.

3.02 INSTALLATION, ENCASEMENT PIPE

- A. General: Install encasement pipe at grade and alignment shown on Drawing. Allow for height of skids or chocks when establishing grade for gravity line encasement pipe. Refer to Standard Detail Sheet.
- B. Bores:
 - 1. Excavate pits and trenches required at each side of crossing to minimum width and length necessary for boring and jacking operation and carrier pipe installation.
 - 2. Carefully set timber or steel guide rails in pit to attain specified grade and alignment.
 - 3. Keep pit pumped free of standing water. Maintain pit bottom to provide stable base for rails and equipment and firm footing for workmen.
 - 4. Provide temporary sheeting and bracing as necessary to prevent earth slides.

5. Bore tunnel and simultaneously jack encasement pipe forward one section at a time. Connect sections by full penetration butt welding performed in accordance with AWS D1.1.
6. Remove excavated soil from boring operation as it enters pit and dispose of it offsite.

3.03 INSTALLATION, CARRIER PIPE

- A. General: Joint pipe as specified in Section 02730 Sanitary Sewer Pipelines. Pull or jack carrier pipe through encasement pipe. Do not allow cables or jacks to be in direct contact with carrier pipe while pulling or jacking pipe. Use timber or padded steel member.

3.04 BACKFILL

- A. Prior to backfill, seal ends of encasement pipe with brick and mortar and install vent as shown in Standard Detail Sheet.
- B. Use material excavated from pit.
- C. Backfill against ends of encasement pipe.
- D. Backfill pit and carrier pipe in same manner as specified in Section 02730 Sanitary Sewer Pipelines.

3.05 CLEANUP

- A. Clean up ground surface around work area in same manner as specified for line work in Section 02220 - Excavation, Backfilling and Compacting.

END OF SECTION 02607

SECTION 02610
PIPE AND FITTINGS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers the manufacture, transportation, and storage of pipe, pipe joints, and fittings for sanitary sewer pipelines and service lines.
- B. Use only pipe, fittings, and adapters approved by the Engineering Division of the Little Rock Wastewater Utility.
- C. Use bends, tees, plugs, wyes, or other approved fittings constructed from the same material as the pipe in which they are installed. Use only standard, approved fittings.

1.02 RELATED WORK

- A. Section 02605 - Manholes
- B. Section 02730 - Sanitary Sewer Pipelines
- C. Section 02732 - Sanitary Sewer Service Lines
- D. Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines

1.03 SUBMITTALS

- A. Use of materials other than those specifically listed below is prohibited.
- B. Submit the manufacturer's certificate that the pipe meets with these Specification requirements including material testing requirements to the Engineer of Record.

1.04 REFERENCES

Not Used.

PART 2 - PRODUCTS

2.01 PROHIBITED PIPE MATERIALS

- A. The following materials are specifically forbidden for use either in city sewers or service lines:
1. Asphalt impregnated fiber tube pipe.
 2. Concrete pipe.
 3. Open profile PVC pipe as defined in ASTM F794 less than 24" in diameter.
 4. "No Hub" cast iron soil pipe or other non bell and spigot pipe.

2.02 SERVICE LINES

- A. Service lines are four (4) inches in diameter or larger.
- B. Furnish one of the following:
1. Cast iron soil pipe: per ASTM A 74 - Bell and Spigot pipe with rubber gaskets, ASTM C 564. Joints: push on equipped with a rubber gasket.
 2. Ductile iron pipe: per ANSI A 21.51 with joints same as water main pipe.
 3. Ductile Iron pipe: per ASTM A 746 with push on, rubber gasket joints.
 4. Polyvinyl chloride (PVC) pipe for service lines shall be SDR 21, 200psi and shall be completely encased as required for larger PVC pipe.
 5. Polyethylene pipe SDR 17 or thicker.

2.03 DUCTILE IRON PIPE FOR GRAVITY MAINS

- A. Minimum wall thickness: Thickness Class 50 or 51 according to ANSI/AWWA-C150/A 21.50: Thickness Design of Ductile Iron Pipe
- B. Gravity Sanitary Sewer ASTM A 746: Ductile Iron Pipe Gravity Sewer Pipe
- C. Cement lining (Double Thickness): ANSA/AWWA C 104/A 21.4: Cement Mortar Lining for Gray and Ductile Iron Pipe.
- D. Joint connections, pipe and fittings:
 - 1. Push on and mechanical rubber gasket joints: ANSI/AWWA C111/A21.11.
 - 2. Flanged: ANSI/AWWA C115/A21.15, ANSI B16.1.
 - 3. Grooved and shouldered ANSI/AWWA C606.
- E. Corrosion Control
 - 1. Polyethylene wrap in tube or sheet form conforming to the requirements of ANSI/AWWA C105/A21.5.

2.04 POLYVINYL CHLORIDE (PVC) GRAVITY SEWER PIPE (Solid Wall)

- A. Pipe eight (8) inches in diameter and larger: conform to ASTM D 3034 and D 3915. Maximum standard dimension ratio (SDR) shall be thirty five (SDR35).
- B. Pipe six (6) inches in diameter: conform to ASTM D 3034. Maximum standard dimension ratio (SDR) shall be twenty six (SDR26).
- C. Joint connections: push on, elastomeric gasket type conforming to ASTM D 3212.

2.05 POLYVINYL CHLORIDE (PVC) GRAVITY SEWER PIPE REPAIR COUPLINGS

- A. Use PVC repair couplings instead of flexible rubber coupling when connecting two PVC pipes.
- B. Install repair couplings in accordance with manufacturer's recommendations.

2.06 PVC LARGE DIAMETER (24" & LARGER) CLOSED PROFILE GRAVITY SEWER PIPE

- A. PVC closed profile pipe and fittings shall be manufactured in accordance with requirements of ASTM F794, latest edition and ASTM F1803, latest edition.
- B. PVC closed profile wall pipe shall be made from a compound meeting the requirements of cell classification 123464A as defined by ASTM D1784.
- C. Maximum long term deflection is five percent. Lag factor to be 1.5 and soil modulus of 500 psi. Factor of safety to be 2.5.
- D. Minimum stiffness factor to be 46 psi.
- E. Manufactured by Lamson Vylon, or equal. All large diameter closed profile wall gravity sewer pipe must be approved by the Little Rock Wastewater Utility prior to being installed.

2.07 PVC LARGE DIAMETER (24" & LARGER) DUAL WALL CORRUGATED PROFILE GRAVITY SEWER PIPE

- A. PVC dual wall corrugated profile pipe and fittings shall be manufactured in accordance with requirements of ASTM F794, latest edition and ASTM F949, latest edition
- B. PVC dual wall corrugated profile wall pipe shall be made from a compound meeting the requirements of cell classification 12454 as defined by ASTM D1784.
- C. Maximum long term deflection is five percent. Lag factor to be 1.5 and soil modulus of 500 psi. Factor of safety to be 2.5.
- D. Minimum stiffness factor to be 46 psi.
- E. Manufactured by Contech, or equal. All large diameter open profile wall gravity sewer pipe must be approved by the Little Rock Wastewater Utility prior to being installed.

2.08 CENTRIFUGALLY CAST FIBERGLASS GRAVITY SEWER PIPE

- A. Pipe shall conform to all requirements of ASTM 3262 for fiberglass pipe.
- B. Pipe stiffness shall meet or exceed manufacturer's recommendations. Minimum pipe stiffness shall be 46 psi.
- C. Manufactured by Hobas USA, Inc. or equal.

2.09 REINFORCED COUPLINGS

- A. Materials: Chemical resistant rubber. Reinforced Adjustable Repair Couplings shall be Mission Flex-Seal or equal.
- B. Coupling shall be made of stainless steel utilizing a nut and bolt clamp design and an "O" ring seal under the sealing clamp band..
- C. Dimensions: Inside diameter to fit the outside diameter of the different pipe materials being connected: take care that proper alignment is maintained and the spacing between pipes does not exceed 1/2 inch as shown in the Standard Detail Drawings.
- D. Any other Coupling other than specified above must be approved by the Little Rock Wastewater Utility prior to use.

2.10 SERVICE SADDLES

- A. A composite saddle using a Virgin SBR compound gasket (ASTM D-2000 3 BA715) and a ductile iron saddle casting (ASTM A 536 Grade 65-44-12) as shown in the Standard Details.
- B. A compression fit three piece service connection consisting of an ASTM D-3034 PVC hub, a Stainless Steel band, and a rubber sleeve conforming to ASTM C-443. Refer to the Standard Details.
- C. All saddles shall other than those shown above shall be approved by the Little Rock Wastewater Utility prior to installation.

2.11 SERVICE WYES

- A. The wye material and joint type must match that of the mainline pipe.
- B. Wyes shall terminate in a bell suitable for connection of a 4 inch service line pipe as specified herein.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Sanitary Sewer Pipelines: Refer to Section 02730
- B. Sanitary Sewer Service Lines: Refer to Section 02732

END OF SECTION 02610

SECTION 02730
SANITARY SEWER PIPELINES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Installation of sanitary sewer pipelines.
- B. Point repairs on existing sanitary sewer pipelines.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling, and Compacting.
- B. Section 02575 - Pavement Repair.
- C. Sections 02605 - Manholes.
- D. Section 02610 - Pipe and Fittings.
- E. Section 02732 - Sanitary Sewer Service Lines
- F. Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.
- G. Section 03300 - Cast-in-place Concrete.

1.03 DEFINITIONS

- A. New Pipelines - Pipelines installed in such a manner that there is no sewage flow during construction.
- B. Replacement Pipelines - Pipelines installed in a trench while there is a flow from "live" service connections.
- C. Point Repairs - Replacement of a short section (less than 50 feet in length) in an existing pipeline.

- D. Force Mains - Sewer pipelines that transport wastewater under pressure from a pump station to a discharge point.

1.04 QUALITY ASSURANCE

- A. Inspect all pipelines per Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.

1.05 SUBMITTALS

- A. Submit to the Engineer of Record all materials and procedures not described in these specifications. Approval from Little Rock Wastewater Utility is required prior to installation of any materials not described in these specifications.

1.06 REFERENCES

Not Used.

1.07 PROTECTION

- A. In all cases, the Contractor is responsible for protecting public and private property; protecting any person or persons who might be injured as a result of the Contractors' Work.
- B. All utilities shown on the plans may not represent the exact location; however, the Contractor is responsible for verifying these locations and contacting "Arkansas One Call System" before excavating.

PART 2 - PRODUCTS

2.01 BEDDING AND BACKFILL

- A. Refer to Section 02220 - Excavation, Backfilling, and Compacting.

2.02 PIPE AND FITTINGS

- A. Refer to Section 02610 - Pipe and Fittings.

2.03 MANHOLES, MANHOLE RINGS, AND LIDS

- A. Refer to Section 02605 - Manholes.

2.04 CONCRETE

- A. Refer to Section 03300 - Cast-in-place Concrete.

PART 3 - EXECUTION

3.01 EXCAVATION - GENERAL

- A. Perform excavation and prepare bedding in accordance with Section 02220 - Excavation, Backfilling, and Compacting.
- B. Never lay pipe in a water-filled trench, or when trench conditions or weather are unsuitable for such Work.
- C. Divert surface water and de-water trenches during excavation.
- D. Excavate for bells so that the entire barrel of the pipe will be uniformly supported on the pipe bedding before placing pipe in the trench.

3.02 LAYOUT

- A. The Contractor shall install sewer lines, wyes, and manholes as shown on the Plans.

3.03 SHALLOW BURY

- A. Ductile iron pipe shall be required when the existing grade or the proposed finish grade, whichever is less, provides less than 30 inches of cover. The ductile iron pipe shall, whenever feasible, extend from manhole to manhole. The ductile iron pipe shall meet the requirements of Section 02610 - Pipe and Fittings, of these Specifications.

3.04 PIERS

- A. Install concrete piers as indicated on the plans per Section 03300 - Cast-in-place Concrete.

3.05 STEEP GRADES

- A. Whenever the grade of the sewer line exceeds 15 percent, ductile iron pipe shall be required. The ductile iron pipe shall meet the requirements of Section 02610 - Pipe and Fittings, of these Specifications.
- B. Sewers on 20 percent slopes or greater shall be anchored securely with concrete anchors spaced as follows:
 - 1. Not over 36 feet center to center on grades 20 percent and up to 35 percent.
 - 2. Not over 24 feet center to center on grades 35 percent and up to 50 percent.
 - 3. Not over 16 feet center to center on grades 50 percent and over.
- C. Anchor collars should be placed on downstream side of bell. Where no bell is available, a retainer gland shall be installed.

3.06 PIPE INSTALLATION

- A. Inspect each joint of pipe carefully before it is placed in the trench. Plainly mark and separate from the remaining pipe any joint found to be cracked, warped, or otherwise damaged. Remove these damaged joints from the project site as soon as possible.
- B. Cut pipe in a neat and workmanlike manner without damage to pipe or pipe lining when trimming joint length.
- C. Lay all pipe with the bell upstream.
- D. Use proper equipment for lowering sections of pipe into trenches. Lower pipe carefully into the trench so the spigot and bell will not become contaminated.
- E. Lay each pipe joint to line and grade using laser beam grade light, keeping a minimum of six inches between the pipe and the trench wall.
- F. Keep the pipe joints' interior clean from all dirt and other foreign matter as the Work progresses. Maintain the pipe's interior cleanliness until accepted or put in service.
- G. Close the open ends of the pipeline temporarily with an appropriate manufactured plug at the end of each day's Work or when discontinuing pipe laying for an appreciable period.

3.07 PIPE TO PIPE CONNECTIONS

- A. Make all pipe joints in strict accordance with the manufacturer's recommendation and as stated below for the particular type of connection. Make all joints watertight in accordance with the latest ASTM Standards.
- B. Slip-type or Push-on Joints Connection Procedure
 - 1. Clean the bell and spigot end of the pipes prior to jointing thoroughly with a brush. Exercise particular care to clean the gasket seat.
 - 2. Apply pipe lubricant and attach gasket in strict accordance with the specific joint manufacturer's recommendations. Clean and insert the rubber gasket in the gasket seat within the bell. Insert the spigot end of the upstream pipe in the

bell of the downstream pipe. Push the upstream joint until it is in firm contact with the shoulder of the bell.

C. Mechanical Joints Connection Procedure

1. Clean thoroughly the spigot end of the pipe, the bell of the connecting pipe, and the rubber gasket as specified for slip-type or push-on joints. Clean the gland in a similar manner.
2. After the gland and gasket are placed on the spigot end of the pipe, a sufficient distance from the end to avoid fouling the bell, insert the spigot end in the fitting bell to the point of firm contact with the bell shoulder. Then advance the rubber gasket into the bell and seat in the gasket seat. Exercise care to center the spigot end within the bell. Bring the gland into contact with the gasket, enter all bolts, and make all nuts hand tight. Exercise continued care to keep the spigot centered in the bell.
3. Make the joints tight by turning the nuts with a torque wrench: First partially tightening a nut, then partially tightening the nut 180 degrees away from it. Work around the pipe with uniformly applied tension until the required torque is applied to all nuts. Required torque ranges and indicated wrench lengths for standard cast iron bolts are as follows:

Diameter	Range of Torque	Length of Wrench
<u>Inches</u>	<u>Foot Pounds</u>	<u>Inches</u>
5/8	40 – 60	8
3/4	60 – 90	10
1	70 – 100	12
1-1/4	90 – 120	14

D. Reinforced Rubber Couplings

1. Install reinforced rubber coupling only where dissimilar pipe materials are connected.
2. Take care that proper alignment is maintained and a minimum spacing between pipes does not exceed one-half inch.
3. Encase rubber coupling in Class B concrete as shown on the Standard Details.

3.08 WYE FITTINGS FOR SERVICE CONNECTIONS

- A. Use in-line wye fittings for all service connections except on ductile iron pipe.
- B. The wye material and joint type must match that of the mainline pipe.
- C. Use taps instead of wyes only on ductile iron pipe.
- D. Install wye branches at the location of live services or as indicated on the construction plans. Install wye connections for services in accordance with the manufacturer's recommendations.
- E. Place Class "B" concrete under each wye branch to prevent cracking or twisting under earth loads.
- F. Mark wyes for future connections using detectable tape or ski rope terminated at the ground surface. Install on each service wye either:
 1. A service stub terminated with a plugged bell; or,
 2. A plugged adapter capable of connecting to a four-inch cast iron service.
- G. Terminate wyes for future connections in a bell suitable for connection of a four-inch service line pipe as specified herein. Securely plug all wyes and service stubs for future connections.
- H. For Service Wye Details, see the Standard Detail Drawings.

3.09 BACKFILLING AND INSPECTION

- A. Before backfilling, place concrete encasement at transitions between different types of pipe and around all reinforced rubber couplings as shown in the Project Plans. Use Class B concrete per Section 03300-Cast-in-place Concrete.
- B. Before backfilling, install concrete anchor collars in accordance with the details at the location and interval and shown on the Plans. Use Class A concrete and reinforce with steel bars per Section 03300-Cast-in-place Concrete.
- C. After the pipeline is installed and visually inspected by the Engineer of Record, backfill the trench per Section 02220-Excavation, Backfilling, and Compacting.
- D. Test the pipeline per Section 02734-Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.
- E. Repair all pavements per Section 02575-Pavement Repair.
- F. Repair all incidental damage to buildings, structures, utilities, pavements, landscaping, etc.
- G. Repair sodded and grass areas to original condition.

3.10 CONNECTION OF NEW SEWER PIPELINES TO EXISTING SANITARY SEWERS

- A. Construct, clean, test, and obtain Little Rock Wastewater Utility's approval before connecting new pipeline to the existing sewer.
- B. Connection of new sewer pipelines to existing sanitary sewers cannot be made until the entire project is ready for final acceptance by the Little Rock Wastewater Utility.
- C. All new pipelines must connect to the existing system at a new or existing manhole. If a new manhole is built over an existing sewer line, do not break out the top of the existing pipe until the new line is accepted. New pipelines cannot be connected to an existing manhole prior to final acceptance without permission from the Little Rock Wastewater Utility.
- D. If a new pipeline is to discharge into an existing manhole, divert the sewage flow around the existing manhole while the tie-in is under construction. Intercept the

sewage flow at the existing manhole first upstream from the tie-in construction. Provide suitable pumping equipment and re-routing conduit to pump the sewage around the tie-in construction. Discharge into an appropriate manhole downstream from the construction.

- E. Connect new pipelines to existing manholes in a neat, workmanlike manner, to ensure a watertight connection.

3.11 GRAVITY SEWER PIPELINE INSTALLATION – LIVE SEWER PIPELINES AND POINT REPAIRS

- A. Install sewer pipeline and point repairs as detailed above for new pipelines with the following exceptions:
 1. Divert all upstream flow around the section to be replaced with plugs or pumps. The bedding must be kept dry during installation. If trench bottom is too wet, excavate wet portion and replace with bedding material.
 2. Make transitions to original pipe using materials and procedures specified. Take care that replacement pipe is aligned properly with no offsets. Install concrete encasement around transitions. Take care that no concrete from the encasement enters the existing pipeline. If this occurs, remove the concrete.
 3. At the end of each day's work, and when for any reason the laying of pipe will be discontinued for an appreciable period, place a temporary section of pipe in the live line.
 4. Pressure testing is not required. Visual and television testing are required.
 5. Mandrel testing may be required.
 6. Service line pressure testing is not required.
 7. A temporary debris catcher, as shown in the Standard Detail Drawings, shall be used in the downstream manhole.

3.12 GRAVITY SEWER PIPELINE INSTALLATION - AERIAL CROSSINGS

- A. Construct piers as shown on Plans.
- B. Install pipe on piers to grade.

3.13 FORCE MAIN PIPELINE INSTALLATION

- A. Install all pipe and fittings to the line and grade as detailed on the Plans. Submit fitting substitution requests to the Engineer of Record for approval.
- B. Remove all dirt and other foreign matter from the inside of pipe and fittings before they are lowered into the trench. Keep pipe and fittings clean during and after laying. Take care to keep dirt out of the bells. Plug all pipe openings at the end of each days work or when pipe laying is discontinued.
- C. Use proper equipment for lowering sections of pipe into trenches. Lower pipe carefully into the trench so the spigot and bell will not become contaminated.
- D. Cut pipe in a neat and workmanlike manner without damage to pipe or pipe lining when trimming joint length.
- E. Install pipe with bell ends facing in the direction of laying. Face bells upgrade on lines on an appreciable slope.
- F. When necessary to deflect pipe from a straight line in either the horizontal or vertical plan to avoid obstructions, do not deflect the pipe beyond the point recommended by the pipe manufacturer.
- G. Before backfilling, install concrete thrust blocking in accordance with Standard Details on Plans.
- H. Test the pipeline per Section 02734-Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.
- I. Install all flushing stations, check valves, air and vacuum release valves, and all necessary fittings according to manufactures recommendation.
- J. After the pipeline is installed and visually inspected by the Engineer of Record, backfill the trench per Section 02220-Excavation, Backfilling, and Compacting. Repair all pavements per Section 02575-Pavement Repair. Repair all incidental damage to buildings, structures, utilities, pavements, landscaping, etc.

K. Repair sodded and grass areas to original condition.

END OF SECTION 02730

SECTION 02732
SANITARY SEWER SERVICE LINES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers:
 - 1. Installation of sanitary sewer service lines.
 - 2. Point repairs on existing sanitary sewer service lines.
- B. Sewer lines 6 inches in diameter and larger are constructed under the requirements of Section 02730 - Sanitary Sewer Pipelines.

1.02 RELATED WORK

- A. Standard Detail Drawings
- B. Section 01000 - General Requirements and Procedures
- C. Section 02220 - Excavation, Backfilling, and Compacting
- D. Section 02575 - Pavement Repair
- E. Section 02605 - Manholes
- F. Section 02610 - Pipe and Fittings
- G. Section 02730 - Sanitary Sewer Pipelines
- H. Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines
- I. Section 03300 - Cast-In-Place Concrete

1.03 DEFINITIONS

- A. City Sewer Main - A public sanitary sewer in which all owners of abutting properties have equal rights and is maintained and controlled by the Little Rock

Wastewater Utility. No sewer line smaller than six (6) inches in diameter is a city sewer.

- B. Service Line - The sewer which conveys the discharge from a building's plumbing system or other approved waste system to the city sanitary sewer system. The service line begins at the connection to the city sanitary sewer and ends at the building foundation.
- C. Permit - Written authorization issued to a plumber or contractor upon request allowing installation of a service line to connect to the Little Rock Wastewater Utility system.
- D. Plumbing Permit - Written authorization issued to a plumber or contractor upon request allowing work on existing plumbing in an existing structure or to install plumbing in a new or existing structure.

1.04 QUALITY ASSURANCE

- A. Inspect all service lines per Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.

1.05 SUBMITTALS

- A. Submit to the Engineer of Record all materials and procedures not described in these specifications. Little Rock Wastewater Utility's approval required for all materials not described in these specifications.

1.06 REFERENCES

- A. Arkansas State Plumbing Code
- B. City of Little Rock Plumbing Code

1.07 SPECIAL REQUIREMENTS CONCERNING FIELD LOCATION OF PIPE, BENDS, CLEANOUTS, AND MANHOLES ON SERVICE LINES

A. Bends

1. Avoid using short radius ninety degree bends on 4" service lines.
2. Use only long sweep bends where bends are absolutely necessary.

B. Cleanouts

1. Cleanouts are required at the building foundation per the Little Rock Plumbing Code.
2. On lines longer than one hundred (100) feet, cleanouts are required at one hundred (100) foot spacing.
3. Install cleanouts adjacent to any ninety degree bend.
4. Install pipe on cleanout riser up to finish grade.
5. The cleanout shall be the same diameter as the pipe on which it is installed.

C. Backwater Traps (Sewage check valve)

1. Provide backwater traps as required by Section 6.14 of the Arkansas Plumbing Code or as shown on the plans.
2. Backwater Traps shall be Mainline "Adapt-A-Valve" or approved equal.

1.08 PROTECTION

- A. In all cases the Contractor is responsible for protecting public and private property; and, protecting any person or persons who might be injured as a result of the Contractor's work.
- B. All utilities shown on the plans may not represent the exact location; however, the contractor is responsible for verifying these locations and contacting "Arkansas One Call System" before excavating.

PART 2 - PRODUCTS

2.01 BEDDING AND BACKFILL

- A. Refer to Section 02220 - Excavation, Backfilling, and Compacting.

2.02 PIPE AND FITTINGS

- A. Refer to Section 02610 - Pipe and Fittings for allowable materials.

2.03 BACKFILL AND ASPHALT FOR PAVEMENT REPAIRS

- A. Refer to Section 02575 - Pavement Repair

2.04 MANHOLES, MANHOLE RINGS AND LIDS

- A. Refer to Section 02605 - Manholes

2.05 CONCRETE

- A. Refer to Section 03300 - Cast-In-Place Concrete

PART 3 - EXECUTION

3.01 EXCAVATION

- A. Perform excavation and prepare bedding in accordance with Section 02220 - Excavation, Backfilling, and Compacting for Sanitary Sewer Pipelines.
- B. Never lay pipe in a water filled trench.

- C. Excavate for bells so that the entire barrel of the pipe will be uniformly supported before placing pipe in the trench.

3.02 PIERS

- A. Install concrete piers as indicated on the plans in accordance with Section 03300 - Cast-In-Place Concrete.
- B. Use only ductile iron pipe on piers.

3.03 PIPE INSTALLATION

- A. Inspect each joint of pipe carefully before it is placed in the trench. Discard damaged joints.
- B. If trimming joint length is required, cut pipe in a neat and workmanlike manner without damage to pipe or pipe lining.
- C. Lay all pipe with the bell upstream.
- D. Lower pipe carefully into the trench so the spigot and bell will not become contaminated.
- E. Lay the service line on a straight alignment and at a constant slope. Install pipe a minimum slope of one percent (1.00%); this equals one-eighth inch fall per lineal foot (1/8" / LF). The maximum allowable deflection in a horizontal plane is one inch per lineal foot (1.00"/LF).
- F. Install bends on 4" service lines at all changes in alignment and slope. Cleanouts are required at 90 degree bends and every 100 feet on lines longer than 100 feet. Bends on 6" and larger service lines are only permitted within 5 feet of the building foundation and 2 feet of the manhole being connected to; if longer than 150 feet, bends are not allowed and manholes must be built.
- G. Keep the pipe joints' interior clean from all dirt and other foreign matter as the work progresses. Maintain the pipe's interior cleanliness until accepted or put in service.

- H. At the end of each day's work, and when for any reason the laying of pipe will be discontinued for an appreciable period, close the open ends of the pipeline temporarily with an appropriate manufactured plug.

3.04 PIPE TO PIPE CONNECTIONS

- A. Make all pipe joints in strict accordance with the manufacturer's recommendation and these specifications as stated below for the particular type of connection. Make all joints watertight in accordance with the latest ASTM Standards.
- B. "No-Hub" type pipe connections are not permitted.
- C. Slip-Type Or Push-On Joints Connection Procedure
 1. Clean the bell and spigot end of the pipes prior to jointing thoroughly by whatever means necessary to remove all foreign matter and attain the required cleanliness. Use a brush as necessary. Exercise particular care to clean the gasket seat.
 2. Apply lubricant and attach gasket in strict accordance with the specific joint manufacturer's recommendations. Clean and insert the rubber gasket in the gasket seat within the bell. Insert the spigot end of the pipe in the bell of the pipe to which connection is being made, and force a firm contact with the shoulder of the bell.
- D. Mechanical Joints Connection Procedure
 1. Clean thoroughly the spigot end of pipe, the bell of fitting, and the rubber gasket as specified for slip-type or push-on joints. Clean the gland in a similar manner.
 2. After the gland and gasket are placed on the spigot end of the pipe a sufficient distance from the end to avoid fouling the bell, insert the spigot end in the fitting bell to the point of firm contact with the bell shoulder. Then advance the rubber gasket into the bell and seat in the gasket seat. Exercise care to center the spigot end within the bell.

3. Bring the gland into contact with the gasket, enter all bolts, and make all nuts hand tight. Exercise continued care to keep the spigot centered in the bell.
4. Make the joints tight by turning the nuts with a wrench - first partially tightening a nut, then partially tightening the nut 180 degrees therefrom and working thus around the pipe with uniformly applied tension until the required torque is applied to all nuts. Required torque ranges and indicated wrench lengths for standard cast iron bolts are shown in Section 02730 - Sanitary Sewer Pipelines.

E. Reinforced Rubber Couplings

1. Install a reinforced rubber coupling only where dissimilar pipe materials are mated.
2. Take care that proper alignment is maintained.
3. Encase reinforced rubber coupling in Class B concrete as shown on the Standard Details.

3.05 SERVICE LINE CONNECTIONS TO CITY SEWER PIPELINES

A. Wye connection - Use existing wye or other prefabricated outlet if one has been left in the city sewer for sewer service to a lot unless it can be shown that the dwelling unit or building cannot drain by gravity to the wye.

B. Taps

1. Where a wye or other prefabricated outlet in the city sewer is not available to serve a lot, a tap connection shall be installed at a location approved by the Utility to connect the building sewer to the city sewer.
2. The Contractor shall install all taps using approved materials and equipment.

C. Manhole Taps

1. Make manhole tap connections into existing manholes as indicated on the plans.

2. Install manhole taps no more than twenty-four (24) inches or $2/3$ of the main line pipe diameter whichever is greater above the manhole invert.
3. Make manhole tap watertight and flush with inside surface of manhole.
4. Manhole taps are considered as part of the service line and are subject to inspection.

3.06 BACKFILLING AND INSPECTION

- A. Before backfilling, place concrete encasement at transitions between different types of pipe and around all flexible rubber couplings as shown on the Standard Details.
- B. Install backwater traps (Sewage check valve) if required.
- C. Before backfilling, install concrete anchor collars in accordance with the details at the location and interval and shown on the plans. Use Class "A" concrete and reinforce with steel bars per Section 03300 - Cast-In-Place Concrete.
- D. After the pipeline is installed and visually inspected by the Engineer, backfill the trench and clean up the site per Section 02220 - Excavation, Backfilling, and Compacting.
- E. Test the service line per Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.
- F. Repair all pavements per Section 02575 - Pavement Repair.
- G. Repair all incidental damage to buildings, structures, utilities, pavements, landscaping, etc.

3.07 SERVICE LINE REPLACEMENT/REPAIRS

- A. Obtain permit per Little Rock Wastewater Utility requirements.
- B. When possible, the existing tap or wye should be used to connect a repaired or replaced service line.

- C. When the existing wye or tap cannot be used, then the Contractor shall seal original wye or tap (to prevent entrance of rainwater or debris into the city sewer) and contact LRWU Engineering Services to arrange for inspection of seal.
- D. Repair damaged portion in accordance with these specifications.
- E. If reinforced rubber couplings are required, be sure to encase them in Class B Concrete as shown in the Standard Details.
- F. Contact LRWU Engineering Services to arrange for inspection of service line repair.

3.08 PIPE BURSTING SERVICE LINES

- A. Pipe bursting of existing service lines shall be done only with prior approval from Little Rock Wastewater Utility personnel. Submittal of location, depth, method used, pipe material to be installed and reason for bursting service line instead of conventional relay will be required prior to approval.
- B. Pre and Post televising of existing service line will be required.
- C. Connections at each end of pipe bursting shall be inspected by Utility personnel. All normal inspection fees will be charged for pipe bursting installations.

3.08 RELOCATE SERVICE EXIT

- A. Obtain Plumbing Permit from the Little Rock Public Works Permit Section. A copy of the permit shall be given to the Utility.
- B. Relocate where the sanitary sewer line exits the structure and plug the old sewer line where it was cut to be rerouted.
- C. Have the work inspected by the City Plumbing Inspector and provide the Utility a copy of the Approval Slip.

END OF SECTION 02732

SECTION 02734
INSPECTION AND TESTING OF
SANITARY SEWER PIPELINES, MANHOLES, AND SERVICE LINES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers the inspection and testing of pipelines, manholes, and service lines. Testing is required before final acceptance of pipelines and service lines by Little Rock Wastewater Utility.

1.02 RELATED WORK

- A. Section 02605 - Manholes
- B. Section 02610 - Pipe and Fittings
- C. Section 02730 - Sanitary Sewer Pipelines
- D. Section 02732 - Sanitary Sewer Service Lines
- E. Section 02766 - Cured-In-Place Pipe Installed Using The Inversion Method
- F. Section 02769 – Polyethylene Pipe Installed Using the Pipe Bursting Method
- G. Section 03700 - Manhole Rehabilitation

1.03 SCOPE OF WORK

All pipelines shall be inspected and tested before final acceptance. The methods to be used are as follows:

- A. New Gravity Sewer Pipelines
 - 1. Visual inspection during installation and before backfill.
 - 2. Low pressure air test.

3. Television inspection.
 4. Mandrel test (Flexible pipes only) If Required by Little Rock Wastewater Utility
 5. Final Visual Inspection
 6. Infiltration/exfiltration if Required by Little Rock Wastewater Utility.
- B. Manholes**
1. Visual inspection during installation and before backfill.
 2. Vacuum testing.
 3. Exfiltration test if required by Little Rock Wastewater Utility.
 4. Final Visual Inspection.
- C. Replacement Pipelines and Point Repairs**
1. Visual inspection during installation and before backfill.
 2. Low pressure air test/exfiltration, infiltration.
 3. Television inspection.
 4. Mandrel test (Flexible pipes only) if required by Little Rock Wastewater Utility
 5. Final Visual Inspection.
- D. Force Mains**
1. Visual inspection during installation and before backfill.
 2. Hydrostatic pressure test.
- E. Service Lines**
1. Visual inspection during installation and before backfill.
 2. Low pressure air test if required by Little Rock Wastewater Utility.
 3. Exfiltration test if required by Little Rock Wastewater Utility.
 4. Television inspection for pipe bursting existing service lines.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 VISUAL INSPECTION DURING INSTALLATION AND BEFORE BACKFILL

- A. The Engineer of Record will inspect pipelines, manholes, and service lines during all phases of construction. The level of inspection is at the discretion of the Engineer of Record and will be based partly on the Contractors ability, experience, and past performance. All work not conforming to these specifications that is discovered during this inspection phase will be corrected by the Contractor.

3.02 PRESSURE TEST FOR GRAVITY SEWER PIPELINES

- A. The Contractor will perform pressure tests on all gravity sewer pipelines in the presence of the Engineer of Record
- B. Lines will not be accepted until they pass all required tests.
- C. Perform the tests in the presence of the Engineer of Record's representative. Provide Little Rock Wastewater Utility's representative at least 24 hours notice before beginning testing.
- D. The primary test method is the Low Pressure Air Loss test for lines smaller than 24 inches in diameter. Under special conditions and when approved in advance by Little Rock Wastewater Utility the exfiltration/infiltration test procedure may be used.

3.03 LOW PRESSURE AIR LOSS PROCEDURE FOR GRAVITY SEWER PIPELINES

- A. Plug all pipe outlets with suitable test plugs. Brace each plug securely.
- B. Pipe air supply to pipeline to be tested so that air supply may be shut off, pressure observed, and air pressure released from the pipe without entering the manhole.

Install a valved branch in the supply line past the shut-off valve terminating in a 1/4" female pipe thread for installation of the test gauge.

- C. Add air slowly to portion of pipe under test until test gauge reads at least 4 psig, but less than 5 psig.
- D. Shut air supply valve and allow at least two minutes for internal pressure to stabilize.
- E. Determine time in seconds for pressure to fall 1 psig so that pressure at the end of time of the test is at least 2.5 psig.
- F. Compare observed time with minimum allowable times in the following chart for pass/fail determination.

TEST CHART FOR AIR TESTING SEWERS

Leakage Testing of Sewers by Low Pressure Air Loss

(Time Pressure Drop Method)

Table 1 - Minimum Test Times in Seconds for 1 psig drop (3.5 psig to 2.5 psig)								
Distance Between Manholes	Nominal Pipe Diameter (inches)							
	6	8	10	12	15	18	21	24
100	40	70	110	155	245	350	480	625
150	60	105	165	235	365	500	595	680
200	80	140	220	315	425	510	595	680
250	100	176	270	340	425	510	595	680
300	120	215	283	340	425	510	595	680
350	140	226	283	340	425	510	595	680
400	160	226	283	340	425	510	595	680
450	170	226	283	340	425	510	595	680
500				340	425	510	595	680
550						510	595	680
600							595	680

NOTE: Due to force resisted by plug restraints, testing of sewers larger than 24" is not recommended.

- G. Where groundwater level is above the crown of the pipe being tested, increase test pressure at the rate of 1 psi for every 2.5 feet of water above the crown.

H. Air Testing Safety Requirements:

1. Securely brace plugs used to close the sewer pipe for the air test; this is to prevent the unintentional release of a plug which can become a high velocity projectile. For example: four pounds (gauge) air pressure develops a force against the plug in a 12" diameter pipe of approximately 450 pounds; this force can propel a 12-inch plug weighing 10 pounds to supersonic speeds.
2. Locate gauges, air piping manifolds, and valves at the top of the ground. Entry by anyone into a manhole where a plugged pipe is under pressure is strictly prohibited.
3. Do not use the air test on gravity sewer pipes larger than 24" in diameter because of the difficulty of adequately blocking the plugs.

3.04 WATER LOSS TEST PROCEDURE (USE ONLY IF APPROVED IN ADVANCE BY LITTLE ROCK WASTEWATER UTILITY)

- A. Perform the water test procedure to determine the quality of the sewer line against infiltration and exfiltration only when specifically approved by Little Rock Wastewater Utility. The Low Pressure Air Loss Test outlined above is the standard test procedure. Where approved, follow the procedure below.
- B. Infiltration Test: Minimum test time is 2 hours. The allowable pipeline leakage rate under exterior ground water pressures is:
 1. For all pipe materials: 100 gallons (or less) per inch of nominal pipe diameter per mile of pipeline per 24 hours. Submit procedure to Engineer for approval if this test is used.
- C. Exfiltration Test: This test will be used if Little Rock Wastewater Utility decides the ground water table at the time of testing is too low to produce dependable results from the infiltration test. This test will not be used if Little Rock Wastewater Utility decides the ground water table is too high. The allowable

pipeline leakage rates are the same as stated for the Infiltration Test. Submit procedure to Engineer for approval if this test is used.

3.05 TELEVISION INSPECTION

All newly installed sewer mains shall be televised as follows:

- A. The Contractor shall clean all lines thoroughly prior to the start of televising.
- B. Each segment of pipe shall be televised.
- C. The sewer main shall be televised to reveal possible defects in material or workmanship.
- D. The Contractor shall correct any defects discovered during the television inspection at the Contractor's expense.
- E. Any televising of line segments by the Contractor will be made in the presence of the representative of the Engineer of Record and final videos shall be delivered to the Little Rock Wastewater Utility for review and approval. Little Rock Wastewater Utility's representative will be notified in advance of all televising of line segments performed by the Contractor.

3.06 MANDREL TEST (FLEXIBLE PIPE ONLY)

- A. The maximum allowable pipe deflection is five (5) percent of the inside pipe diameter.
- B. Any sewer pipe which fails the mandrel test prior to final acceptance will not be accepted by the Utility until the defects are corrected.
- C. All mandrel tests shall be performed by the Contractor while observed by the Engineer of Record's representative.

3.07 SUPPLEMENTAL MANDREL TESTING

- A. The Utility may at any time after final acceptance perform supplemental mandrel testing on pipelines constructed of flexible pipe material. These supplemental tests will be performed as detailed above with a maximum allowable long term deflection of five percent (5%).
- B. Any sewer pipe which fails the mandrel test prior to expiration of the maintenance bond will be corrected by the Contractor at the Contractor's expense. If the Contractor fails to correct these defects after a reasonable time, the Utility will correct the defects and file a claim with the bonding company.

3.08 FINAL VISUAL INSPECTION

- A. Upon completion of the above tests the Engineer of Record will perform a final visual inspection of pipelines and manholes.
- B. A punch list of defects (including obvious running leaks) will be prepared and sent to the Contractor for correction at the Contractors' expense.

3.09 INSPECTION FOR SERVICE LINES

- A. All building sewer installations shall be inspected and approved by an authorized Wastewater Utility inspector.
- B. Backfill may only be placed on the completed portions of a building sewer following inspection. No approval certificate shall be issued until all portions of a building sewer from the main connection to the building foundation have been inspected and approved by an authorized inspector. At the time of inspection, the pipe should be in place in the trench and "safed-up", but the top half of the pipe barrel exposed. No approval will be given for building sewers all or a portion of which are covered at the time of inspection.

- C. All building sewers are subject to testing to insure water tightness. All tests must be performed in the presence of a representative of Little Rock Wastewater Utility. Tests may be either by:
1. Water Loss Test Procedure; or,
 2. Low Pressure Air Loss Procedure.
- D. If, in the opinion of the Little Rock Wastewater Utility, the line in question is properly installed and free from open joints and breaks, building sewers constructed entirely of cast iron soil pipe may be connected to the city sewer without testing.
- E. Water Loss Test Procedure
1. Plug the section of line to be tested at the lower end and fill section with water so that at least four (4) feet of head is obtained.
 2. The maximum acceptable water loss while so filled is not more than 100 gallons per twenty-four hours per inch of pipe diameter per mile of pipe. This is approximately 3/16 gallon for a one hundred (100) foot long section of four (4) inch pipe tested thirty minutes.
- F. Low Pressure Air Loss Procedure
1. Plug securely both ends of the line to be tested.
 2. Charge the line with air to a pressure of 4.5 psig.
 3. Allow at least five minutes for the temperature in the pipe to stabilize.
 4. Measure the time required for a one (1.0) psi drop in pressure.
 5. The minimum time for a one psi loss is $28.5 \times d$ seconds where d = the nominal diameter in inches of the pipe being tested.

3.10 PRESSURE TEST FOR FORCE MAINS

- A. Perform hydrostatic leakage tests for force mains by filling the force main with water and increasing the pressure to a testing pressure of 150% of the working pressure with a minimum of 100 psi.

- B. The duration of the leakage test shall be two hours or as specified by the Engineer of Record.
- C. The force main will not be accepted until the actual leakage is equal to or less than the allowable. In addition, all obvious leaks shall be repaired.
- D. The allowable leakage rate per hour for ductile iron, PVC, or concrete pipe shall be calculated by the following formula:

$$L = \frac{ND \times P^5}{7400}$$

L = Allowable Leakage (gallons per hour)

N = Number of Joints in Pipeline Tested

D = Nominal Diameter (inches)

P = Test Pressure (psi)

3.11 MANHOLE TESTING

- A. The Contractor shall vacuum test all new manholes constructed.
- B. The Contractor shall vacuum test all manholes that have been sealed (waterproofed).
- C. The Contractor shall vacuum test all manholes that have been epoxy lined.
- D. Manholes shall be tested in accordance with ASTM C 1244-93. Vacuum test shall not be performed earlier than 7 days after construction or installation. The Contractor shall provide all testing equipment, pump, hosing, seal, and other incidentals. Vacuum test head shall be positioned at the top of the casting (the surface on which the manhole cover rests, to include grade rings) in accordance with the equipment manufacturer's instructions. A vacuum of 10-inches of mercury shall be drawn and the vacuum pump isolated by the shut-off valve on the

test head connection. When valve is closed, time measurement shall commence, and the time required for vacuum drop to 9-inches of mercury shall be observed and recorded. Manholes shall pass if the time for the vacuum reading to drop from 10-inches of mercury to 9-inches of mercury meets or exceeds the time values in seconds in the following table.

Depth (feet)	Diameter (inches)								
	30	33	36	42	48	54	60	66	72
<10	11	12	14	17	20	23	26	29	33
10	14	15	18	21	25	29	33	36	41
12	17	18	21	25	30	35	39	43	49
14	20	21	25	30	35	41	46	51	57
16	22	24	29	34	40	46	57	58	67
18	25	27	32	38	45	52	59	65	73
20	28	30	35	42	50	53	65	72	81
22	31	33	39	46	55	64	72	79	89
24	33	36	42	51	59	70	78	87	97
26	36	39	46	55	64	75	85	94	105
28	39	42	49	59	69	81	91	101	113
30	42	45	53	63	74	87	98	108	121

- E. Manholes showing greater than the allowable leakage shall be repaired and re-tested until a satisfactory leakage result is obtained.
- F. The Engineer of Record will be required to certify that all manholes on a project have been vacuum tested and have passed the test criteria. Copies of the test results will be supplied Little Rock Wastewater Utility if requested.

END OF SECTION 02734

SECTION 02760
PIPELINE CLEANING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This Section covers the cleaning of sanitary sewer lines.

1.02 RELATED WORK

- A. Standard Detail Drawings
- B. Section 02605 - Manholes
- C. Section 02730 - Sanitary Sewer Pipelines
- D. Section 02732 - Sanitary Sewer Service Lines
- E. Section 02762 - Pipeline Television Inspection
- F. Section 02766 - Cured-In-Place Pipe Installed Using the Inversion Method
- G. Section 02769 - Polyethylene Pipe Installed Using the Pipe Bursting Method
- H. Section 03350 - Manhole Rehabilitation

1.03 SUBMITTALS

- A. The Contractor shall submit for approval manufacturer's brochures and specifications for his proposed cleaning equipment. The equipment and methods selected for cleaning shall be approved by the Engineer of Record.

PART 2 - PRODUCTS

2.01 EQUIPMENT

- A. Equipment selected for cleaning shall be of a type generally recognized by the trade for the purpose being used and that has proved satisfactory. The equipment shall be capable of removing all roots, dirt, grease, rock and other deleterious material and obstructions from the sewer lines and manholes that would prevent efficient use of the inspection equipment.
- B. Hydraulic cleaning equipment shall be of a movable dam type and shall be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. Sewer cleaning balls or other such equipment which cannot be collapsed instantly will not be considered acceptable cleaning equipment. The moveable dam shall be of the same diameter as the pipe being cleaned and shall provide a flexible scraper around the outer periphery to insure total removal of grease. If a line segment is found to be completely stopped up or plugged or heavily intruded with roots, then a mechanical root cutter shall be used.
- C. High velocity hydro-cleaning equipment shall be truck mounted for ease of operation. The equipment shall have minimum of 600 feet of 1 inch I.D. high pressure hose with a selection of two or more high velocity nozzles. The nozzles shall have a capacity of 60 GPM at a minimum working pressure of 1000 pounds per square inch (psi). The nozzles shall be capable of producing a scouring action from 15 degrees to 45 degrees in all size lines designated to be cleaned. Equipment shall also have a high velocity gun for washing and scouring manhole walls and floor. The equipment shall carry its own water tank capable of holding corrosive or caustic cleaning or sanitizing chemicals, auxiliary engines, pump and a hydraulically driven hose reel. All controls shall be located so that equipment can be operated above ground with minimal interference to traffic and/or danger to the operator.

- D. Mechanical cleaning equipment shall be used to remove heavy accumulations of silt, sludge, etc., and roots. Bucket machines shall be operated in pairs with each machine powered by an engine with a minimum of 16 horsepower (HP) to ensure sufficient pulling power. Machines shall be capable of operating at least two speeds to match job conditions. Sufficient accessories and tools shall be furnished to accomplish the required cleaning in a complete and efficient manner.
- E. Power rodding machines shall be of a continuous rod type, capable of holding a minimum of 1000 feet of rod. The rod shall be specifically treated steel. The machine shall have a positive rod drive and produce a 2000 pound rod pull. To insure safe operation, the machine shall have a fully enclosed body and an automatic safety throw-out clutch.
- F. Cleaning equipment shall be provided that includes an air conveying vacuum system to provide for the simultaneous removal of the debris flushed to the manhole.
- G. A temporary debris catcher, as approved by the Little Rock Wastewater Utility, shall be used in the downstream manhole if the project is tied to existing sewer mains. See Standard Detail Drawings.

2.02 PERSONNEL

- A. Contractor personnel shall be thoroughly familiar with all phases of sewer line cleaning to insure satisfactory end results without causing damage to the sewer lines or adjacent property.

PART 3 - EXECUTION

3.01 CLEANING EQUIPMENT

- A. The importance of the cleaning operation cannot be too strongly emphasized. The equipment selected for cleaning shall be capable of removing all dirt, grass, rocks and other deleterious materials from the sewer lines and manholes.
- B. The Contractor shall make an inspection of the lines to be cleaned in order to determine the type of cleaning equipment that is required. It is anticipated that hydraulic cleaning will be adequate for most of the line segments.

3.02 CLEANING REQUIREMENTS

Prior to inspection, all sewer mains will be thoroughly cleaned as specified below:

- A. The sewer lines shall be cleaned by using standard mechanically powered or hydraulically propelled cleaning tools or combinations thereof, such as rodding machines, boring machines, hydraulic balls, cones, ferrets, or other similar devices.
- B. All roots, sludge, dirt, sand, rock, grease and other solid or semi-solid material resulting from the cleaning operations shall be removed at the downstream manhole without passing the material to existing sewer mains. When cleaning equipment is used, a debris catch riser, as approved by Little Rock Wastewater Utility, shall be used in the downstream manhole so that both solids and water shall be trapped. All solids or semi-solids resulting from the cleaning operations shall be removed from the site and disposed of by the Contractor. It the responsibility of the Contractor to secure a legal dump site for the disposal of this material. Contractor will be responsible for any material allowed to enter Little Rock Wastewater Utility's System as a result of this cleaning process. Contractor will be responsible for any damages resulting, either private or public, from any material

entering the Utility's System. All costs incurred to remove such material will be paid by the Contractor.

- C. Satisfactory precautions shall be taken to protect the sewer lines from damage that might be inflicted by the improper use of cleaning equipment. Whenever hydraulically propelled cleaning tools, which depend upon water pressure to provide their cleaning force or any tools which retard the flow of water in the sewer lines are used, precautions shall be taken to insure that the water pressure created does not cause any damage or flooding to public or private property. When quantities of water from fire hydrants are necessary to avoid delay in normal working procedures, the water shall be conserved and not used unnecessarily. No fire hydrant shall be obstructed or used when there is a fire in the area. Before using any water from the City water supply system, the Contractor shall apply for and receive permission from Central Arkansas Water. The Contractor shall be responsible for the water meter and related charges for the set up, including the water usage bill. All expenses shall be considered incidental to cleaning.
- D. **UNDER NO CIRCUMSTANCES SHALL SEWAGE OR SOLIDS REMOVED THEREFROM BE DUMPED ONTO STREETS OR INTO DITCHES, CATCH BASINS, STORM DRAINS OR EXISTING SANITARY SEWER MANHOLES.**

END OF SECTION 02760

SECTION 02762
PIPELINE TELEVISION INSPECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

This section covers the television inspection of sanitary sewer lines.

- A. The inspection of each line shall be by a television (TV) camera especially designed to accurately show the condition of the lines from the interior and with the ability to pinpoint the locations of line faults and necessary repairs.
- B. A sewer line joint means the junction of two adjacent lengths of sewer pipe. The term "manhole section" as used in these specifications shall mean the length of pipe connection two manholes.

1.02 RELATED WORK

- A. Section 02730 - Sanitary Sewer Pipelines
- B. Section 02732 - Sanitary Sewer Service Lines
- C. Section 02760 - Pipeline Cleaning

1.03 SUBMITTALS

- A. The Contractor shall submit for approval manufacturer's brochures and specifications for proposed TV equipment to the Engineer of Record. Upon request this information will be submitted to Little Rock Wastewater Utility for Utility review.

1.04 INSPECTION

- A. Immediately upon cleaning the sewer line, it will be televised to determine the condition of the line and location of existing service connections, etc.
- B. The sewer lines shall be visually inspected by TV camera. The section being inspected shall be suitably isolated from the remainder of the sewer line as necessary.
- C. The camera shall be moved through the line in either direction at a uniform slow rate not to exceed 60 feet per minute, by means of cable winches, or similar mechanisms. **Under no circumstances shall the camera be tethered to a hydraulically propelled or high-velocity jet cleaning device while the cleaning device is on.**
- D. The camera shall stop at each service connection and provide a view up the service line.
- E. Telephone, or similar suitable means of communications, shall be set up between the two winches, the pumping unit and the monitor control.
- F. TV inspection will be done one manhole section at a time and the flow in the section being inspected will be suitably controlled. Sewer flow will not exceed those shown below as measured in the manhole:

6" - 10" Pipe	1 inch
12" - 14" Pipe	2 inches
14" - 24" Pipe	3 inches
Over 24" Pipe	4 inches
- G. The Contractor will make all provisions for pumping or bypassing the flow around the manhole section and the cost shall be incidental to TV inspection. Contractor shall not be allowed to float the camera unless permitted by the Little Rock Wastewater Utility.

PART 2 - PRODUCTS

2.01 TELEVISION INSPECTION EQUIPMENT

- A. The television camera and monitoring equipment shall be specifically designed and constructed to perform the work as specified. The camera shall be operative in conditions of 100% humidity and/or under water. The camera shall be small enough to pass through a 6 inch diameter sewer and shall be waterproof with a self contained lighting system capable of producing enough light to produce clear, bright, sharp pictures on the monitor. The lighting and camera quality shall be suitable to allow a clear, in focus picture of a minimum of 6 linear feet of the entire inside periphery of the sewer pipe. Picture quality and definition shall be to the satisfaction of the Little Rock Wastewater Utility, otherwise, the equipment shall be removed from the line.
- B. The monitor shall be located within a temperature controlled television unit that will accommodate three people to watch the sewer line inspection. The monitor will have a 12 inch minimum viewing screen. The Engineer of Record and a representative of the Little Rock Wastewater Utility will have access to view the television monitor at all times.

PART 3 - EXECUTION

3.01 GENERAL

All television inspection will be performed by Little Rock Wastewater Utility crews during the initial phase of the television inspection. The Owner/Contractor will use the services of a company of his choice, that meets the specifications listed above, if any addition television inspection is required. See Section 01100 Subsection 7.03.

3.02 TELEVISION INSPECTION BY THE CONTRACTOR

- A. When additional television inspection is required, the Contractor shall furnish videos of the lines televised to the Engineering Services Department of the Little Rock Wastewater Utility for review and comments. The video media shall be CD, or DVD format. Software used in viewing the video will be provided the Utility if necessary. Each video media shall be permanently labeled with the following information furnished:
1. Project Name
 2. Manhole to Manhole Designation
 3. Name of Contractor
 4. Date Televised
- B. The following information shall be recorded and visible onscreen for 10 seconds immediately before the start of televising each line segment:
1. Project Name
 2. Manhole to Manhole Designation (Number, Pipe Material, Size of Line, and Direction of Televising)
 3. Name of Contractor
 4. Date Televised
 5. Street and or Easement Location
- C. A continuous uninterrupted recording of distance from the insertion manhole shall be visible at the lower left corner of the screen at all times during inspection.
- D. The following information shall be provided in hard copy to accompany each tape:
1. Project Name
 2. Name of Contractor
 3. Date Televised
 4. Street or Other Location
 5. Upstream Manhole Designation
 6. Downstream Manhole Designation
 7. Pipe Material

8. Pipe Diameter
 9. Direction of Televising (Downstream or Upstream)
 10. Location of Service Connections
- E. Videos will become the property of the Utility and will be retained by the Department of Engineering Services. If the videos are of such poor quality that the Utility is unable to evaluate the condition of the sewer line or to locate service connections, the Contractor will be required to retelevise and provide a good video of the line.

END OF SECTION 02762

SECTION 02930
LAWNS AND GRASSES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This Section covers the replacement of sod in lawns disturbed by the construction.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling, and Compacting

1.03 SCOPE OF WORK

- A. This Section covers the furnishing and placing of sod to form solid mats on areas disturbed by the Contractor.
- B. It covers the furnishing and applying of water for sod.
- C. It covers the furnishing and placing of four (4) inches of topsoil on areas.
- D. It covers the furnishing and placing of fertilizer.
- E. All work shall be in accordance with details noted in these specifications.

PART 2 - PRODUCTS

2.01 SOD

- A. Solid sod shall be cut from well established viable Bermuda, Zoysia or St. Augustine grass. Sod type shall match that established in the disturbed areas.

2.02 TOPSOIL

- A. Topsoil shall be reasonably free from subsoil, clay, lumps, brush, objectionable weeds and/or other litter and shall be free from roots and toxic substances or other material or substances that might be harmful to plant growth or be a hindrance to grading, planting and maintenance operations.

2.03 FERTILIZER

Fertilizer shall be a standard commercial product complying with State and Federal laws and with the requirements issued by proper authorities.

- A. Fertilizer shall be delivered to the site in the manufacturer's original container, on which shall be plainly marked the manufacturer's name and the guaranteed chemical analysis.
- B. Except as noted in the following sentence, fertilizer shall contain not less than the percentages by weight of ingredients as follows:

Nitrogen	- 12 percent
Phosphorus, P205	- 12 percent
Potash, K2	- 12 percent

Other 1:1:1 ratio fertilizers may be used, provided the available plant food remains the same as herein specified.

- C. All fertilizer shall be solid and shall be in a condition which will permit proper distribution.

2.04 WATER

- A. Water shall be free from any substances, in solution or in suspension, which would inhibit the rapid growth of grass.

PART 3 - EXECUTION

3.01 SOD PLACEMENT

- A. In this paragraph, "Solid Sod" is interchangeable with the word "sod."
- B. Solid sod or topsoil shall not be placed until all other items of work are complete.
- C. Areas to be sodded shall be shaped in such manner that they will, after placement of sod, conform to the typical sections.
- D. Prior to placing the topsoil in the areas designated, the ground surface shall be cleared of materials that might hinder proper grading, tillage, or subsequent maintenance operations such as stumps, stones, roots, cable, wire, grade stakes, etc., and brought to four (4) inches below the finished grade. The areas shall then be thoroughly tilled to a depth of at least two (2) inches by plowing, disking, harrowing or other acceptable means.
- E. The Contractor shall then obtain an approved topsoil from any available source and place uniformly on the designated areas and spread evenly to a minimum thickness of four (4) inches. Irregularities in the surface shall be corrected so as to prevent formation of depressions where water will stand. TOPSOIL SHALL NOT BE PLACED WHEN THE SUBGRADE IS FROZEN, EXCESSIVELY WET, OR IN A CONDITION DETRIMENTAL TO THE PROPOSED PLANTING AND PROPER GRADING.
- F. After the topsoil has been spread and graded, the surface shall be cleared of stones, stumps or other objects that might hinder planting or maintenance preparations. Paved areas over which hauling operations are conducted shall be kept clean.

- G. Where any portion of the surface becomes gullied or otherwise damaged, the affected areas shall be repaired to the aforementioned condition.

3.02 FERTILIZER APPLICATION

- A. Fertilizer shall be applied to the loosened layers (two (2) inches deep) at the rate of one and one-half (1-1/2) pounds per 100 square feet for all areas, regardless of whether topsoil has been added. Distribution shall be uniform.

3.03 WATERING

- A. Prior to placement of sod, areas shall be sprinkled with water sufficiently to make them moist, but not muddy. The initial application of water may be omitted if the area is sufficient moist from rainfall.
- B. Immediately following the placing and tamping of sod, the covered area shall be wetted thoroughly. Subsequent applications of water shall be as required.

3.04 COMPLETENESS

- A. The sodding operations shall not be considered complete until it has produced areas of solid, living grass.

3.05 INTERMITTENT CLEANUP

- A. Immediately following the sodding operations, all gutters, sidewalks, driveways, street pavement, yard or other areas shall be cleaned of all debris, excess sod, topsoil or other objectionable matter. All such cleanup operations shall be completed before sodded areas are measured for payment.

END OF SECTION 02930

SECTION 02935
GROUND COVER

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Consists of furnishing and applying fertilizer, seed, mulch cover, asphalt and water at all locations disturbed by the construction.
- B. Maintenance service.

1.02 QUALITY ASSURANCE

- A. Perform work with personnel experienced in the work required of this section under direction of a skilled foreman.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver plant materials to the site in accordance with Owner's policies and requirements.
- B. Keep grass seed and fertilizer dry and out of the weather.

1.04 WARRANTY

- A. Provide one year warranty from date of final acceptance.
- B. Replace areas found dead, or not in a healthy growing condition.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Fertilizer shall be commercial grade, uniform in composition, free flowing and suitable for application with mechanical equipment, delivered to the site in labeled containers, conforming to current fertilizer laws and bearing the name, trademark and warranty of the producer.
- B. The seed shall be labeled in accordance with current rules and regulations of the U.S. Department of Agriculture and shall have a minimum of 98% pure seed and 85% germination by weight, and shall contain no more than 1% weed seeds. A combined total of 50 noxious weed seeds shall be the maximum amount allowed per pound of seed with the following exceptions: Johnson grass seed, wild onion seed, wild garlic seed, field bindweed seed, or nut grass seed will not be allowed in any amount whatsoever. Seed shall be furnished in sealed, standard containers. Seed which has become wet, moldy or otherwise damaged in transit or in storage will not be acceptable.
- C. Legumes shall be inoculated with an approved culture as recommended by the manufacturer, just prior to seeding. After planting, watering will continue after germination until growth is established.
- D. Seed shall be composed of the varieties and amount by weight as shown below, based on time of application:

	Weight Lbs.
	<u>Per Acre</u>
<u>February 15 - March 15</u>	
Tall Fescue (Ky. 31)	35
Weeping Love Grass (Eragrostis Currala)	5
Lespedeza (Kobe)	35

March 15 - June 1

Bermuda Grass (Common), Hulled	10
Weeping Love Grass (Eragrostis Currala)	5
Bahia (Pensacola)	20
Lespedeza (Kobe)	35

June 1 - September 15

Weeping Love Grass (Eragrostis Currala)	5
Bermuda Seed (Common), Hulled	5
Bermuda Seed (Common), Unhulled	10
Bahia Grass(Pensacola)	20
Brown Top Millet	15

September 15 - November 15

Tall Fescue (Ky.31)	35
Rye Grass (Annual)	10
Crimson Clover (Dixie)	20

- E. Much cover shall consist of straw. Mulch shall be dry and reasonably free from Johnson grass or other noxious weeds, and shall not be excessively brittle or in an advanced state of decomposition. All material will be inspected and approved prior to use.
- F. Asphalt in mulch cover shall be of such quality that the mulch cover will be bound together to form a cover mat which will stay intact under normal climatic conditions.
- G. Water shall be of irrigation quality and free of impurities that would be detrimental to plant growth.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Areas to be seeded shall be dressed to natural shape.
- B. The seed bed shall be thoroughly pulverized by means of disk harrows or other approved methods, thoroughly mixing soil to a depth of not less than 6 inches.
- C. Fertilizer shall be applied at the rate of 800 pounds per acre of 10-20-10, or the equivalent amount of plant food. Fertilizer shall be uniformly incorporated into the soil to a depth of at least 2 inches.
- D. Broadcast sowing of seed may be accomplished by hand seeders or by approved poser equipment. Either method shall result in uniform distribution and no work shall be performed during high winds. The area seeded shall be lightly firmed with a cultipacker immediately after broadcast.
- E. Mulch cover shall be applied at the rate of 4,000 pounds per acre immediately after seeding and shall be spread uniformly over the entire area by approved poser mulching equipment.
- F. Immediately following or during the application of the mulch cover on seeded area, asphalt shall be applied at the rate of 0.05 gallons per square yard.
- G. After application of the mulch cover, water shall be applied in sufficient quantity to thoroughly moisten the soil to the depth of pulverization and then as necessary to germinate the seed and maintain growth.
- H. The contractor shall water and maintain seeded areas from time of completion until final acceptance of the project.
- I. The contractor shall be responsible for establishing ground cover on all disturbed areas. Repeated seeding shall be required if necessary throughout the warranty period.

END OF SECTION 02935

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers cast-in-place concrete materials, reinforcing steel, forms, and finishing in conjunction with sanitary sewer pipeline construction.
- B. Use Class A Concrete in all manholes and other structures.
- C. Use Class B Concrete for bedding and encasement only.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling, and Compacting
- B. Section 02575 - Pavement Repair
- C. Section 02605 - Manholes
- D. Section 02730 - Sanitary Sewer Pipelines
- E. Section 02732 - Sanitary Sewer Service Lines

1.03 QUALITY ASSURANCE

Not used.

1.04 SUBMITTALS

- A. Submit mix design, equipment details, and vendor name for field batched concrete.

1.05 REFERENCES

Not used.

PART 2 - PRODUCTS

2.01 CONCRETE

- A. Concrete: composed of Portland Cement; fine and coarse aggregate; water; and, an air entraining agent. Provide either Class A concrete or Class B concrete as described below.
- B. For Class A concrete use ready-mixed concrete; conform to ASTM C 94, latest edition; deliver and place within one hour after all materials have been placed in the mixing drum.
- C. For Class B concrete use ready-mixed or field mixed concrete.
- D. Proportion components, except water, by weight. Water may be measured by volume. One sack of Portland Cement consists of one cubic foot or 94 pounds. Proportion components to meet these requirements:
 - 1. Class A Concrete:
 - a. Minimum sacks of cement per cubic yard: six (6)
 - b. Slump range: 2 - 4 inches
 - c. Minimum 28 day compressive strength: 4000 PSI
 - d. Air Content: 4 - 7 percent
 - 2. Class B Concrete:
 - a. Minimum sacks of cement per cubic yard: five (5)
 - b. Slump range: 2 - 4 inches
 - c. Minimum 28 day compressive strength: 3000 PSI
 - d. Air Content: Not Applicable

- E. Cement: Portland Cement conforming to AASHTO M 85, Type I. Use Type III cement (high early strength) only if approved by the Little Rock Wastewater Utility.
- F. Water: potable water free from injurious amounts of acids, alkalis, oils, sewage, vegetable matter and dirt.
- G. Air entraining agent: use in all Class A concrete; conform to AASHTO M 154; add to the mixing water in solution; proportion to provide four (4) to seven (7) percent air in the concrete.
- H. Fine aggregate: clean, hard, durable particles of natural sand free from injurious amounts of organic impurities; conform to the gradation requirements of AASHTO T 27.
- I. Coarse aggregate: clean, hard and durable crushed stone or washed gravel; reasonably well graded from course to fine; per AASHTO T 27.

2.02 REINFORCING STEEL

- A. Steel bars: deformed, conforming to ASTM A 615 or A 617.
- B. Steel wire: conform to ASTM A 82, Cold-Drawn Steel Wire for Concrete Reinforcement.
- C. Wire mesh: conform to ASTM A 185; gauge and mesh per plans.
- D. Submit reinforcing steel bars shop drawings for approval.
- E. All steel reinforcement: free from rust, scale, mortar, dirt, or other objectionable coatings.

PART 3 - EXECUTION

- A. Perform excavation per Section 02220 - Excavation, Backfilling, and Compacting.
- B. Build forms neat, square, and flat so concrete will have smooth finish when forms are pulled. Construct forms to provide finished concrete to dimensions shown on plans.

- C. Place reinforcing steel accurately in accordance with details shown on the plans and properly secure in position.
- D. Vibrate all structural concrete as it is placed using internal vibrators capable of transmitting vibration to the concrete at frequencies not less than 4,500 impulses per minute. Do not use form vibrators. Limit vibration to provide satisfactory consolidation without causing segregation. Do not insert vibrator more than six (6) inches into the lower courses previously vibrated. Use vibrators in a substantially vertical position; insert at uniformly spaced points no farther apart than the visible effectiveness of the vibrator.
- E. Vibration is not required in manhole bases and pipe encasements; consolidate concrete in these places with a tamping rod so a dense void free mass is formed.
- F. Allow concrete to cure for at least 48 hours before stripping forms. If concrete is in a structural member, do not remove forms until the concrete can withstand safely all superimposed loads.
- G. On all exposed surfaces, including the inside surface of manholes, remove all fins and projections so the surface is smooth. Cut out and fill with grout any honeycombed areas. Extensive honeycombing is not allowable.

END OF SECTION 03300

SECTION 03400
CLEARING FOR CONSTRUCTION ACCESS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Excavation, grading, cutting and removal of trees, shrubs and underbrush, and the removal of any debris existing above natural ground surface and within the cleared area necessary to permit the construction of the improvements.

1.02 RELATED WORK

- A. Section 02605 - Manholes
- B. Section 02730 - Sanitary Sewer Pipelines
- C. Section 02732 - Sanitary Sewer Service Lines
- D. Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes and Service Lines

1.03 PROTECTION

- A. In all cases the Contractor is responsible for protecting public and private property: and, protecting any person or persons who might be injured as a result of the Contractor's work.
- B. The Contractor is responsible for verifying locations of all utilities and contacting the Arkansas One Call System before excavating.

PART 2 - MATERIALS

Not used

PART 3 - EXECUTION

3.01 GENERAL

- A. The Contractor will be required to submit a plan to build access roads/trails for approval by the Engineer of Record.
- B. Trees, shrubs, underbrush and debris removed from the improvement right of way shall be disposed of by the Contractor in a manner approved by the Engineer of Record.

END OF SECTION 03400

SECTION 03500
GROUT FILL ABANDONED SEWER PIPELINES

PART 1 - GENERAL

1.01 GENERAL

- A. This section covers the materials and procedures used in grout filling abandoned sewer pipelines with a lightweight, pumpable cementitious mix.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling, and Compacting
- B. Section 02730 - Sanitary Sewer Pipelines

1.03 SUBMITTALS

- A. Submit to the Engineer of Record for review and approval all materials and procedures to be used in grout filling of abandoned lines.

PART 2 - PRODUCTS

2.01 CEMENTITIOUS GROUT

- A. Cementitious grout shall consist of a preblend of lightweight aggregate, cement, fly ash and admix to prevent segregation and promote expansion upon setting. Loose bulk density for the dry mix materials shall be 30 to 35 pounds per cubic foot. Grout shall equal or exceed Strong-Seal Grout 250 - Product Code 2133 and shall be packaged in 2 cubic foot bags.

2.02 FLOWABLE FILL

- A. Flowable fill shall conform to Section 206 – Flowable Select Material of the Arkansas State Highway and Transportation Department’s Standard Specifications for Highway Construction, latest edition.

2.03 WATER

- A. Potable water free from injurious amounts of acids, alkalies, oils, sewage, vegetable matter and dirt shall be used.

PART 3 - EXECUTION

3.01 GENERAL

- A. Components shall be combined and thoroughly mixed in an approved mixer to a uniform pumpable mix. Equipment shall be of special design to insure proper mixing in as short a duration as possible. A water meter or measuring tank shall be utilized to insure that a correct and consistent mix is produced for pumping and flow to fill voids. Mixing and pumping shall be continuous and at such a rate as to insure that voids are filled prior to setting of mix. A pressure gauge shall be used to insure a continuous uniform flow of high quality grout without shutdowns or delays.

END OF SECTION 03500

SECTION 04000
STANDARD DOCUMENTS

PART 1 - GENERAL

1.01 GENERAL

- A. This section provides all the Standard Documents associated with these specifications..

1.02 RELATED WORK

- A. Section 01100 – Requirements For Developer Funded Projects

PART 2 – Documents

	Page
SEWER MAINTENANCE BOND	2
BILL OF SALE	3-4
AFFIDAVIT OF COMPLETION	5
RIGHT OF WAY EASEMENT (CORPORATION)	6-8
RIGHT OF WAY EASEMENT (JOINT TENANT)	9-11
RIGHT OF WAY EASEMENT (MARRIED COUPLE)	12-14
RIGHT OF WAY EASEMENT (SINGLE PERSON)	15-17

SEWER MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT, _____, as Principal; and, _____, as surety are held and firmly bound unto the Little Rock Wastewater Utility, as Obligee, in the amount of _____ Dollars (\$ _____) for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

NOW, THEREFORE, the condition of this obligation is such that if the Principal, upon receiving notice within a period of one year from the date of acceptance of these sanitary sewer lines and appurtenances by the Little Rock Wastewater Utility, of defects or necessary maintenance in the following improvements: SANITARY SEWER LINES AND APPURTENANCES THERETO THAT SERVE _____, shall promptly correct said defects and perform the necessary maintenance in keeping with the requirements of the Wastewater Utility in accordance with the requirements of SPECIFICATION REQUIREMENTS FOR SANITARY SEWERS, then such obligation shall be null and void; otherwise, it shall remain in full force and effect. Any suit under this bond must be instituted before the expiration of three (3) months from the end of the period of notification referred to in the preceding paragraph thereof.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators, or successors of Owner.

Signed and sealed this _____ day of _____, 200__.

Principal

By: _____

Surety

By: _____

BILL OF SALE

STATE OF ARKANSAS) ss
)
COUNTY OF)

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned _____ for and in consideration of the permission and consent of the Little Rock Wastewater Utility, to connect the sewer facilities hereinafter described to the Little Rock Wastewater Utility sanitary sewer system and the sum of One Dollar to the undersigned cash in hand paid by the Little Rock Wastewater Utility, the receipt of which is hereby acknowledged, does hereby bargain, sell, convey, assign, transfer and deliver to the Little Rock Wastewater Utility the following described property:

The completed sewer project known as _____, including all pipe, machinery, equipment, pumps, fixtures and any and all other appurtenances thereto installed in the completed sewer project mentioned above.

TO HAVE AND TO HOLD the same unto the Little Rock Wastewater, its successors and assigns forever.

The undersigned does hereby warrant that all of the costs of the installation of the sanitary sewer project mentioned above have been paid in full and that the same is free from any and all encumbrances.

WITNESS OUR HANDS AND SEALS THIS _____
Day of _____, 20__.

_____(SEAL)
_____(SEAL)
_____(SEAL)
_____(SEAL)

AFFIDAVIT OF COMPLETION

The undersigned, sponsor of the sewer project designated _____, in accordance with the policy adopted by the Little Rock Wastewater Utility Sewer Committee, does hereby certify that the construction of the sewer facilities in said sewer project were completed in accordance with the approved plans and specifications of the engineer for said project; that the cost of the said project was the total sum of \$ _____; and that all bills and accounts for materials, labor and services have been paid in full.

Executed this day of _____, 20__

I, _____, state on oath that I am the _____ of the sponsor of the above mentioned sewer project which is being connected to the Little Rock Wastewater Utility sanitary sewer system. I further state on oath that the information represented in this certificate is true and correct to the best of my knowledge and belief.

RIGHT OF WAY EASEMENT
(CORPORATION)

KNOW ALL MEN BY THESE PRESENT:

THAT _____, **GRANTOR**, a corporation organized under and by virtue of the laws of the State of _____, by _____ its President and _____, its Secretary, duly authorized by proper resolution of its Board of Directors, for and in consideration of the sum of _____ (\$ _____), and other valuable consideration paid by the Little Rock Sanitary Sewer Committee, the receipt of which is hereby acknowledged, do hereby, subject to prior recorded mortgages and easements, if any, grant, bargain, sell and convey unto the City of Little Rock, Arkansas, for the use and benefit of the Little Rock Sanitary Sewer Committee, **GRANTEE**, and unto its successors and assigns forever, the following described easements:

1. **A PERMANENT RIGHT, PRIVILEGE AND EASEMENT** for the purpose of permitting the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to clear and keep clear the surface of the right-of-way to (a) lay, construct, operate, maintain, repair, replace, reconstruct, test, inspect and add sewer mains and sewer lines whether one or more, and without the payment of additional compensation thereof; (b) keeping the easement clear of all buildings and other improvements of any kind ; and (c) having the right to free ingress and egress across adjacent lands of the **Grantor** to the lands hereinafter described. Subject to prior easement of record and except as hereinafter stated, the Little Rock Sanitary Sewer Committee shall have the exclusive use of this right-of-way and easement; and the **Grantor** may hereinafter use the surface of the easement for any purpose not inconsistent with the rights hereby conveyed, but may not place a building, footing, wall, structure, or other improvement upon the right-of-way except that, after the initial sewer construction is completed, the **Grantor** may pave the easement surface and may use it for driveways, walks or parking areas. The **Grantor** may permit other utility service to cross this easement at approximately right angles, but only if such utilities first comply with whatever specifications the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility may designate at the time for the protection of its own facilities. This permanent easement shall be upon the following described lands situated in Pulaski County, Arkansas, to-wit:

(Description)

2. **A TEMPORARY RIGHT, PRIVILEGE AND EASEMENT** for the purpose of permitting the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to remove necessary trees and obstructions therefrom and to make excavations, store excavated materials, tools, supplies and equipment and provide working space. This temporary easement shall begin when the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility commence the initial work on the permanent easement and shall terminate one year after that date or when that work is completed, whichever is earlier. This temporary easement shall be upon the following described lands situated in Pulaski County, Arkansas, to-wit:

(Description)

Upon completion of the initial or any subsequent work by the Little Rock Sanitary Sewer Committee, the Little Rock Sanitary Sewer Committee shall backfill and thoroughly compact all excavations to minimize settling and shall level the surface over its excavations and pipelines, remove all excess excavated materials and debris and leave the premises in a clean sanitary condition. If the initial or any subsequent work by the Little Rock Sanitary Sewer Committee damages any improvements or landscaping upon the rights-of-way, Little Rock Sanitary Sewer Committee, at its expense, shall repair or replace the damaged portion with materials of like quality and as nearly as possible to its prior condition.

The execution of this easement does not give the **Grantor** the right to connect to or receive service from any sewer or wastewater facility; the right to make connections and receive service shall be subject to the rules, regulations, policies or ordinances in effect at the time of application.

To have and to hold said easements, rights and privileges unto the **Grantee**, and unto its successors and assigns forever, for the purposes aforesaid,

And **Grantor** covenants with **Grantee**, its successors and assigns, that subject to prior recorded mortgages and easements, if any, it will forever warrant and defend title to said easements and rights against the claims of all persons whomsoever and that **Grantee**, its successors and assigns, shall have at all times the quiet use and enjoyment of said easements and rights.

IN WITNESS WHEREOF, the name of the **Grantor** is hereunto affixed by _____ its President and its seal affixed by _____ its Secretary, this _____ day of _____, 2001.

(CORPORATION NAME)

By: _____
President

ATTEST:

Secretary (Affix Seal)

ACKNOWLEDGEMENT

STATE OF)
)
COUNTY OF)

On this day personally appeared before the undersigned, a Notary Public, within and for the County and State aforesaid, commissioned and acting, _____, to me well known, who stated that he is the President of _____, and is duly authorized in his/her capacity to execute the foregoing easement for and in the name and behalf of _____, and further stated and acknowledged that he/she has so signed, executed and delivered said easement for the consideration, uses and purposes therein mentioned and set forth.

Witness my hand and official seal on this _____ day of _____, 2001.

Notary Public

My Commission Expires:

(SEAL)

RIGHT OF WAY EASEMENT

KNOW ALL MEN BY THESE PRESENT:

That we, _____ and _____, joint tenants with rights of survivorship, **GRANTORS**, for and in consideration of the sum of _____ (\$ _____), and other valuable consideration paid by the Little Rock Sanitary Sewer Committee, the receipt of which is hereby acknowledged, do hereby, subject to prior recorded mortgages and easements, if any, grant, bargain, sell and convey unto the City of Little Rock, Arkansas, for the use and benefit of the Little Rock Sanitary Sewer Committee, **GRANTEE**, and unto its successors and assigns forever, the following described easements:

1. **A PERMANENT RIGHT, PRIVILEGE AND EASEMENT** for the purpose of permitting the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to clear and keep clear the surface of the right-of-way to (a) lay, construct, operate, maintain, repair, replace, reconstruct, test, inspect and add sewer mains and sewer lines whether one or more, and without the payment of additional compensation thereof; (b) keeping the easement clear of all buildings and other improvements of any kind; and (c) having the right to free ingress and egress across adjacent lands of the **Grantors** to the lands hereinafter described. Subject to prior easement of record and except as hereinafter stated, the Little Rock Sanitary Sewer Committee shall have the exclusive use of this right-of-way and easement; and the **Grantors** may hereinafter use the surface of the easement for any purpose not inconsistent with the rights hereby conveyed, but may not place a building, footing, wall, structure, or other improvement upon the right-of-way except that, after the initial sewer construction is completed, the **Grantors** may pave the easement surface and may use it for driveways, walks or parking areas. The **Grantors** may permit other utility service to cross this easement at approximately right angles, but only if such utilities first comply with whatever specifications the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility may designate at the time for the protection of its own facilities. This permanent easement shall be upon the following described lands situated in Pulaski County, Arkansas, to-wit:

(Description)

2. **A TEMPORARY RIGHT, PRIVILEGE AND EASEMENT** for the purpose of permitting the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to remove necessary trees and obstructions therefrom and to make excavations, store excavated materials, tools, supplies and equipment and provide working space. This temporary easement shall begin when the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility commence the initial work on the permanent easement and shall terminate one year after that date or when that work is completed, whichever is earlier. This temporary easement shall be upon the following described lands situated in Pulaski County, Arkansas, to-wit:

(Description)

Upon completion of the initial or subsequent work by the Little Rock Sanitary Sewer Committee, the Little Rock Sanitary Sewer Committee shall backfill and thoroughly compact all excavations to minimize settling and shall level the surface over its excavations and pipelines, remove all excess excavated materials and debris and leave the premises in a clean sanitary condition. If the initial or subsequent work by the Little Rock Sanitary Sewer Committee damages any improvements or landscaping upon the right-of-way, Little Rock Sanitary Sewer Committee, at its expense, shall repair or replace the damaged portion with materials of like quality and as nearly as possible to its prior condition.

The execution of this easement does not give the **Grantors** the right to connect to or receive service from any sewer or wastewater facility; the right to make connections and receive service shall be subject to the rules, regulations, policies or ordinances in effect at the time of application.

To have and to hold said easements, rights and privileges unto the **Grantee**, and unto its successors and assigns forever, for the purposes aforesaid.

And **Grantors** covenant with **Grantee**, its successors and assigns, that subject to prior recorded mortgages and easements, if any, they will forever warrant and defend title to said easements and rights against the claims of all persons whomsoever and that **Grantee**, its successors and assigns, shall have at all times the quiet use and enjoyment of said easements and rights.

And we, _____ and _____, joint tenants with rights of survivorship, for and in consideration of said sum of money, do hereby release and relinquish unto said **Grantee**, and unto its successors and assigns forever, all our right and possibility of curtesy, dower, and homestead in and to the said lands.

Witness our hands this _____ day of _____, 2001.

ACKNOWLEDGEMENT

STATE OF)
)
COUNTY OF)

On this day before the undersigned, a Notary Public, duly qualified and acting in and for the county and state aforesaid, personally appeared _____, to me well known to be the person whose name appears as the GRANTOR in the foregoing instrument, and stated that he/she has executed the same for the consideration, uses and purposes therein stated.

In witness whereof, I hereunto set my hand and seal on the _____ day of _____, 2001.

Notary Public

My Commission Expires:

(SEAL)

ACKNOWLEDGEMENT

STATE OF)
)
COUNTY OF)

On this day before the undersigned, a Notary Public, duly qualified and acting in and for the county and state aforesaid, personally appeared _____, to me well known to be the person whose name appears as the GRANTOR in the foregoing instrument, and stated that he/she has executed the same for the consideration, uses and purposes therein stated.

In witness whereof, I hereunto set my hand and seal on the _____ day of _____, 2001.

Notary Public

My Commission Expires:

(SEAL)

RIGHT OF WAY EASEMENT

KNOW ALL MEN BY THESE PRESENT:

That we, _____ and _____, wife and husband, **GRANTORS**, for and in consideration of the sum of _____ Dollars (\$ _____), and other valuable consideration paid by the Little Rock Sanitary Sewer Committee, the receipt of which is hereby acknowledged, do hereby, subject to prior recorded mortgages and easements, if any, grant, bargain, sell and convey unto the City of Little Rock, Arkansas, for the use and benefit of the Little Rock Sanitary Sewer Committee, **GRANTEE**, and unto its successors and assigns forever, the following described easements:

1. **A PERMANENT RIGHT, PRIVILEGE AND EASEMENT** for the purpose of permitting the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to clear and keep clear the surface of the right-of-way to (a) lay, construct, operate, maintain, repair, replace, reconstruct, test, inspect and add sewer mains and sewer lines whether one or more, and without the payment of additional compensation thereof; (b) keeping the easement clear of all buildings and other improvements of any kind; and (c) having the right to free ingress and egress across adjacent lands of the **Grantors** to the lands hereinafter described. Subject to prior easement of record and except as hereinafter stated, the Little Rock Sanitary Sewer Committee shall have the exclusive use of this right-of-way and easement; and the **Grantors** may hereinafter use the surface of the easement for any purpose not inconsistent with the rights hereby conveyed, but may not place a building, footing, wall, structure, or other improvement upon the right-of-way except that, after the initial sewer construction is completed, the **Grantors** may pave the easement surface and may use it for driveways, walks or parking areas. The **Grantors** may permit other utility service to cross this easement at approximately right angles, but only if such utilities first comply with whatever specifications the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility may designate at the time for the protection of its own facilities. This permanent easement shall be upon the following described lands situated in Pulaski County, Arkansas, to-wit:

(Description)

2. **A TEMPORARY RIGHT, PRIVILEGE AND EASEMENT** for the purpose of permitting the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to remove necessary trees and obstructions therefrom and to make excavations, store excavated materials, tools, supplies and equipment and provide working space. This temporary easement shall begin when the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility commence the initial work on the permanent easement and shall terminate one year after that date or when that work is completed, whichever is earlier. This temporary easement shall be upon the following described lands situated in Pulaski County, Arkansas, to-wit:

(Description)

Upon completion of the initial or any subsequent work by the Little Rock Sanitary Sewer Committee, the Little Rock Sanitary Sewer Committee shall backfill and thoroughly compact all excavations to minimize settling and shall level the surface over its excavations and pipelines, remove all excess excavated materials and debris and leave the premises in a clean sanitary condition. If the initial or any subsequent work by the Little Rock Sanitary Sewer Committee damages any improvements or landscaping upon the rights-of-way, Little Rock Sanitary Sewer Committee, at its expense, shall repair or replace the damaged portion with materials of like quality and as nearly as possible to its prior condition.

The execution of this easement does not give the **Grantors** the right to connect to or receive service from any sewer or wastewater facility; the right to make connections and receive service shall be subject to the rules, regulations, policies or ordinances in effect at the time of application.

To have and to hold said easements, rights and privileges unto the **Grantee**, and unto its successors and assigns forever, for the purposes aforesaid,

And **Grantors** covenant with **Grantee**, its successors and assigns, that subject to prior recorded mortgages and easements, if any, they will forever warrant and defend title to said easements and rights against the claims of all persons whomsoever and that **Grantee**, its successors and assigns, shall have at all times the quiet use and enjoyment of said easements and rights.

And we, _____ and _____, for and in consideration of said sum of money, do hereby release and relinquish unto said **Grantee**, and unto its successors and assigns forever, all our right and possibility of curtesy, dower, and homestead in and to the said lands.

Witness our hands this _____ day of _____, 2001.

ACKNOWLEDGEMENT

STATE OF ARKANSAS)
)
COUNTY OF PULASKI)

On this day before the undersigned, a Notary Public, duly qualified and acting in and for the county and state aforesaid, personally appeared _____, to me well known to be the person whose name appears as the GRANTOR in the foregoing instrument, and stated that he/she has executed the same for the consideration, uses and purposes therein stated.

And on the same day also voluntarily and personally appeared before me _____, husband/wife of the said _____, to me well known to be the person whose name appears as GRANTOR in the foregoing instrument, and stated that he/she has executed the foregoing instrument of his/her own free will and has signed and sealed the relinquishment of curtesy/dower and homestead therein expressed, for the purposes and consideration therein stated.

In witness whereof, I hereunto set my hand and seal on the _____ day of _____, 2001.

Notary Public

My Commission Expires:

(SEAL)

RIGHT OF WAY EASEMENT

KNOW ALL MEN BY THESE PRESENT:

That I, _____ **GRANTOR**, for and in consideration of the sum of _____ Dollars (\$ _____), and other valuable consideration paid by the Little Rock Sanitary Sewer Committee, the receipt of which is hereby acknowledged, do hereby, subject to prior recorded mortgages and easements, if any, grant, bargain, sell and convey unto the City of Little Rock, Arkansas, for the use and benefit of the Little Rock Sanitary Sewer Committee, **GRANTEE**, and unto its successors and assigns forever, the following described easements:

1. **A PERMANENT RIGHT, PRIVILEGE AND EASEMENT** for the purpose of permitting the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility to clear and keep clear the surface of the right-of-way to (a) lay, construct, operate, maintain, repair, replace, reconstruct, test, inspect and add sewer mains and sewer lines whether one or more, and without the payment of additional compensation thereof; (b) keeping the easement clear of all buildings and other improvements of any kind; and (c) having the right to free ingress and egress across adjacent lands of the **Grantor** to the lands hereinafter described. Subject to prior easement of record and except as hereinafter stated, the Little Rock Sanitary Sewer Committee shall have the exclusive use of this right-of-way and easement and the **Grantor** may hereinafter use the surface of the easement for any purpose not inconsistent with the rights hereby conveyed, but may not place a building, footing, wall, structure, or other improvement upon the right-of-way except that, after the initial sewer construction is completed, the **Grantor** may pave the easement surface and may use it for driveways, walks or parking areas. The **Grantor** may permit other utility service to cross this easement at approximately right angles, but only if such utilities first comply with whatever specifications the Little Rock Sanitary Sewer Committee and the Little Rock Wastewater Utility may designate at the time for the protection of its own facilities. This permanent easement shall be upon the following described lands situated in Pulaski County, Arkansas, to-wit:

(Description)

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that date or when that work is completed, whichever is earlier. This temporary easement shall be upon the following described lands situated in Pulaski County, Arkansas, to-wit:

(Description)

Upon completion of the initial or any subsequent work by the Little Rock Sanitary Sewer Committee, the Little Rock Sanitary Sewer Committee shall backfill and thoroughly compact all excavations to minimize settling and shall level the surface over its excavations and pipelines, remove all excess excavated materials and debris and leave the premises in a clean sanitary condition. If the initial or any subsequent work by the Little Rock Sanitary Sewer Committee damages any improvements or landscaping upon the rights-of-way, Little Rock Sanitary Sewer Committee, at its expense, shall repair or replace the damaged portion with materials of like quality and as nearly as possible to its prior condition.

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To have and to hold said easements, rights and privileges unto the **Grantee**, and unto its successors and assigns forever, for the purposes aforesaid,

And **Grantor** covenants with **Grantee**, its successors and assigns, that subject to prior recorded mortgages and easements, if any, he will forever warrant and defend title to said easements and rights against the claims of all persons whomsoever and that **Grantee**, its successors and assigns, shall have at all times the quiet use and enjoyment of said easements and rights.

And I, _____, for and in consideration of said sum of money, do hereby release and relinquish unto said **Grantee**, and unto its successors and assigns forever, all my right and possibility of curtesy, dower, and homestead in and to the said lands.

Witness my hand this _____ day of _____, 2001.

ACKNOWLEDGEMENT

STATE OF)
)
COUNTY OF)

On this day before the undersigned, a Notary Public, duly qualified and acting in and for the county and state aforesaid, personally appeared _____, to me well known to be the person whose name appears as the GRANTOR in the foregoing instrument, and stated that he/she has executed the same for the consideration, uses and purposes therein stated.

In witness whereof, I hereunto set my hand and seal on the _____ day of _____, 2001.

Notary Public

My Commission Expires:

(SEAL)

END OF SECTION 04000

SECTION 05000
STANDARD DRAWINGS

PART 1 - GENERAL

1.01 GENERAL

- A. This section provides all the Standard Drawings associated with these specifications..

1.02 RELATED WORK

- A. All Sections

PART 2 – Drawings

Section 1 – Standard Construction Details

- 1.0 Standard Precast Manhole
- 1.1 Standard Cast In Place Manhole
- 1.2 Precast Eccentric Manhole
- 1.3 Cast In Place Eccentric Manhole
- 1.4 Standard Drop Manhole
- 1.5 Standard 2 Foot Manhole
- 1.6 10 Foot Diameter Manhole
- 1.7 Standard Joint Wrap
- 1.8 Adjust Manhole To Grade
- 1.9 Manhole Abandonment
- 1.10 Manhole Disconnect And Seal
- 1.11 Temporary Debris Catch Riser And Table
- 1.12 Standard Manhole Ring And Lid
- 1.13 2 Inch Ring Extension

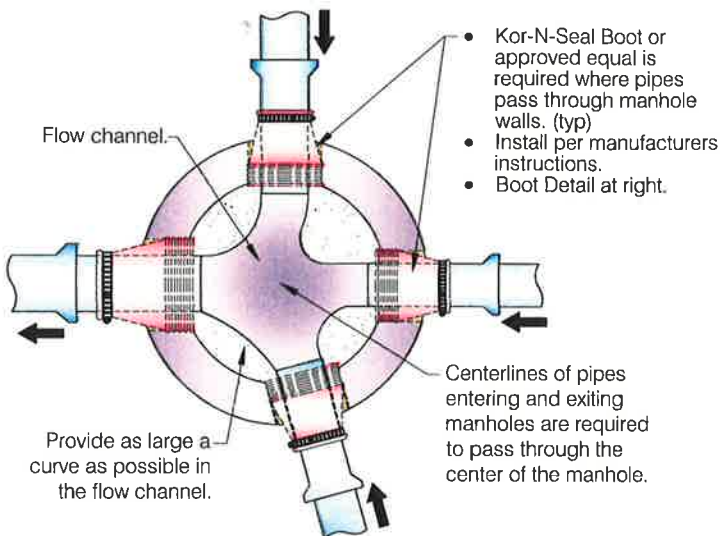
- 1.14 **Standard Manhole Frame Replacement**
- 1.15 **32 Inch Manhole Lid**
- 1.16 **32 Inch Manhole Ring**
- 1.17 **38 Inch Reversible Frame And Lid**
- 1.18 **Seal HDPE At Manhole Detail**
- 1.19 **Seal HDPE Outside Drop Detail**
- 1.20 **Typical Private Residence Sewer System Layout**
- 1.21 **Typical Trench Bedding Details For Flexible And Rigid Pipe**
- 1.22 **Tench Bedding For Flexible And Rigid Pipe With Stone Backfill**
- 1.23 **Service Line Replacement In Right Of Way**
- 1.24 **New Construction Service Connection**
- 1.25 **New Construction Service Wye**
- 1.26 **Flexible Coupling**
- 1.27 **Saddlès**
- 1.28 **Two Way Double Cleanout Detail**
- 1.29 **Miscellaneous Details**
- 1.30 **City And County Street Repair**
- 1.31 **Alley Repair**
- 1.32 **Asphalt And Concrete Driveway And Parking Area Repair**
- 1.33 **Gravel Alley Or Street Repair**
- 1.34 **Curb And Gutter**
- 1.35 **Pipe Bursting**
- 1.36 **HDPE Splice**
- 1.37 **Installation of HDPE Encasement**
- 1.38 **Force Main Laying Conditions**
- 1.39 **Concrete Thrust Block And Anchor Collar Bearing Tables**
- 1.40 **Blocking**
- 1.41 **Pier Details**
- 1.42 **Type D Encasement Detail And Tables**
- 1.43 **Encasement Pipe Details**

- 1.44 Chain Link Fence Details
- 1.45 Wood Privacy Fence Details
- 1.46 Rip Rap Detail
- 1.47 Splash Block Detail
- 1.48 Anchor Collar
- 1.49 Gate Valve
- 1.50 Combination Sewage Air Release Valve

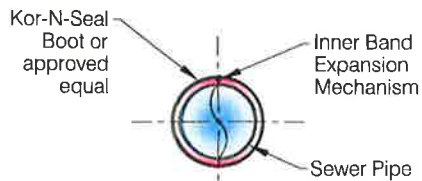
Section 2 – Environmental Details

- 2.01 Site Plan Grease Interceptor And Piping Layout
- 2.02 New Construction Flex Space Plumbing Configuration
- 2.03 Trap Control Miscellaneous Details
- 2.04 Two Way Double Cleanout Detail
- 2.05 Standard Lid And Frame Details
- 2.06 Grease Interceptor
- 2.07 Fiberglass Sampling And Inspection Manhole Details
- 2.08 Concrete Sampling And Inspection Manhole Details
- 2.09 Typical Vehicle Wash Piping Layout With Sand Interceptor
- 2.10 Catch Basin Details
- 2.11 Exterior Sand Oil Water Interceptor
- 2.12 Interior Sand Oil Water Interceptor
- 2.13 Commercial Laundry Lint Interceptor
- 2.14 Grease Interceptor Abandonment And Seal Details
- 2.15 Sand And Oil Interceptor Abandonment And Seal Details
- 2.16 Lint Trap Abandonment And Seal Details
- 2.17 Catch Basin Abandonment And Seal Details
- 2.18 Floor Drain Abandonment And Seal Details
- 2.19 Septic Tank Abandonment And Seal Details

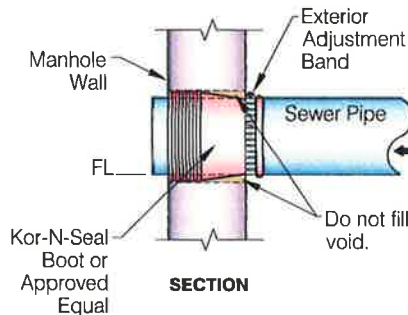
END OF SECTION 05000



MANHOLE FLOW CHANNEL



INTERIOR VIEW

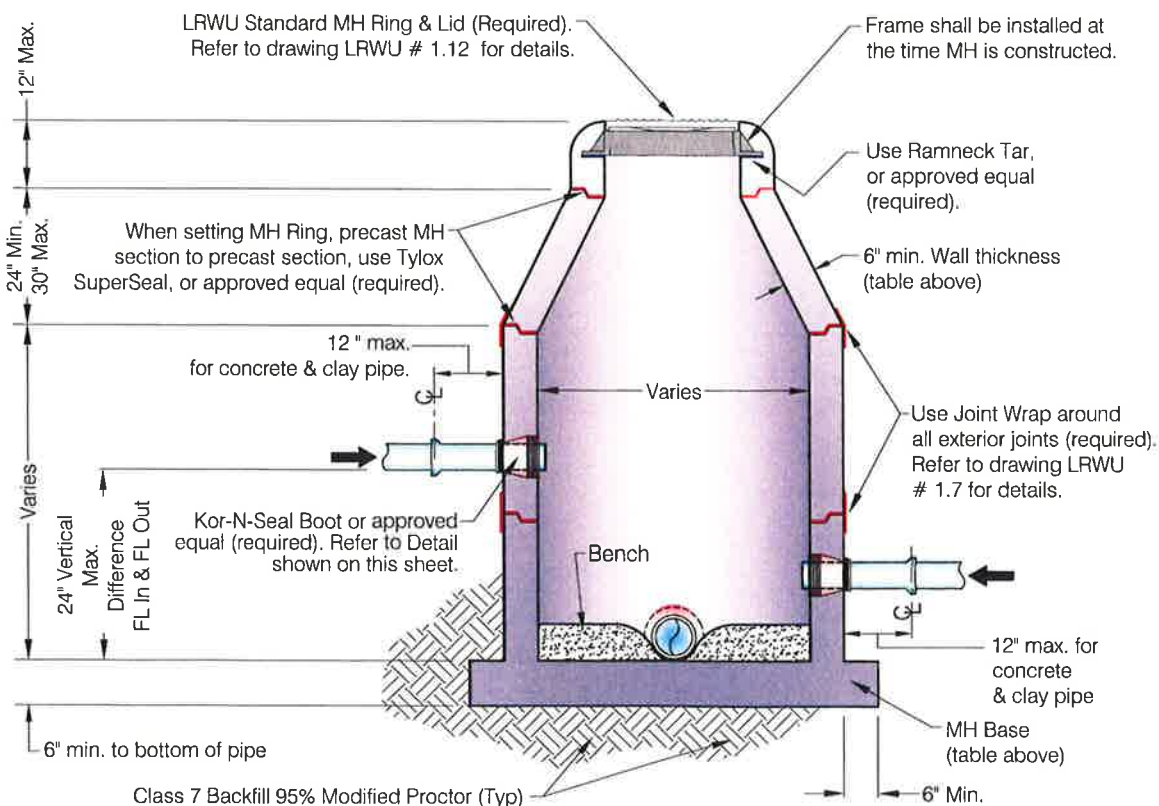


SECTION

BOOT DETAILS

MANHOLE INFORMATION TABLE

Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Manhole Depth	Minimum Lid & Ring Size
4' DIA	6"	6"	0' - 8'	24" (< or Equal to 24" Pipes)
5' DIA	8"	8"	8' - 12'	
6' DIA	8"	12"	↓ DEEPER	36" (> 24" Pipes)



SECTION

LRWU

1.0

STANDARD PRECAST MANHOLE DETAILS

Little Rock Wastewater Utility

SPECIFICATIONS



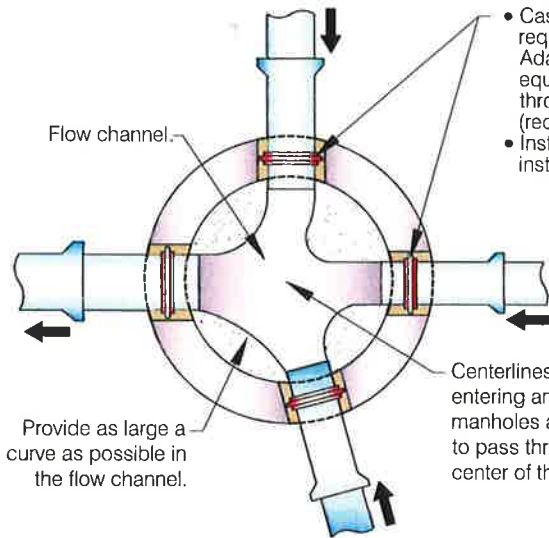
Prepared By: Evangeline O'Neal
2/14/2006 7:43:03 AM

Drawing Status: **APPROVED**

Filename: LRWU 1.0 - STANDARD PRECAST MH.dwg

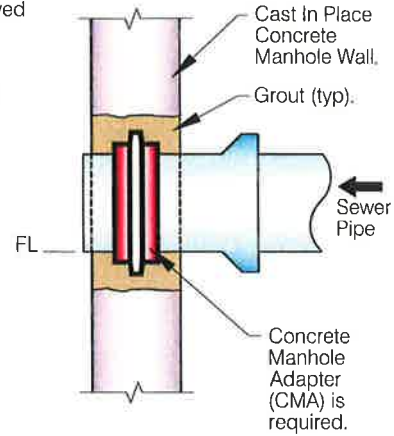
ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



MANHOLE FLOW CHANNEL

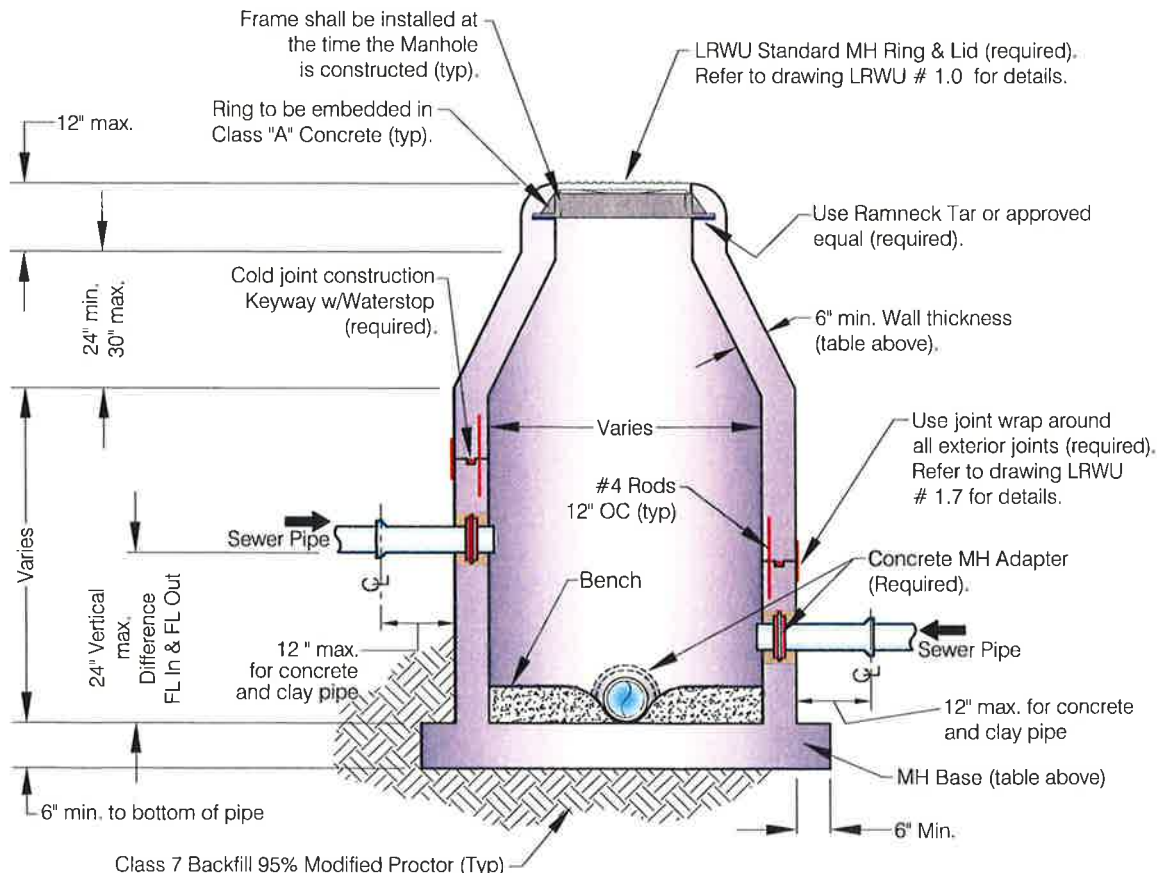
- Cast In Place Manhole requires a Concrete MH Adapter (CMA) or approved equal where pipes pass through manhole walls. (required)
- Install per manufacturers instructions.



CONCRETE MANHOLE ADAPTER (CMA) DETAIL

MANHOLE INFORMATION TABLE

Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Manhole Depth	Minimum Lid & Ring Size
4' DIA	6"	6"	0' - 8'	24" (< or Equal to 24" Pipes)
5' DIA	8"	8"	8' - 12'	
6' DIA	8"	12"	↓ DEEPER	36" (> 24" Pipes)



CAST IN PLACE

LRWU

1:1

STANDARD CAST IN PLACE MANHOLE DETAILS & TABLE

Little Rock Wastewater Utility

SPECIFICATIONS

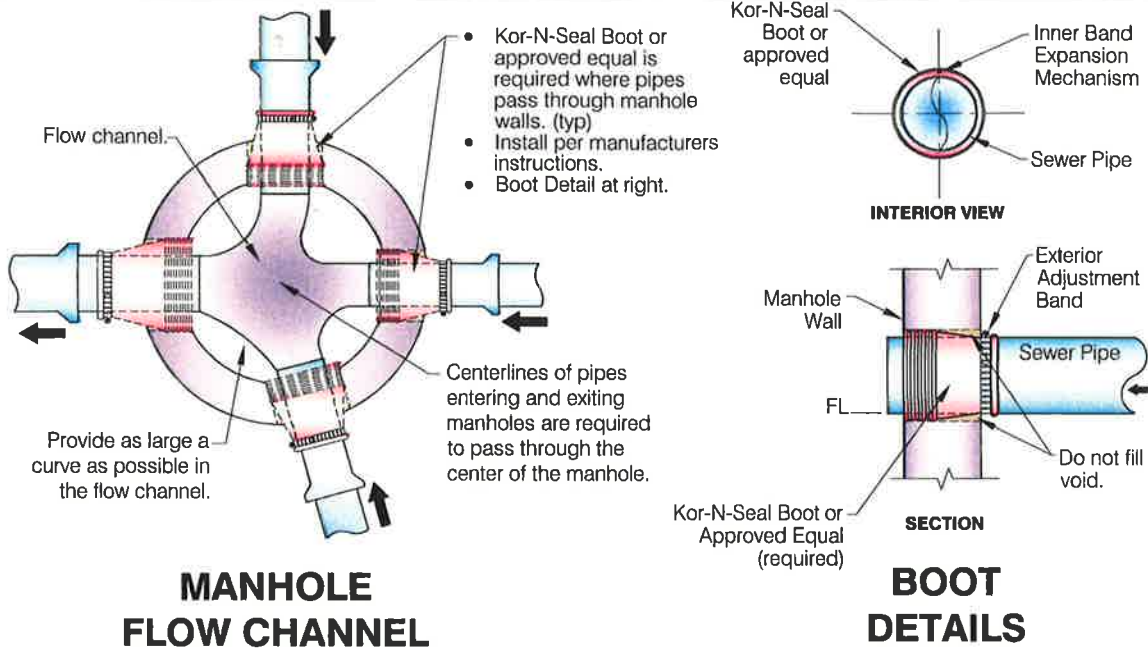


Prepared By: Evangeline O'Neal
 Updated: 12/21/2005 8:58:37 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.1 - STANDARD CAST IN PLACE MH.dwg

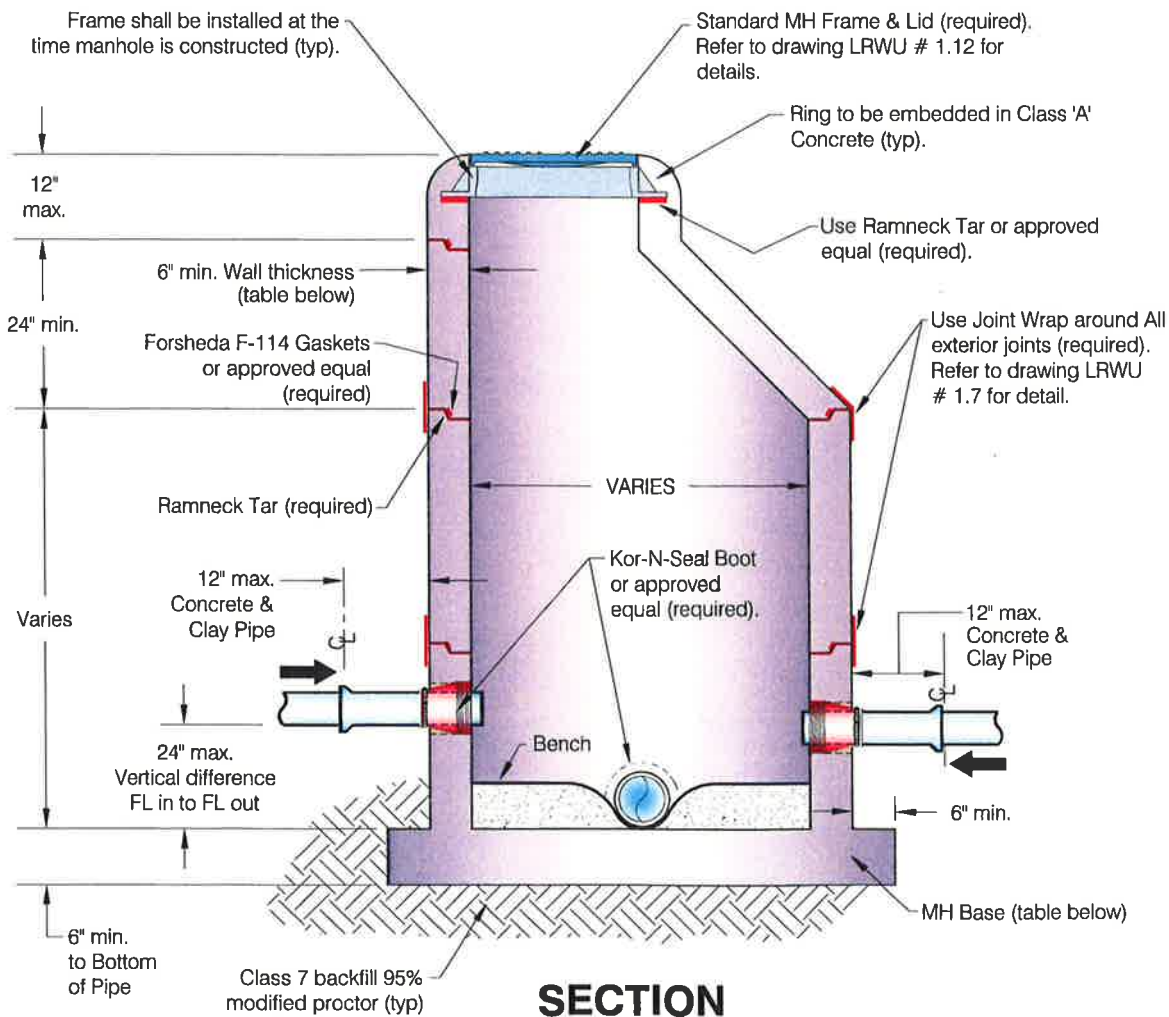
ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

**PRECAST ECCENTRIC
MANHOLE DETAIL & TABLE**



MH INFO TABLE				
I.D. OF MH	MIN. WALL THICKNESS	MIN. LID & RING SIZE	BASE THICKNESS	MANHOLE DEPTH
4' DIA	6"	24"	6"	0' - 8'
5' DIA	8"	30"	8"	8' - 12'
6' DIA	8"	36"	12"	↓ DEEPER



Little Rock Wastewater Utility

SPECIFICATIONS



Prepared By: Evangeline O'Neal

Updated: 12/21/2005 8:49:48 AM

Drawing Status: **APPROVED**

Filename: LRWU 1.2 - PRECAST ECCENTRIC.MH.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

**CAST IN PLACE ECCENTRIC
MANHOLE DETAIL & TABLE**

Little Rock Wastewater Utility
SPECIFICATIONS

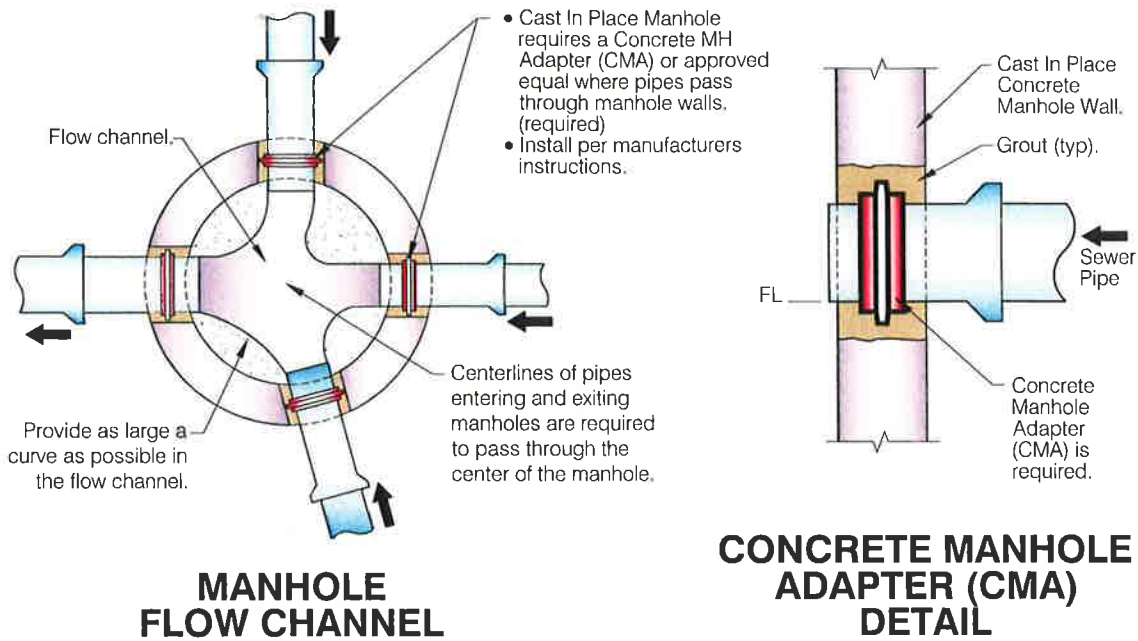


Prepared By: Evangeline O'Neal
Updated: 2/14/2006 7:54:24 AM
Drawing Status: **APPROVED**

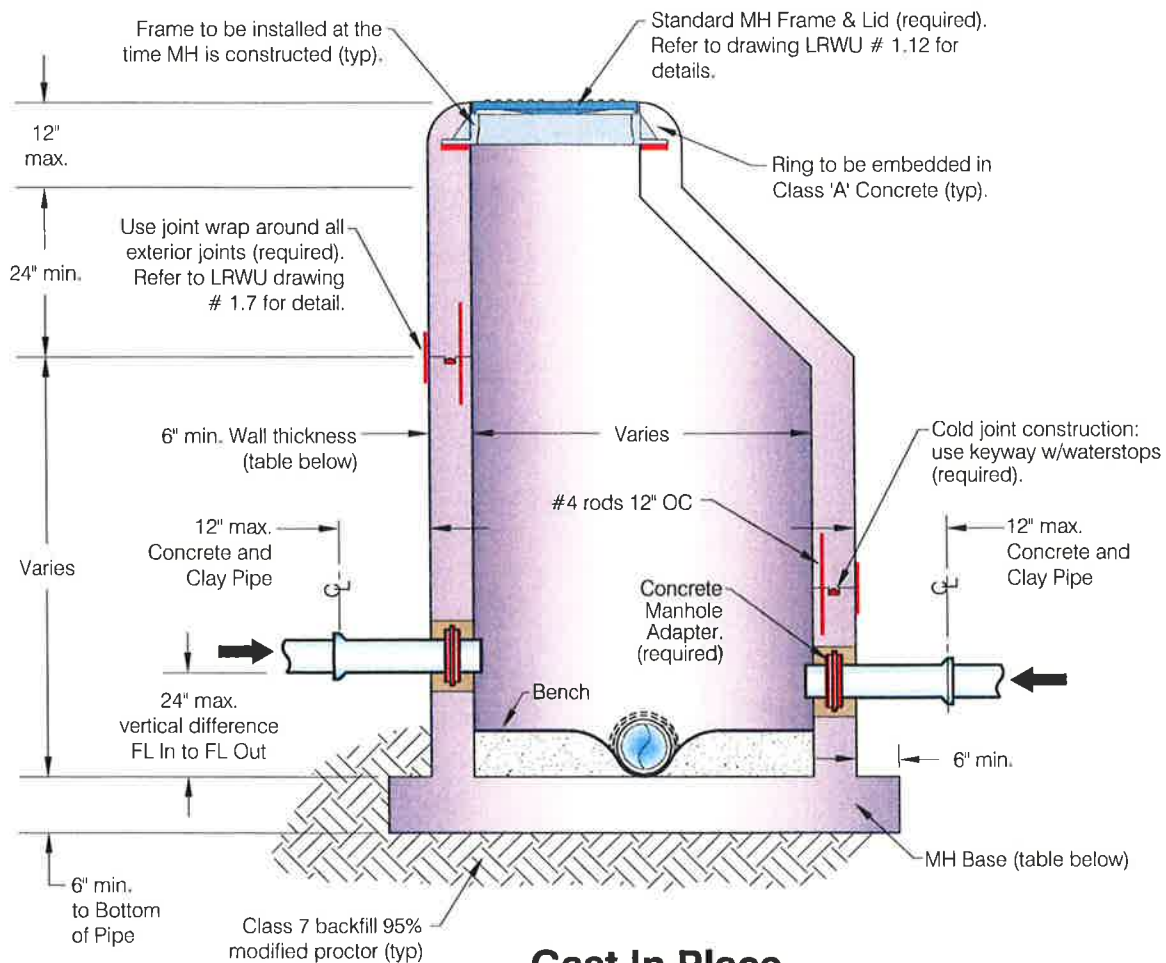
Filename: LRWU 1.3 - CAST IN PLACE ECCENTRIC
MH.dwg

1. ALL CHANGES/REVISIONS/ETC.
MUST BE APPROVED BY THE LRWU
DIRECTOR OF ENGINEERING.

Notes



MH INFO TABLE				
I.D. OF MH	MIN. WALL THICKNESS	MIN. LID & RING SIZE	BASE THICKNESS	MANHOLE DEPTH
4" DIA	6"	24"	6"	0' - 8'
5" DIA	8"	30"	8"	8' - 12'
6" DIA	8"	36"	12"	↓ DEEPER



Notes

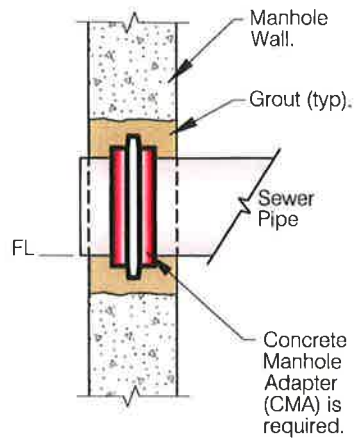
STANDARD DROP MANHOLE DETAIL

Little Rock Wastewater Utility
SPECIFICATIONS

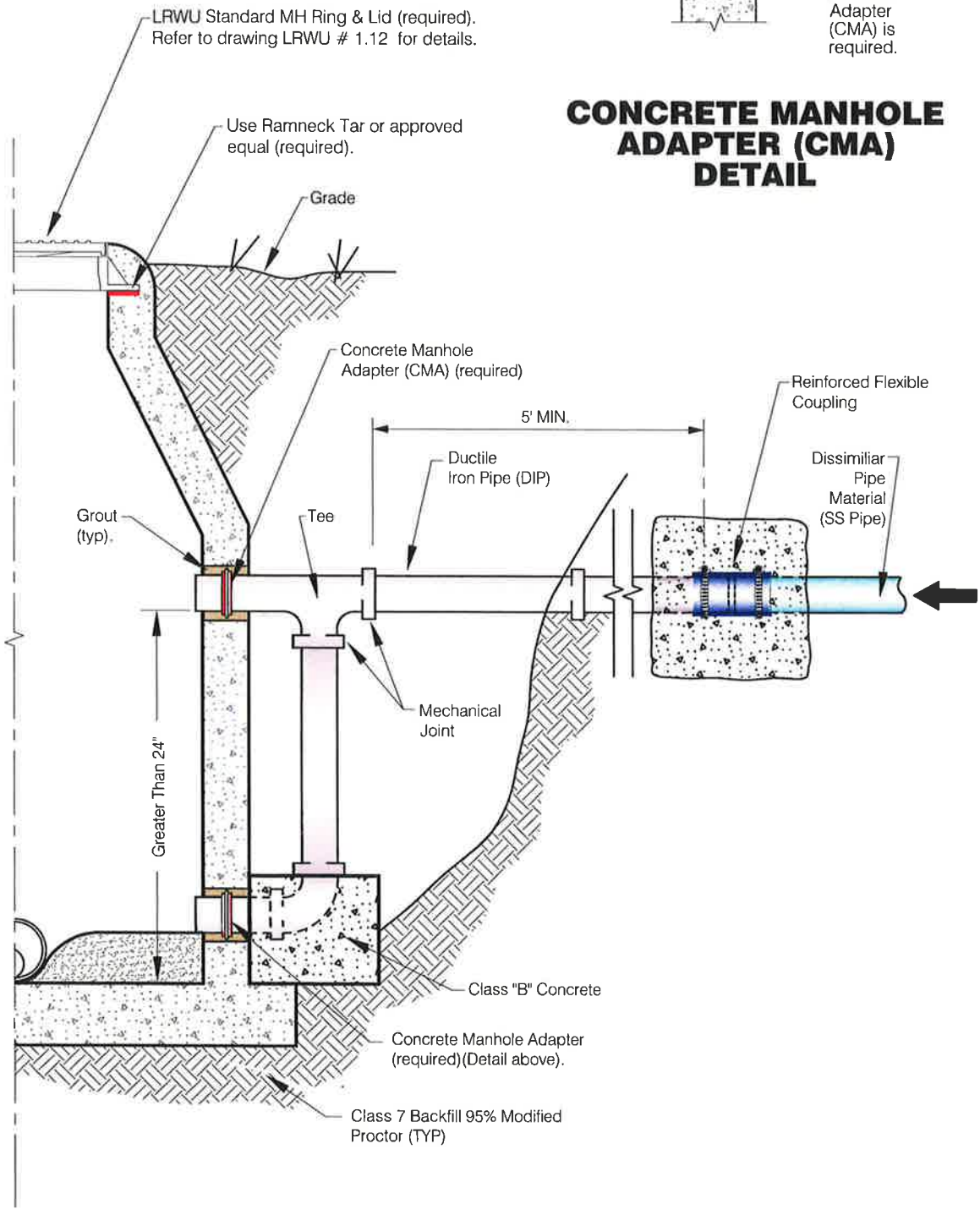


Prepared By: Evangeline O'Neal
Updated: 2/14/2006 7:58:48 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.4 - STANDARD DROP MH-DWG

Notes
1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



CONCRETE MANHOLE ADAPTER (CMA) DETAIL



LRWU Standard MH Ring & Lid (required). Refer to drawing LRWU # 1.12 for details.

Use Ramneck Tar or approved equal (required).

Grade

Concrete Manhole Adapter (CMA) (required)

5' MIN.

Ductile Iron Pipe (DIP)

Reinforced Flexible Coupling

Dissimilar Pipe Material (SS Pipe)

Grout (typ).

Tee

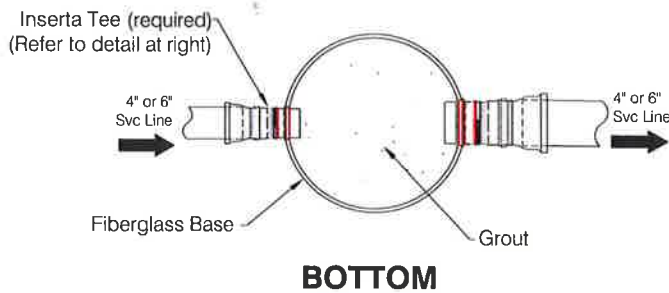
Mechanical Joint

Greater Than 24"

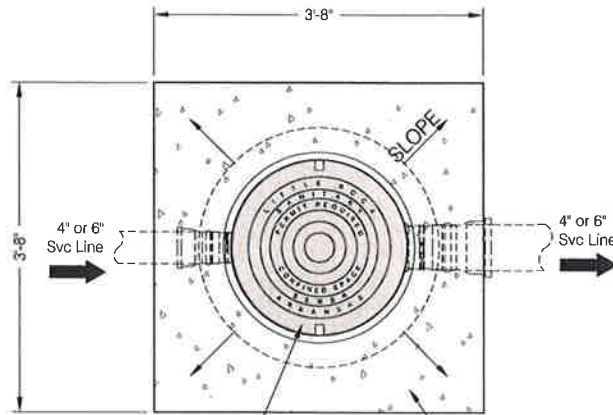
Class "B" Concrete

Concrete Manhole Adapter (required)(Detail above).

Class 7 Backfill 95% Modified Proctor (TYP)

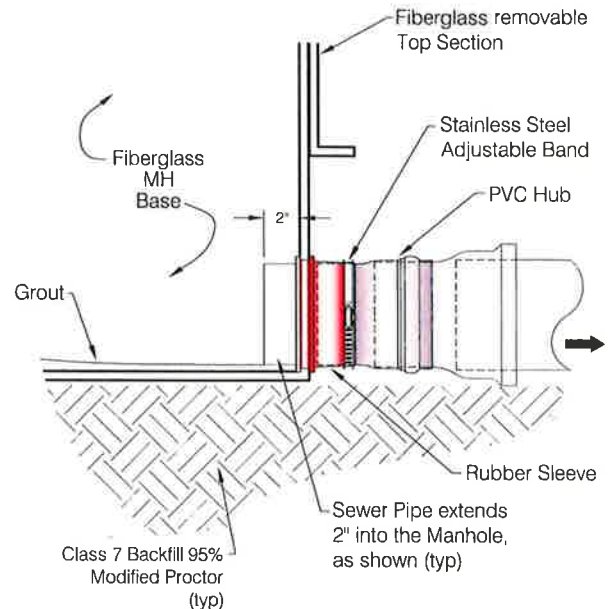


BOTTOM



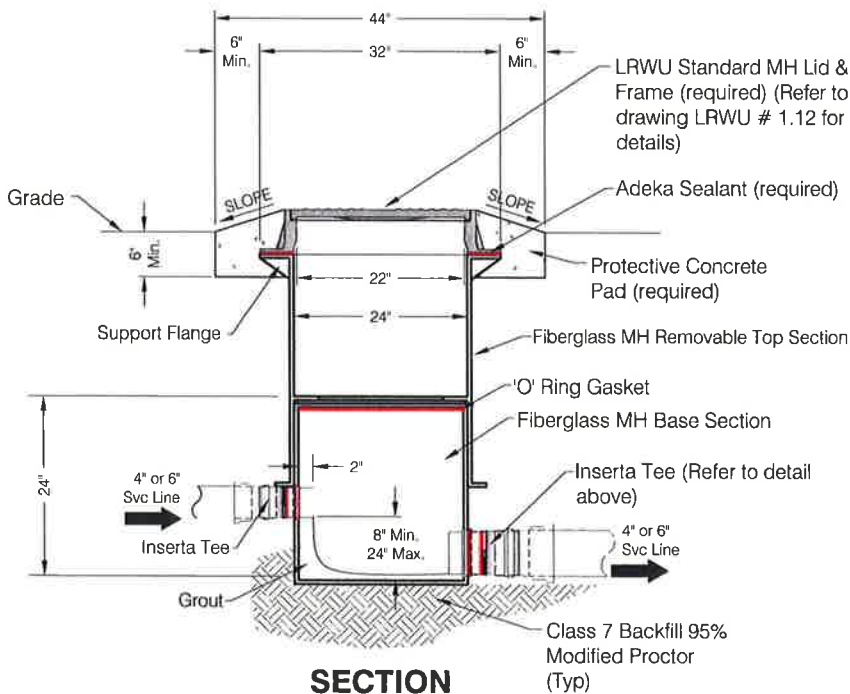
LRWU Standard MH Lid & Frame (required) (Refer to drawing LRWU # 1.12 for details)
Protective Concrete Pad (required)

PLAN VIEW



INSERTA TEE DETAIL

Inserta Tee 3-piece Compression Fit Service Connection (or approved equal) consisting of the following: PVC Hub, Rubber Sleeve, and Stainless Steel Band.



SECTION

- 2-ft Manholes shall be manufactured from commercial grade polyester resin or other suitable polyester or vinyl, ester resins, with fiberglass reinforcements.
- Shall consist of two sections, a removable top section and a base section.
- Manufactured to meet or exceed all specifications of A.S.T.M. D-3753 latest edition.
- Base section shall include a gasket system to provide a seal between the top and base sections.

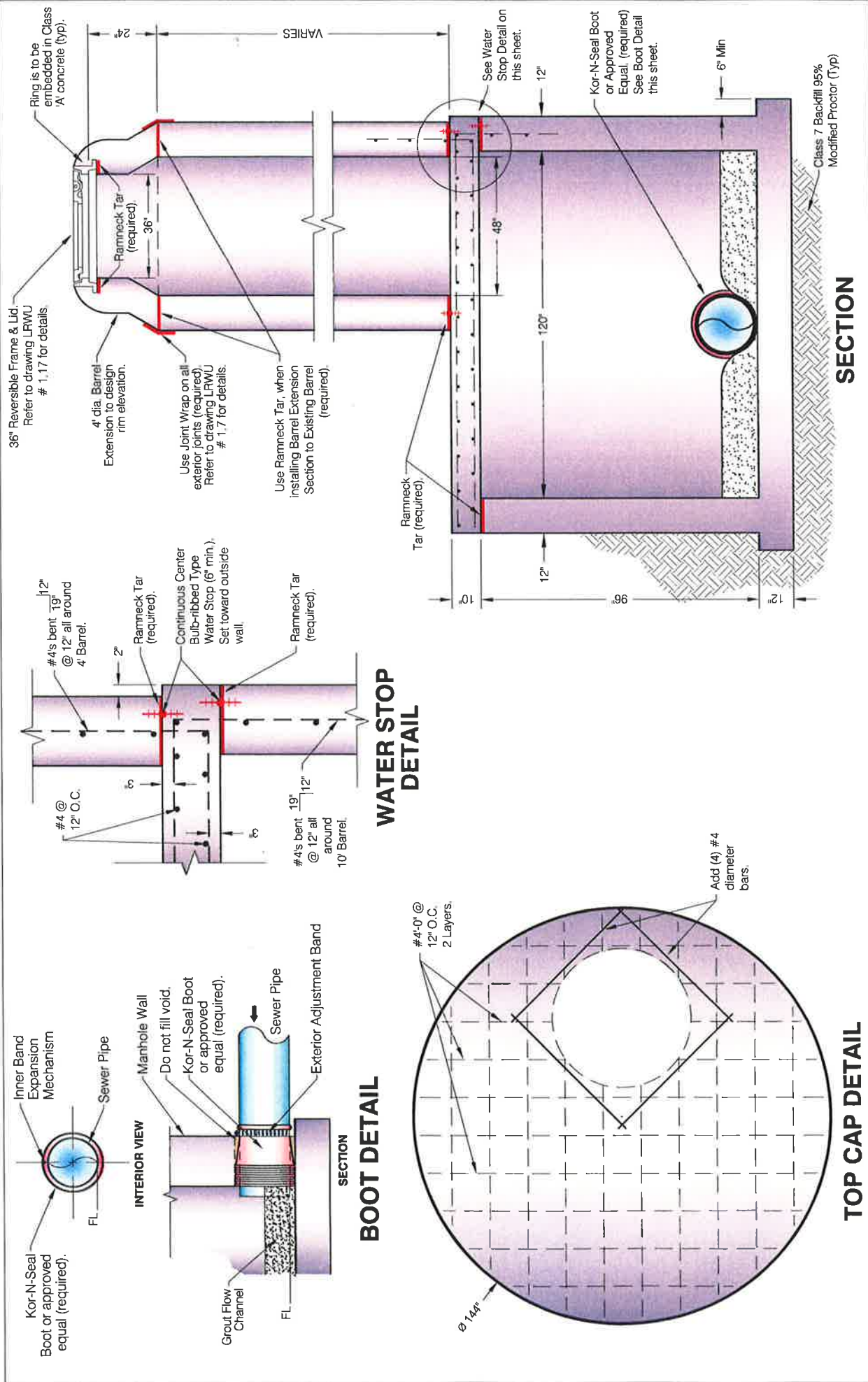
Notes
1. ALL CHANGES/REVISIONS/ETC, MUST BE APPROVED BY THE LRWU DIRECTOR OF ENVIRONMENTAL ASSESSMENT.

Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:04:09 AM
Drawing Status:
APPROVED
Filename: LRWU 1.5 - STANDARD 2-FT MH.dwg



**STANDARD
2-FT MANHOLE
DETAILS**

LRWU
1.5



10' DIAMETER MANHOLE DETAILS

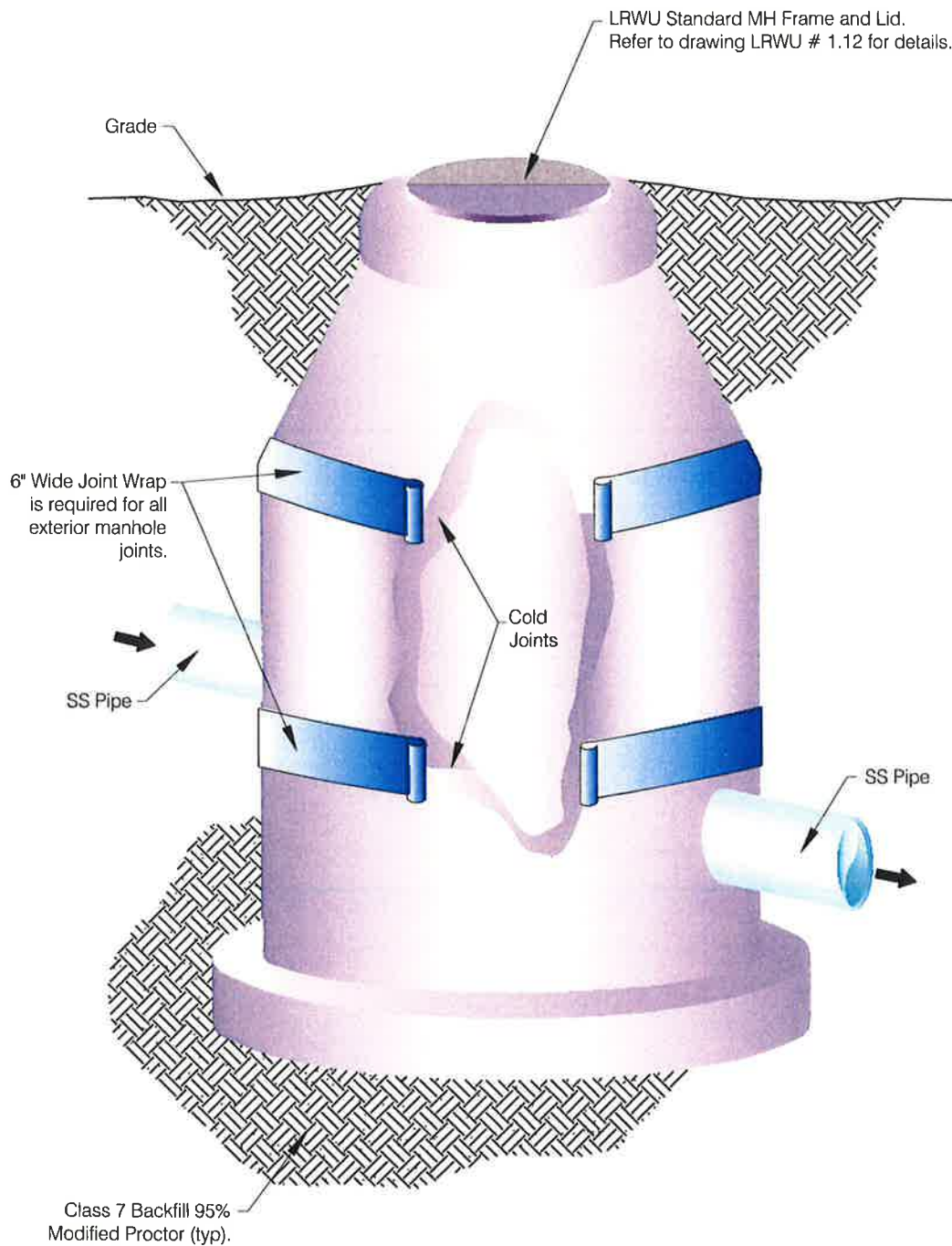


Prepared By: Evangelina O'Neal
 Updated: 2/14/2006 8:07:25 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.6 - 10' DIA MH.dwg

Notes
 1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

MANHOLE JOINT WRAP DETAIL

Little Rock Wastewater Utility
SPECIFICATIONS



NOTE:

- JOINT WRAP TO BE USED:
- ON OUTSIDE OF COLD JOINTS
 - ON EXTERIOR OF ALL PRECAST MANHOLE JOINTS

Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:13:52 AM
Drawing Status:

APPROVED

Filename: LRWU 1.7 - STANDARD JOINT WRAP.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST
BE APPROVED BY THE LRWU
DIRECTOR OF ENGINEERING.

Notes

TYPICAL MANHOLE ADJUST TO GRADE DETAIL

Little Rock Wastewater Utility

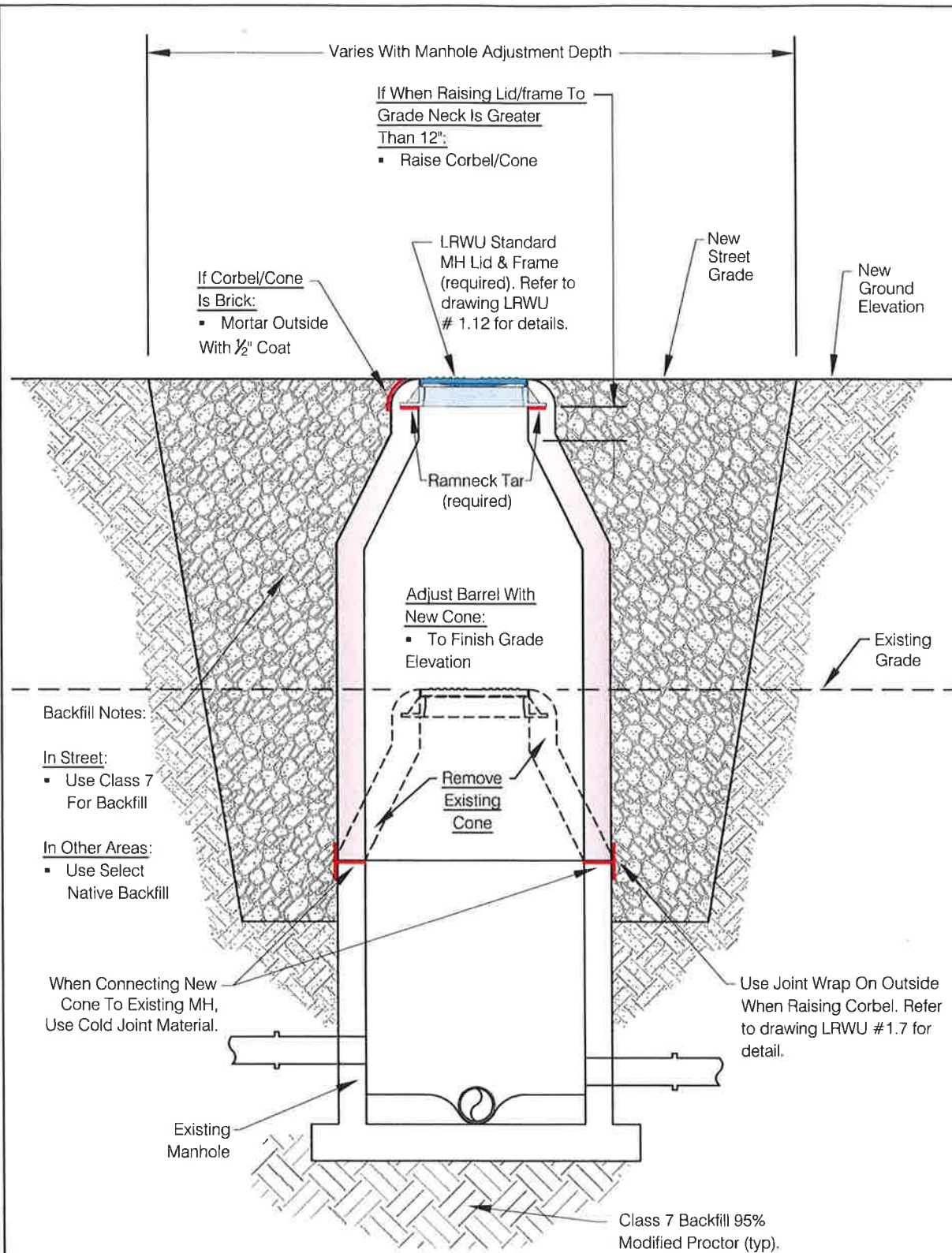
SPECIFICATIONS



Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 8:23:29 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.8 - ADJUST MH TO GRADE.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST
 BE APPROVED BY THE LRWU
 DIRECTOR OF ENGINEERING.

Notes



When a manhole adjustment occurs in the street:

- Use the appropriate street repair technique, as noted on LRWU drawings:
 - LRWU # 1.32 City & County Street Repair
 - LRWU # 1.33 Alley Repair
 - LRWU # 1.34 Asphalt/Concrete Drive & Parking Area Repair
 - LRWU # 1.35 Gravel Alley/Street Repair
 - LRWU # 1.36 Curb and Gutter

EXISTING MANHOLE ABANDONMENT DETAILS

Little Rock Wastewater Utility
SPECIFICATIONS



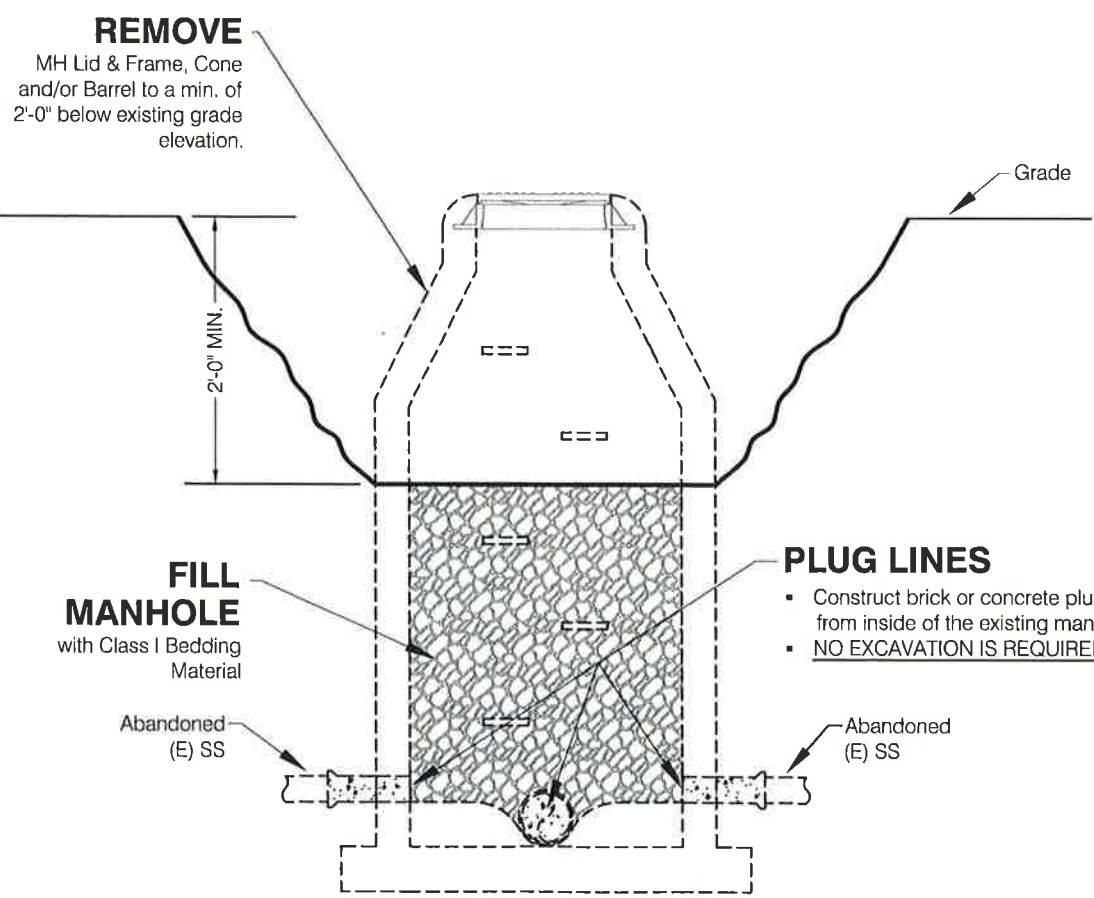
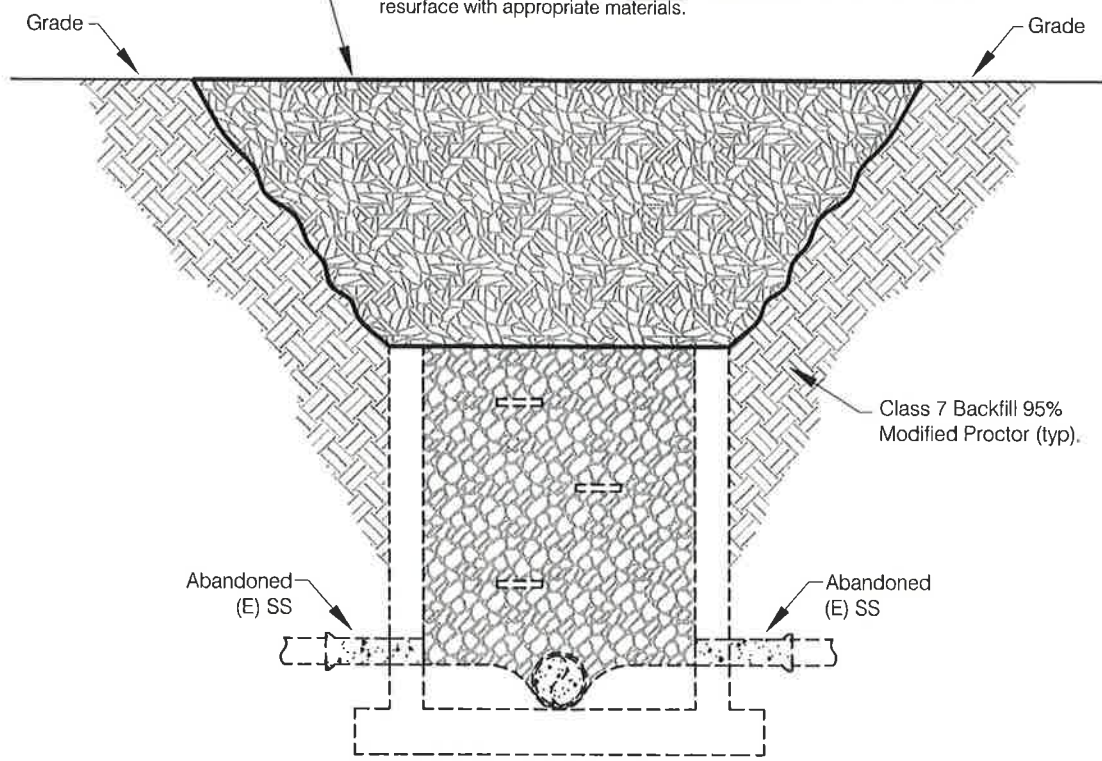
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:26:42 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.9 - MH ABANDONMENT.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

BACKFILL, REPAVE or RESURFACE

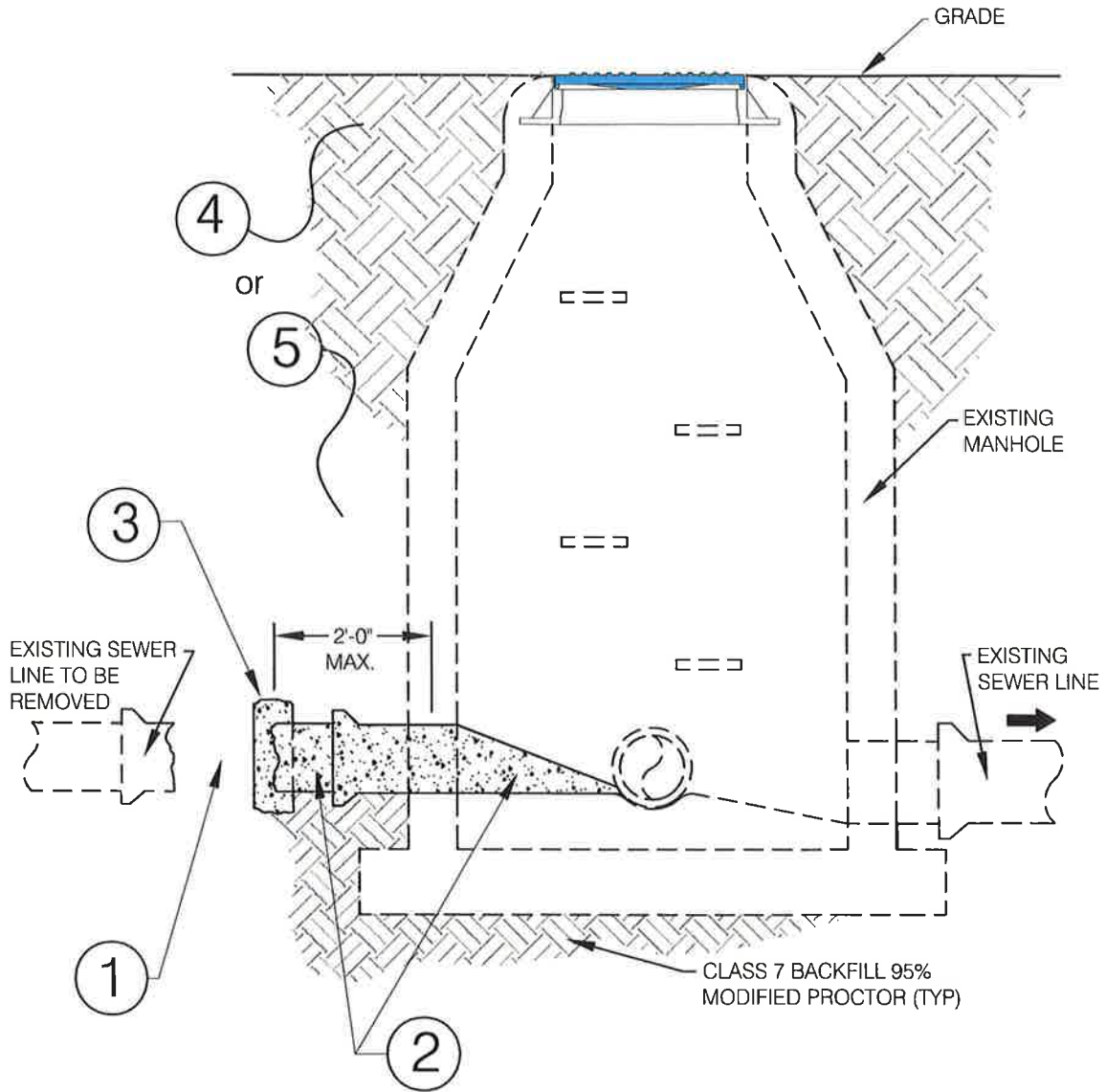
- Backfill Abandonments in PAVED AREAS, and perform pavement repair as per LRWU Specifications appropriate detail.
- Backfill Abandonments in NONPAVED AREAS with select native material, and resurface with appropriate materials.



FILL MANHOLE
with Class I Bedding Material

PLUG LINES

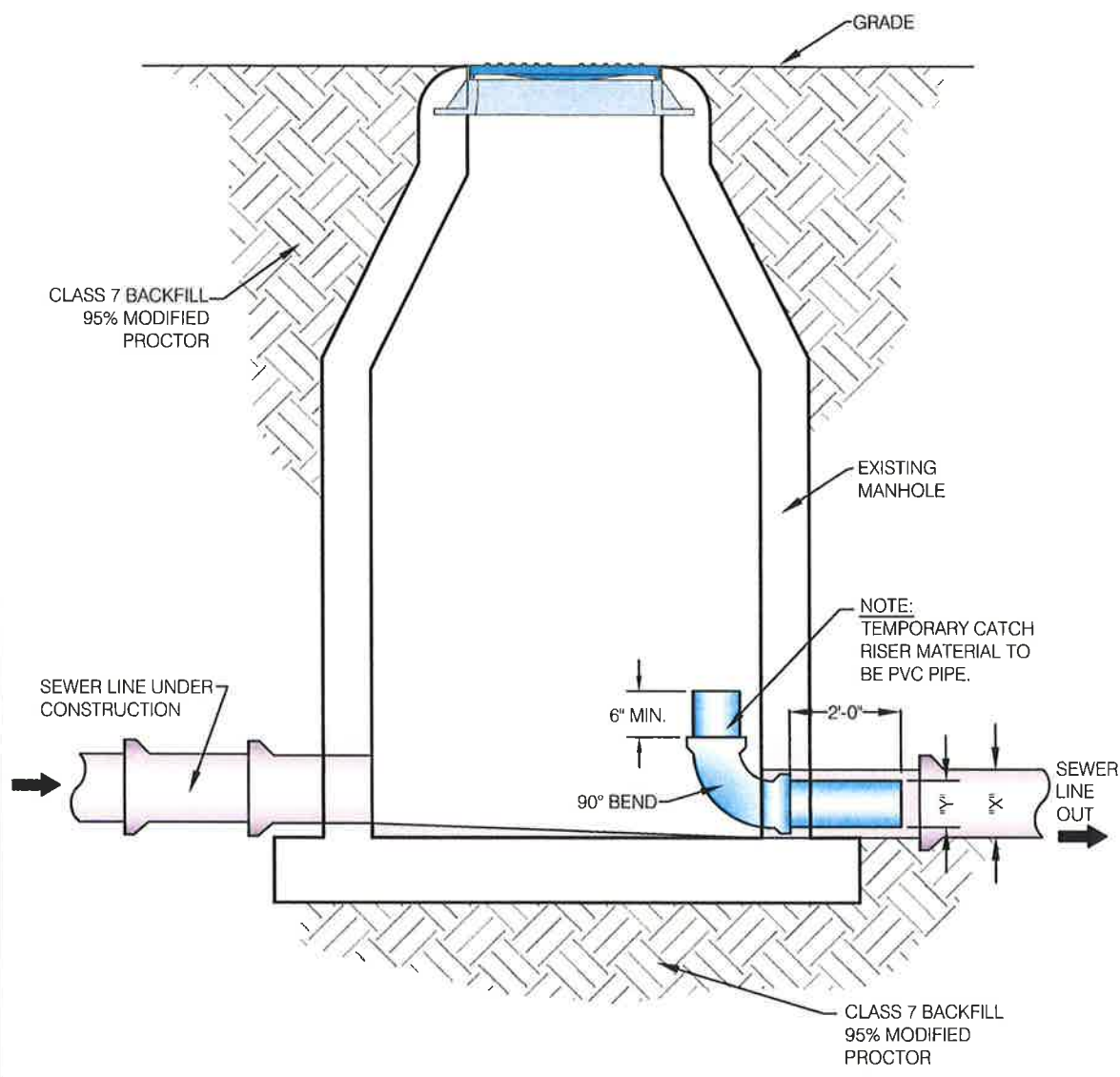
- Construct brick or concrete plug from inside of the existing manhole.
- NO EXCAVATION IS REQUIRED.



- ①. Expose existing line and PHYSICALLY DISCONNECT the line segment to be removed. (required)
- ②. Fill remaining Sewer Pipe to be sealed with Concrete and Reinforcement. (required)
- ③. Construct a concrete cap around pipe connected to existing manhole. (required)
- ④. If the manhole is located in a paved area, backfill the excavated area and perform pavement repair. (required)
- ⑤. If the manhole is located in a non-paved area, backfill the excavated area with select native material, and resurface with the appropriate materials. (required)

**TEMPORARY DEBRIS CATCH RISER
DETAIL & TABLE**

Little Rock Wastewater Utility
SPECIFICATIONS

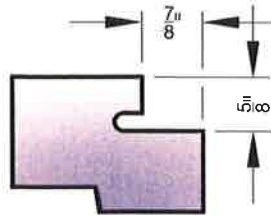


"X"	"Y"
6"	4"
8"	6"
10"	8"
12"	10"
16"	15"

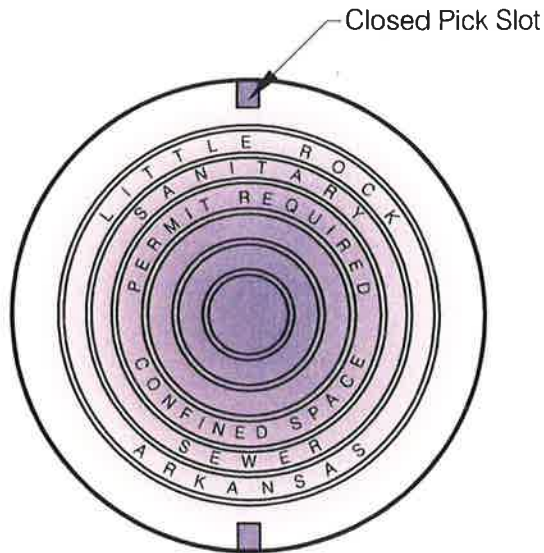
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:28:50 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.11 - Temporary Debris Catch Riser &
Table.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST
BE APPROVED BY THE LRWU
DIRECTOR OF ENGINEERING.

Notes

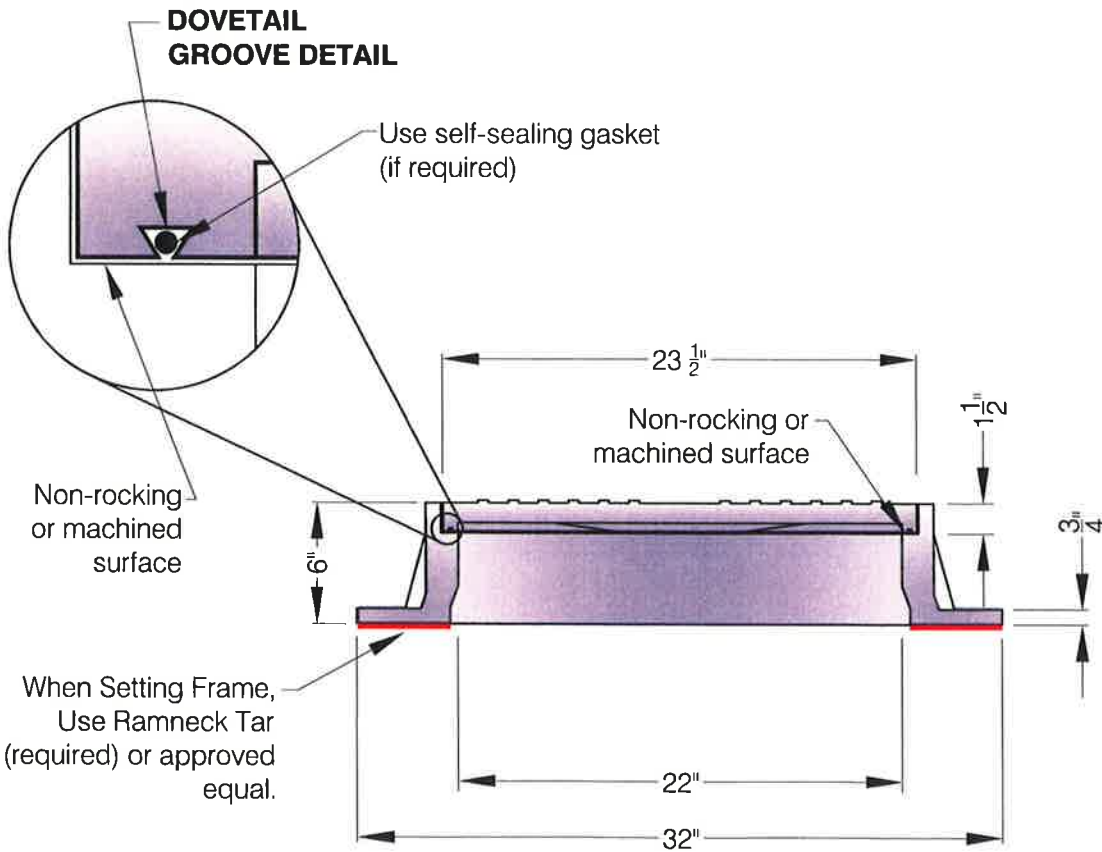


CLOSED PICK SLOT DETAIL



LID DETAIL

1. Minimum weight of ring: 125 pounds
2. Minimum weight of lid: 115 pounds
3. Lids are furnished with two closed pick slots.
4. Castings shall be "Made In USA"



RING DETAIL

Note:
Dimensions shown may vary by $\pm 1/2$ " with the exception of the Lid dimension.

STANDARD RING & LID DETAILS
TO BE USED WITH
4' DIAMETER MANHOLES

Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal

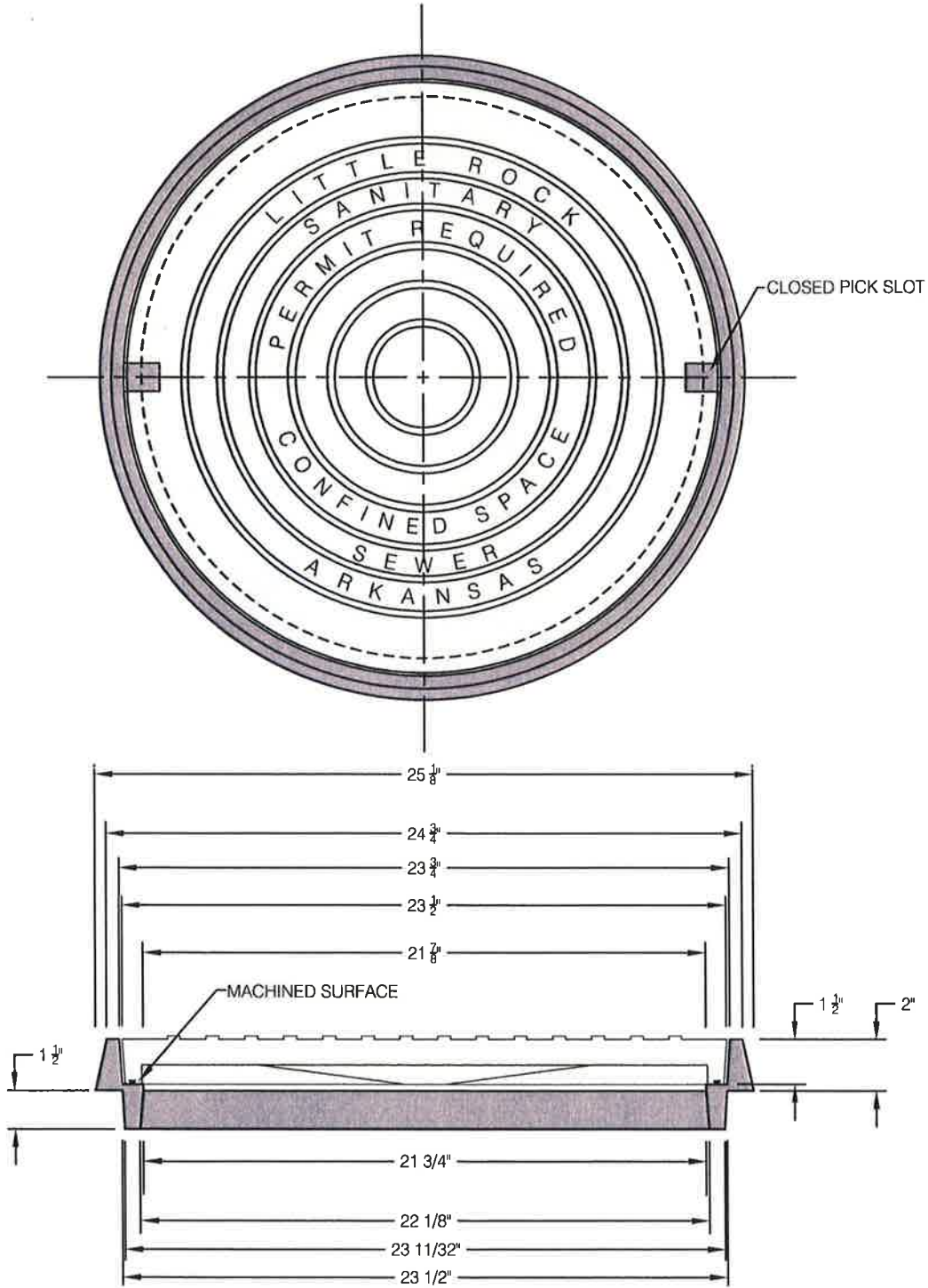
2/14/2006 7:32:15 AM

Drawing Status:

APPROVED

Filename: LRWU 1.12 - STANDARD MH RING & LID.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



CALCULATED WEIGHT OF 2" EXTENSION: 53 POUNDS
CASTING SHALL BE "MADE IN USA"

LRWU

1.13

**2" RING EXTENSION
 DETAILS**

Little Rock Wastewater Utility

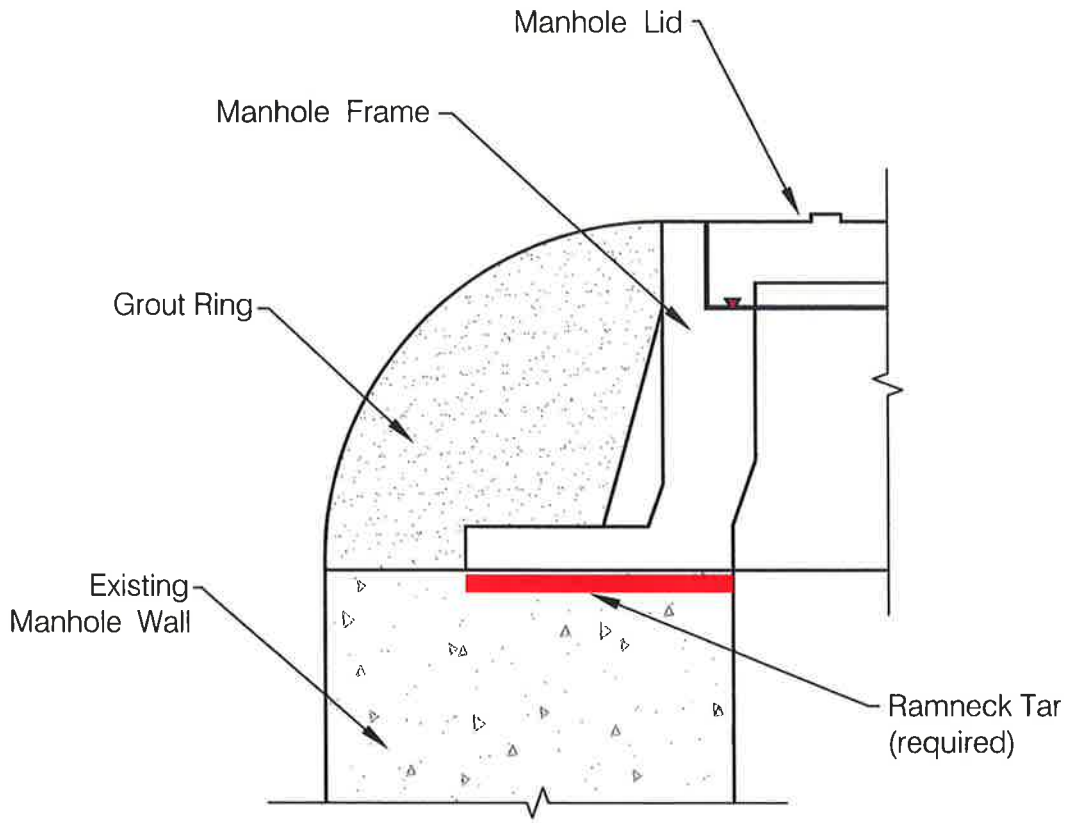
SPECIFICATIONS



Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 8:29:45 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.13 - 2 INCH RING EXTENSION.dwg

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Notes



LRWU

1.14

Little Rock Wastewater Utility
SPECIFICATIONS



**STANDARD MANHOLE
FRAME REPLACEMENT DETAIL**

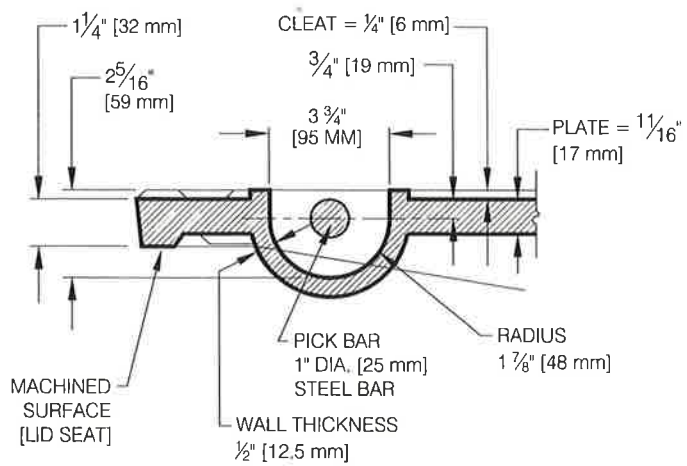
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:30:38 AM
Drawing Status:

APPROVED

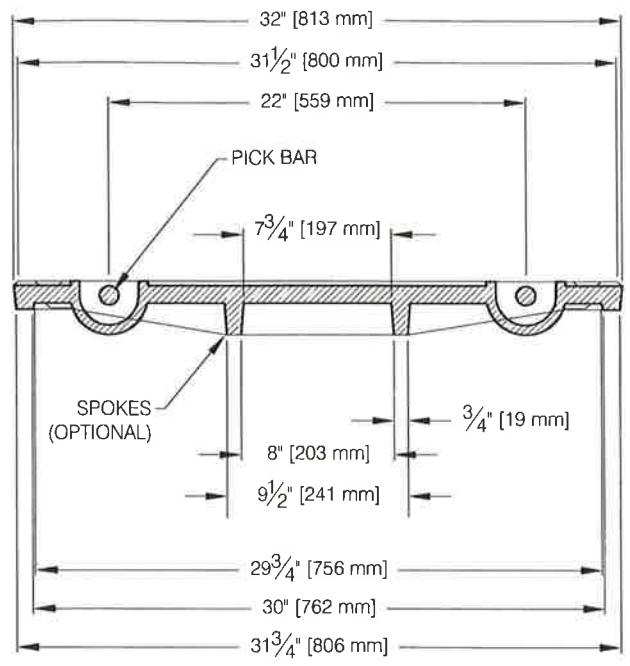
Filename: LRWU 1.14 - STANDARD MH FRAME
REPLACEMENT.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST
BE APPROVED BY THE LRWU
DIRECTOR OF ENGINEERING.

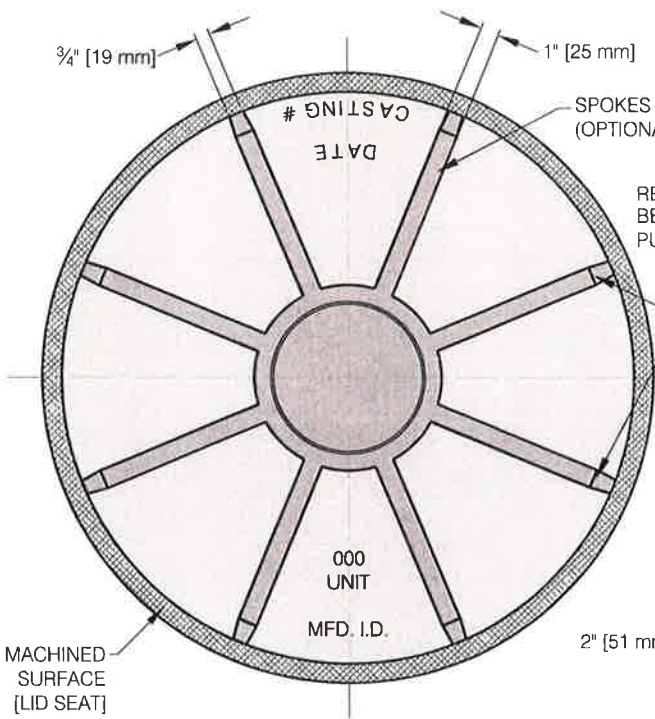
Notes



PICK BAR DETAIL



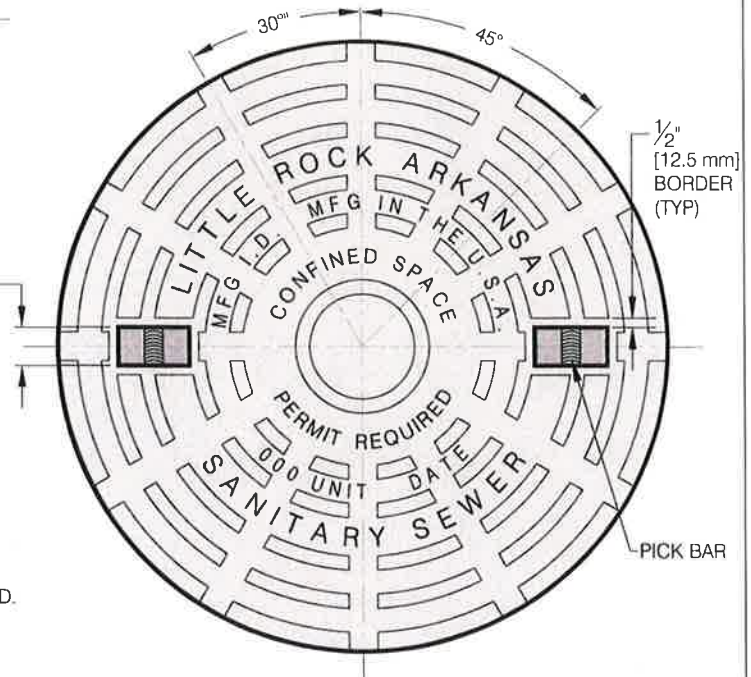
LID SECTION



LID BOTTOM VIEW

RELIEVE SPOKE ENDS $\frac{1}{8}$ " [3 mm] BEYOND LID FOR SEAT MACHINING PURPOSES

AT 27 $\frac{3}{4}$ " DIA. [705 mm] BEGIN SPOKE TAPER



LID TOP VIEW

1. CASTINGS SHALL BE MADE IN THE U.S.A.
2. ALL CORNERS AND EDGES SHALL HAVE A 1" [25 mm] MIN. RADIUS.
3. LIDS SHALL BE CAST WITH TWO 1" [25 mm] DIA. STEEL PICK BARS.
4. LID WEIGHTS SHALL BE 210 LBS FOR CAST IRON OR 175 LBS. FOR DUCTILE IRON.
5. WEIGHT SHALL BE CAST ON BOTH THE TOP AND BOTTOM OF THE LID.
6. MANUFACTURER SHALL PROVIDE INDEPENDENT TESTING LABORATORY REPORT ON 40,000 POUND PROOF LOAD TEST CONDUCTED ACCORDING TO AASHTO M-306.
7. FILLETS SHALL BE $\frac{1}{4}$ " [6 mm] RADIUS UNLESS OTHERWISE SPECIFIED.
8. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.

Notes

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

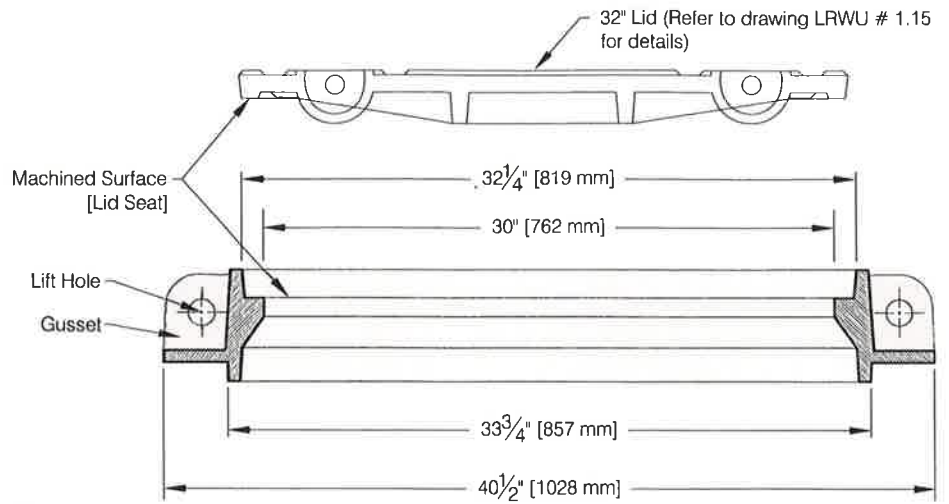
Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 9:21:05 AM
 Drawing Status:
DRAFT
 Filename: LRWU 1.15 - 32 INCH MH LID.dwg



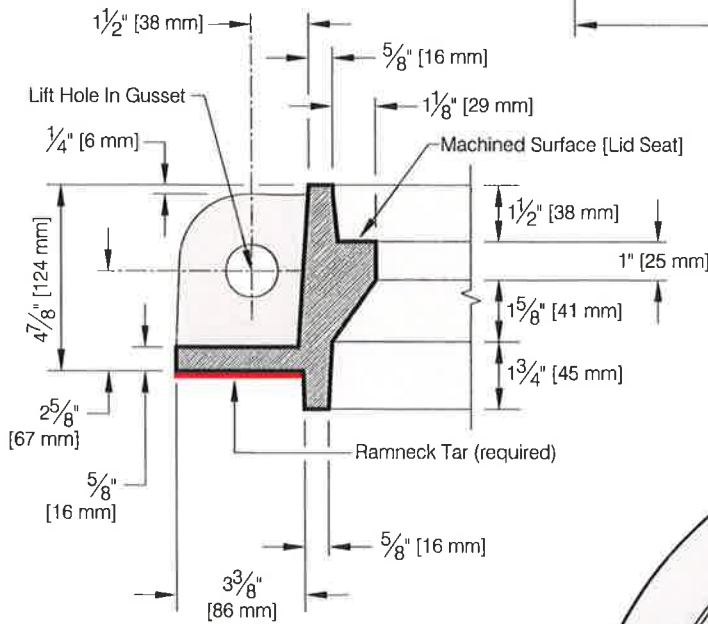
Little Rock Wastewater Utility
 SPECIFICATIONS

**32" MH LID
 DETAILS**

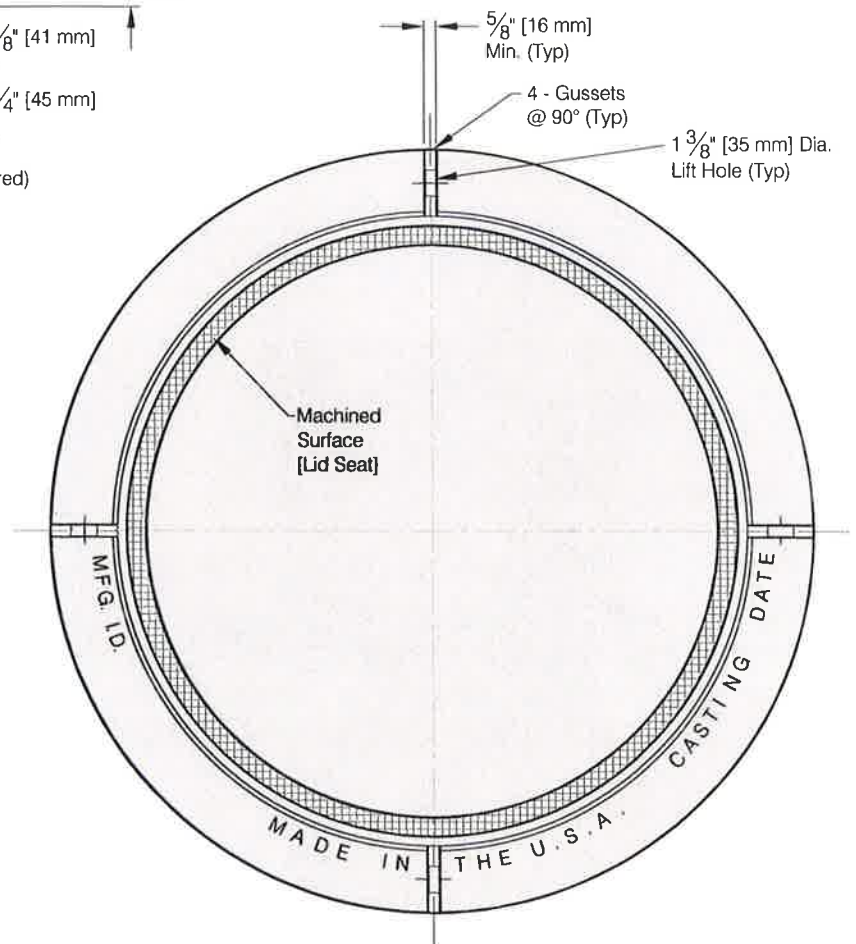
LRWU
1.15



RING SECTION



LIFT HOLE DETAIL



RING

Notes
 1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 8:31:26 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.16 - 32 INCH MH RING.dwg



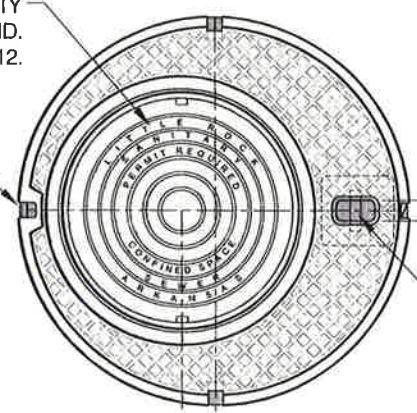
**32" MH RING
 DETAILS**

LRWU

1.16

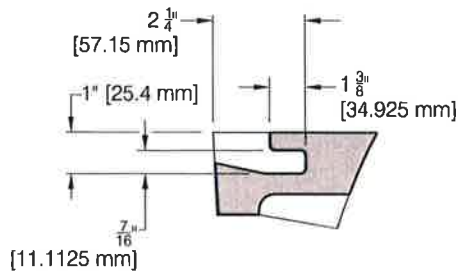
LITTLE ROCK WASTEWATER UTILITY
STANDARD RING & LID.
REFER TO DRAWING LRWU # 1.12.

(4) CLOSED PICKHOLES

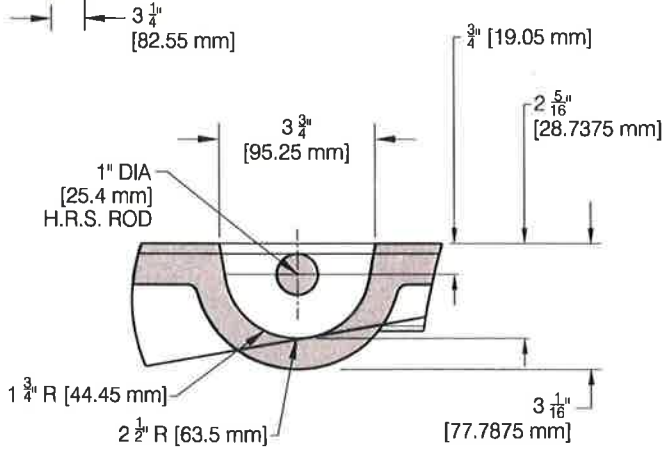


2" [50.8 mm]

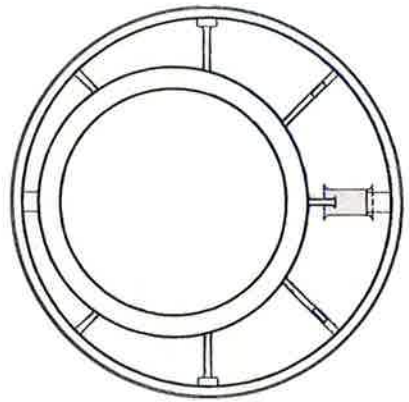
(1) PICKBAR



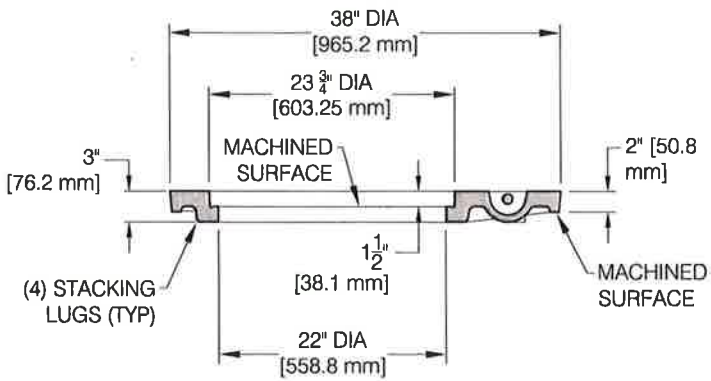
PICKHOLE DETAIL



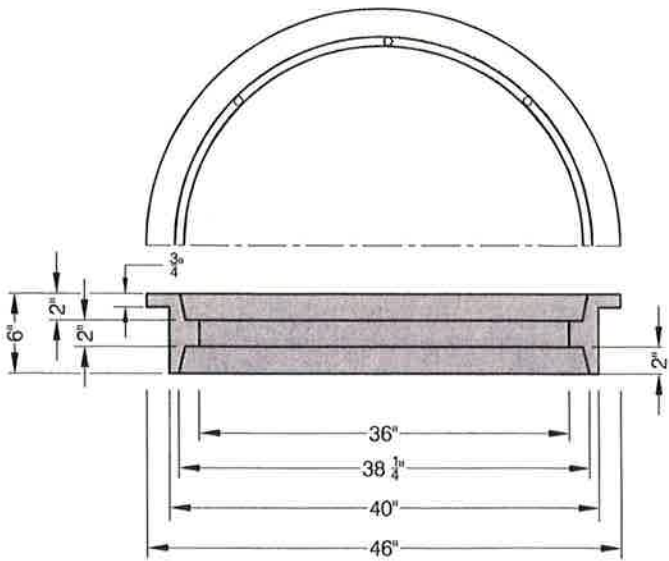
PICKBAR DETAIL



LID BACK



LID SECTION



**REVERSIBLE
FRAME**

EST. WEIGHT
360 POUNDS

NOTE:

All Castings Shall Be "Made In USA"

LRWU

1.17

**38" REVERSIBLE
FRAME & LID DETAILS**

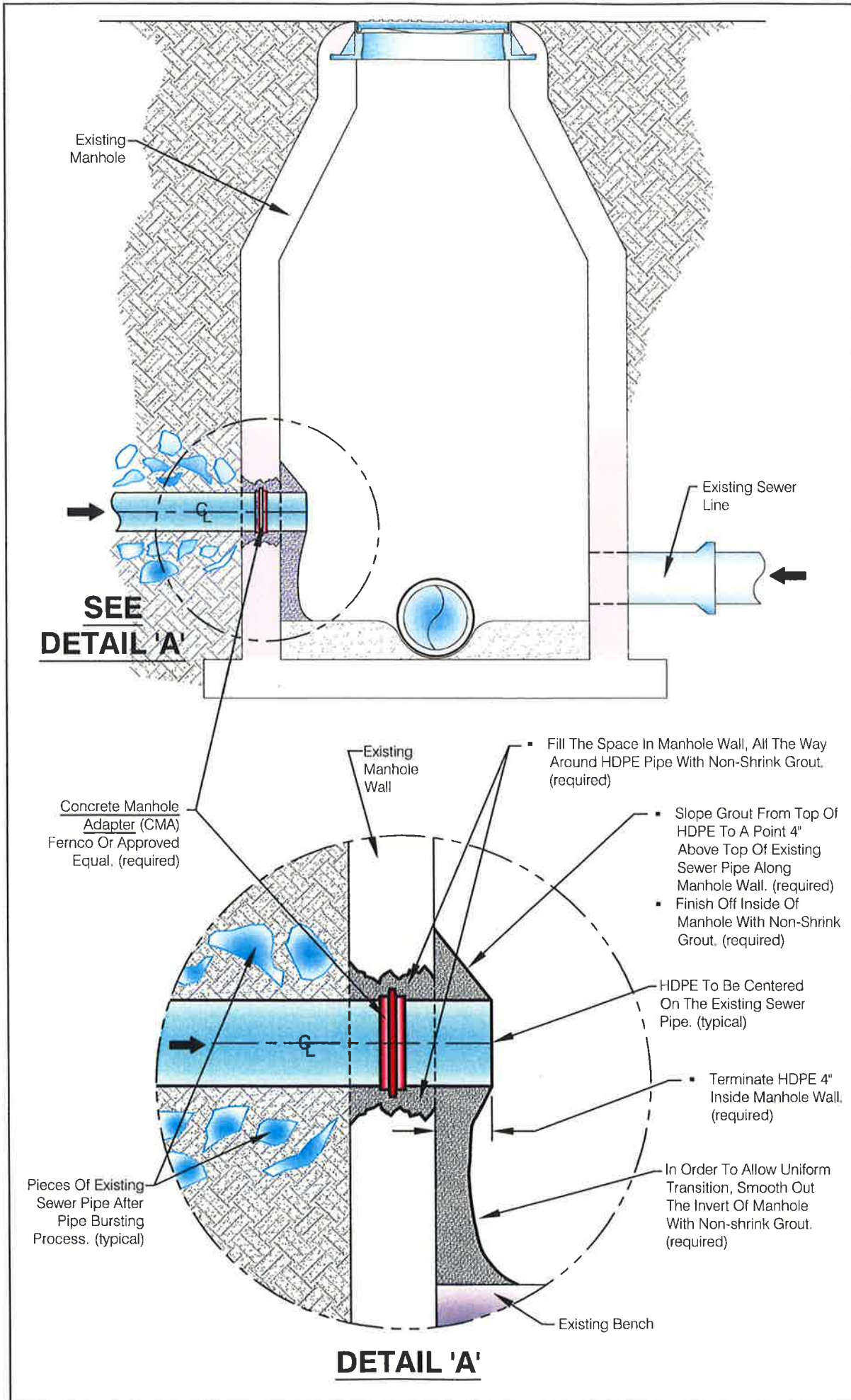
Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:32:51 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.17 - 38 INCH REVERSIBLE FRAME & LID.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE
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ENGINEERING.

NOTES



SEAL HDPE AT MANHOLE DETAILS

Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal

Updated: 2/14/2006 9:22:05 AM

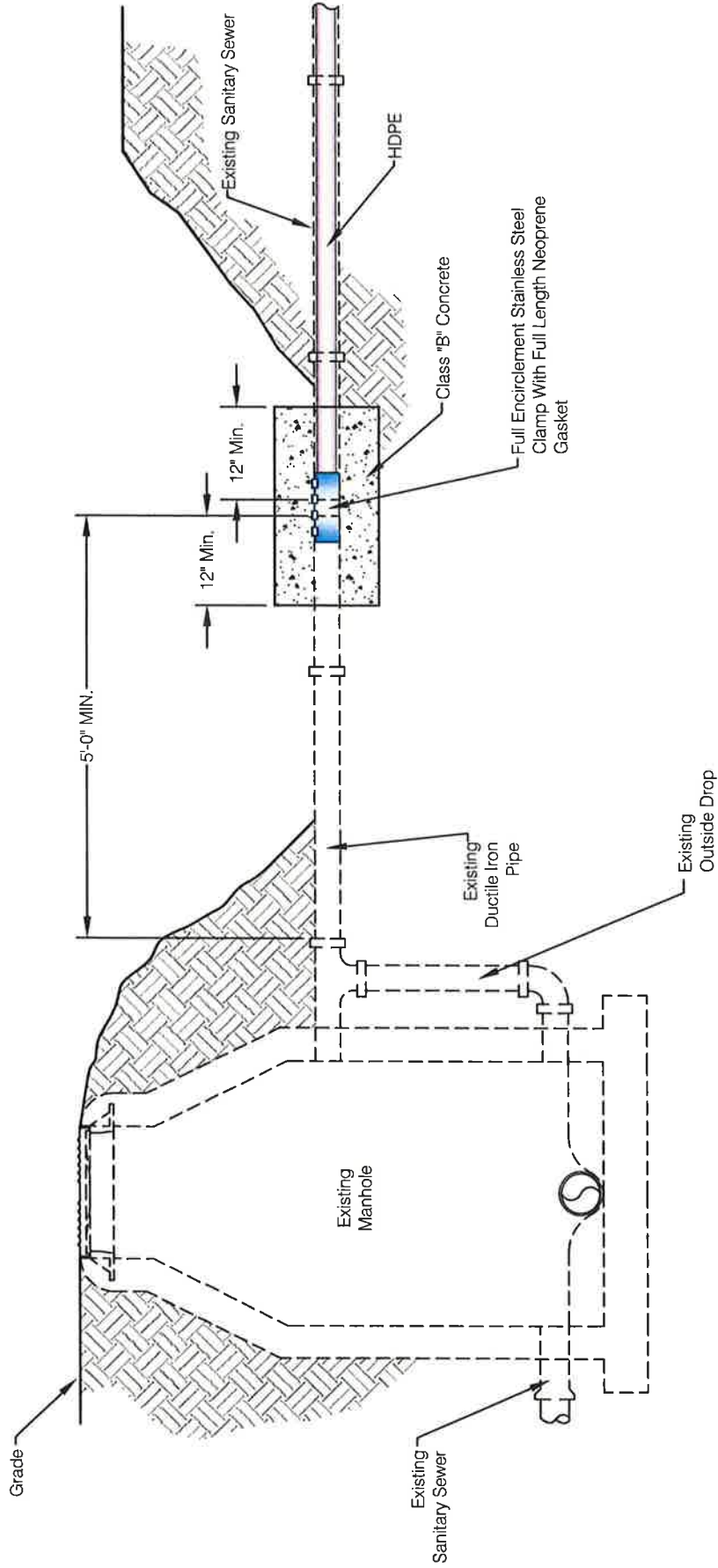
Drawing Status:

APPROVED

Filename: LRWU 1.18 - SEAL HDPE AT MH DETAIL.dwg

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Notes



1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 8:33:53 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.19 - SEAL HDPE OS DROP.dwg



Little Rock Wastewater Utility
 SPECIFICATIONS

SEALING HDPE AT OUTSIDE DROPS DETAIL

LRWU

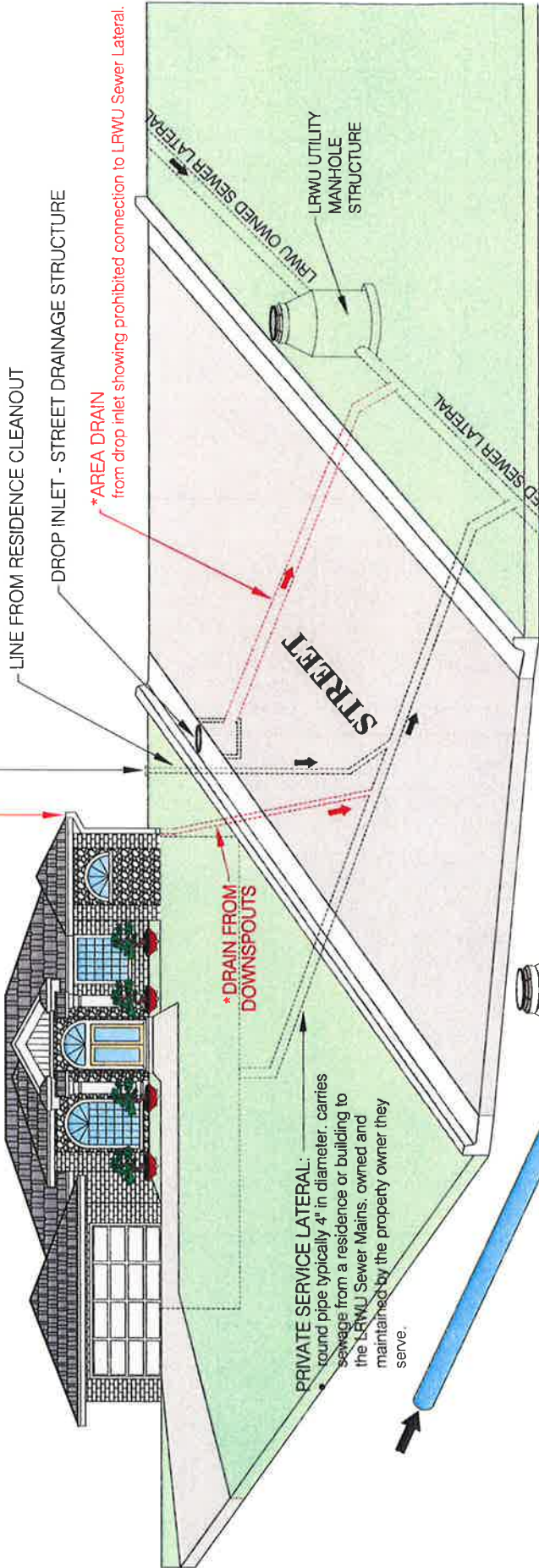
1.19

- * **INFLOW.....**
- Enters into the LRWU Collection System of unwanted storm water runoff generated during rainfall events.
- Enters into the LRWU Collection System through Utility main and private service line defects, roof downspouts, street drainage structures and connections, and deteriorating manhole structures.

ROOF DOWNSPOUTS
*showing prohibited connection to LRWU Sewer Lateral.

RESIDENCE SERVICE CLEANOUT:

- planned ground level access point located on the Private Service Lateral.
- allows plumbers access to remove blockages in the private service lateral.
- owned and maintained by the property owner.



- **PRIVATE SERVICE LATERAL:** round pipe typically 4" in diameter, carries sewage from a residence or building to the LRWU Sewer Mains, owned and maintained by the property owner they serve.

* **PROHIBITED CONNECTIONS.....**

- Unauthorized connections to Little Rock Wastewater Utility Collection System.
- Defined by Little Rock City Ordinance number 17.965.
- Allow rainwater or groundwater to enter the LRWU Collection System and hampering the homeowners service, as well as their neighbors, when found, the homeowner will be notified via registered mail.
- Corrective action is required as soon as possible to avoid enforcement actions.

LRWU SEWER MAINS:

- are round pipes that range in size from 6" to 60" in diameter
- are constructed of various materials (Concrete, Cast Iron, PVC, etc.)
- serve as the basic component of the transportation of sewage to LRWU Treatment Plants.

- **LRWU MANHOLE STRUCTURE:** a round concrete or brick structure that allows Utility workers to access LRWU owned sewer mains in order to inspect, clean and repair manholes or pipes.

Notes

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

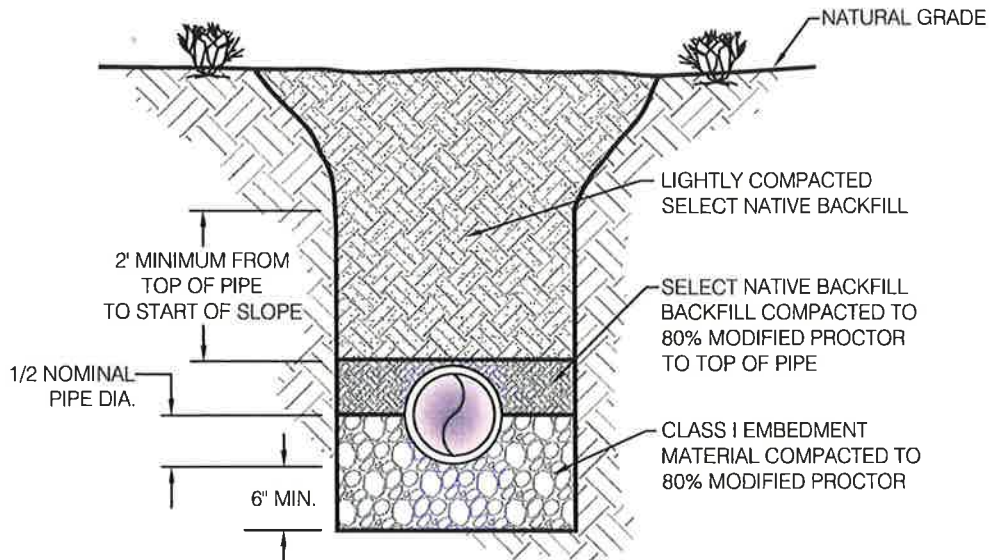
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:34:59 AM
Drawing Status: **APPROVED**
Filename: LRWU 1_20 Typical private residence sewer system layout.dwg



TYPICAL PRIVATE RESIDENCE SEWER SYSTEM LAYOUT

LRWU

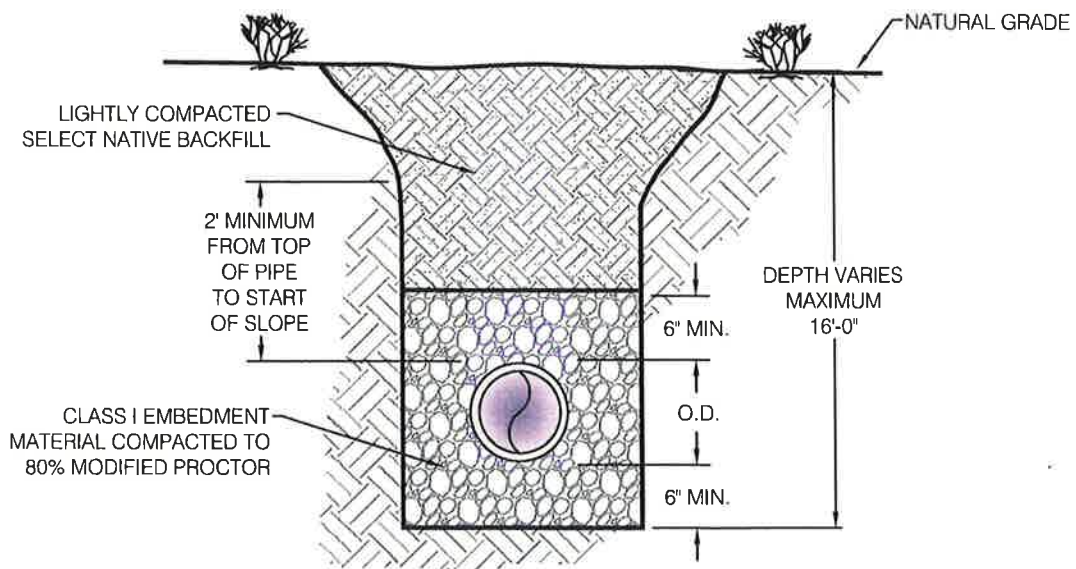
1.20



TYPICAL TRENCH DETAIL RIGID / SEMI-RIGID PIPE BEDDING

MAXIMUM WIDTH OF EXCAVATION FOR PIPE TRENCHES TABLE

NOMINAL PIPE DIAMETER (INCHES)	MAX. WIDTH OF TRENCH FROM TOP OF PIPE TO 2' ABOVE TOP OF PIPE
6, 8, 10,	2'-6"
12, 14, 15, 16,	3'-0"
18, 21,	3'-6"
24, 30	4'-0"
36	4'-6"



TYPICAL TRENCH DETAIL FLEXIBLE PIPE BEDDING

LRWU

1.21

TYPICAL TRENCH BEDDING DETAILS FOR FLEXIBLE & RIGID PIPE

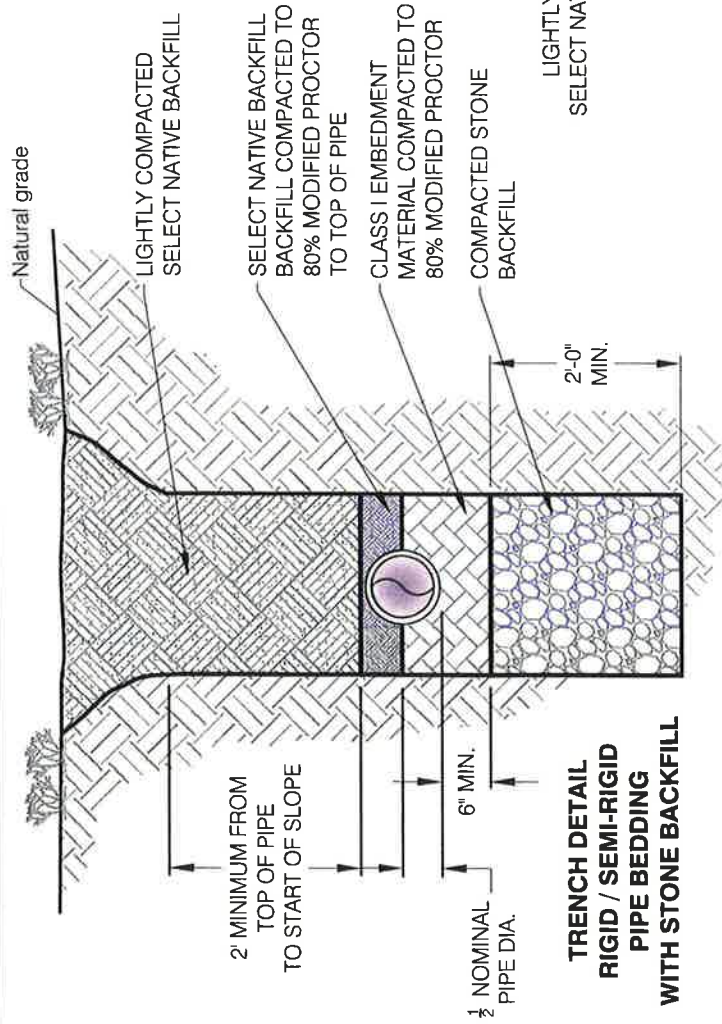
Little Rock Wastewater Utility
SPECIFICATIONS



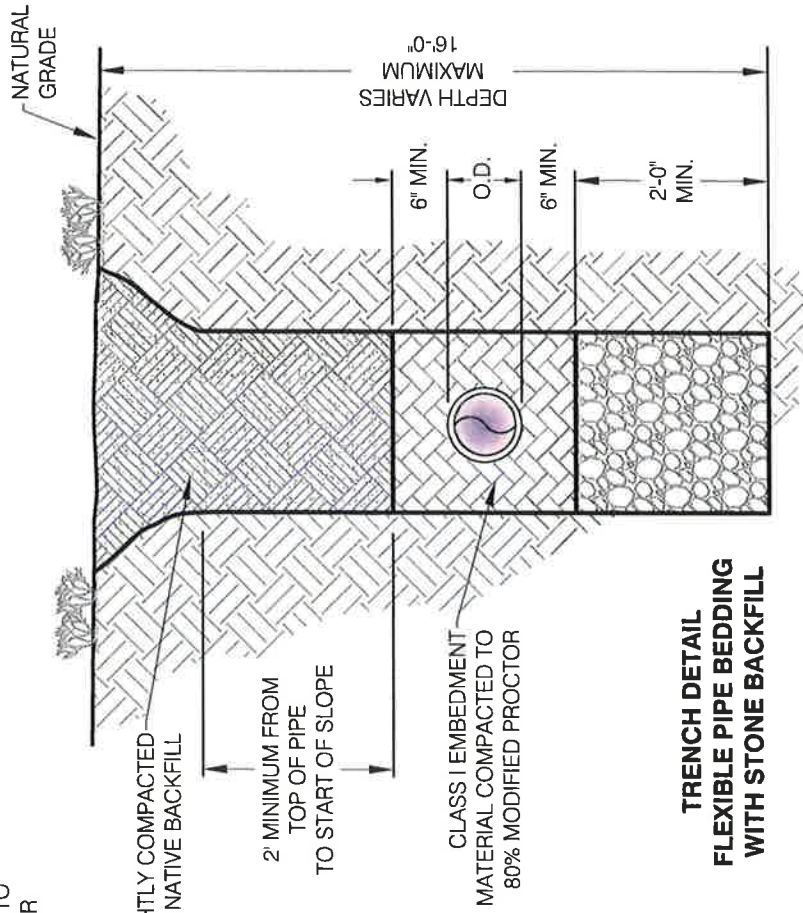
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 9:24:07 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.21 - TYPICAL TRENCH BEDDING DETAILS FOR FLEXIBLE & RIGID PIPE.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



NOTE: FOR MATERIAL REQUIREMENTS, SEE SECTION 2220, PART 2.02.B IN THE PROJECT MANUAL.



MAXIMUM WIDTH OF EXCAVATION FOR PIPE TRENCHES TABLE

NOMINAL PIPE DIAMETER (INCHES)	MAX. WIDTH OF TRENCH FROM TOP OF PIPE TO 2' ABOVE TOP OF PIPE
6, 8, 10,	2'-6"
12, 14, 15, 16,	3'-0"
18, 21,	3'-6"
24, 30	4'-0"
36	4'-6"

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU MANAGER OF ENGINEERING.

Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 8:36:06 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.22 - TRENCH BEDDING FOR FLEXIBLE & RIGID PIPE WITH STONE BACKFILL.dwg

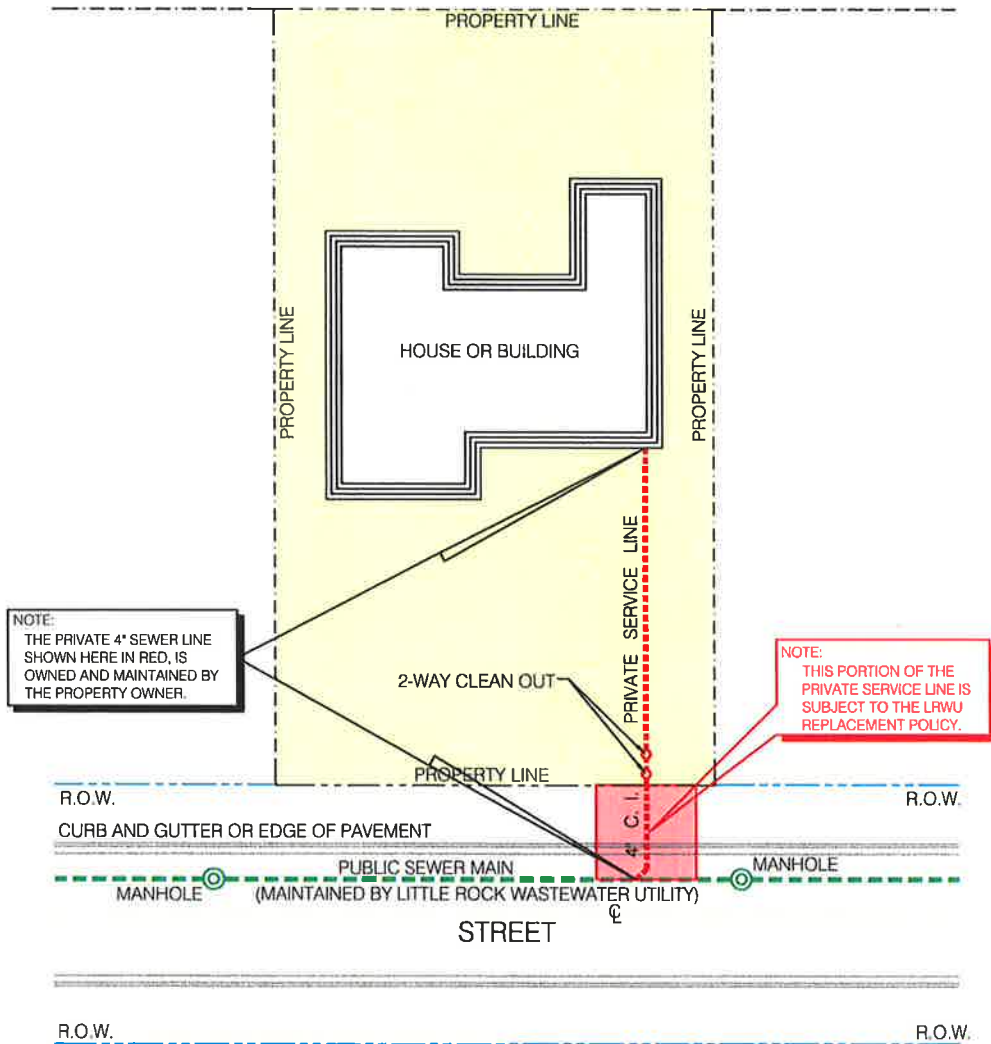


TRENCH BEDDING DETAILS - FLEXIBLE & RIGID PIPE - WITH STONE BACKFILL

LRWU

1.22

Notes



Little Rock Wastewater Utility "Standard Policy for Replacement of Eligible Four (4) inch Building Sewer Lines Located within a Street, Alley, drainage, or Utility Right-of-Way".

Notes

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Prepared By: Evangeline O'Neal

Updated: 2/14/2006 8:36:56 AM

Drawing Status:

APPROVED

Filename: LRWU 1.23 - SERVICE LINE REPLACEMENT IN ROW.dwg

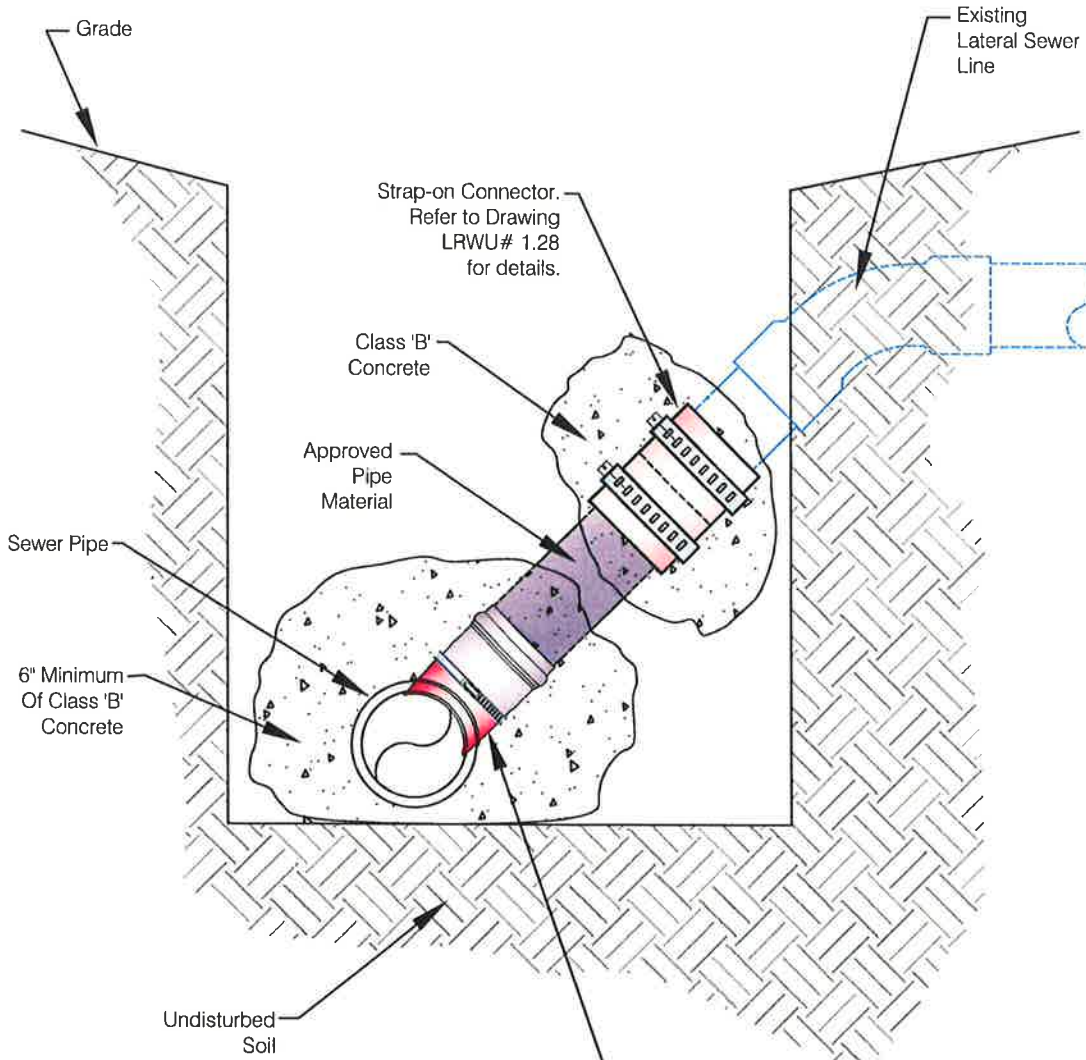


Little Rock Wastewater Utility
SPECIFICATIONS

**SERVICE LINE
REPLACEMENT
IN R.O.W.**

LRWU

1.23



Strap-on Connector.
Refer to Drawing
LRWU# 1.28
for details.

Class 'B'
Concrete

Approved
Pipe
Material

Sewer Pipe

6" Minimum
Of Class 'B'
Concrete

Undisturbed
Soil

Existing
Lateral Sewer
Line

Inserta Tee 3-piece Compression Fit Service
Connection (or Approved Equal) Consists Of:

- PVC Hub
- Rubber Sleeve
- Stainless Steel Band

Refer to drawing LRWU #1.29 for details.

Little Rock Wastewater Utility
SPECIFICATIONS



**NEW CONSTRUCTION
CONNECTION TO HOUSE SERVICE
DETAIL**

LRWU

1.24

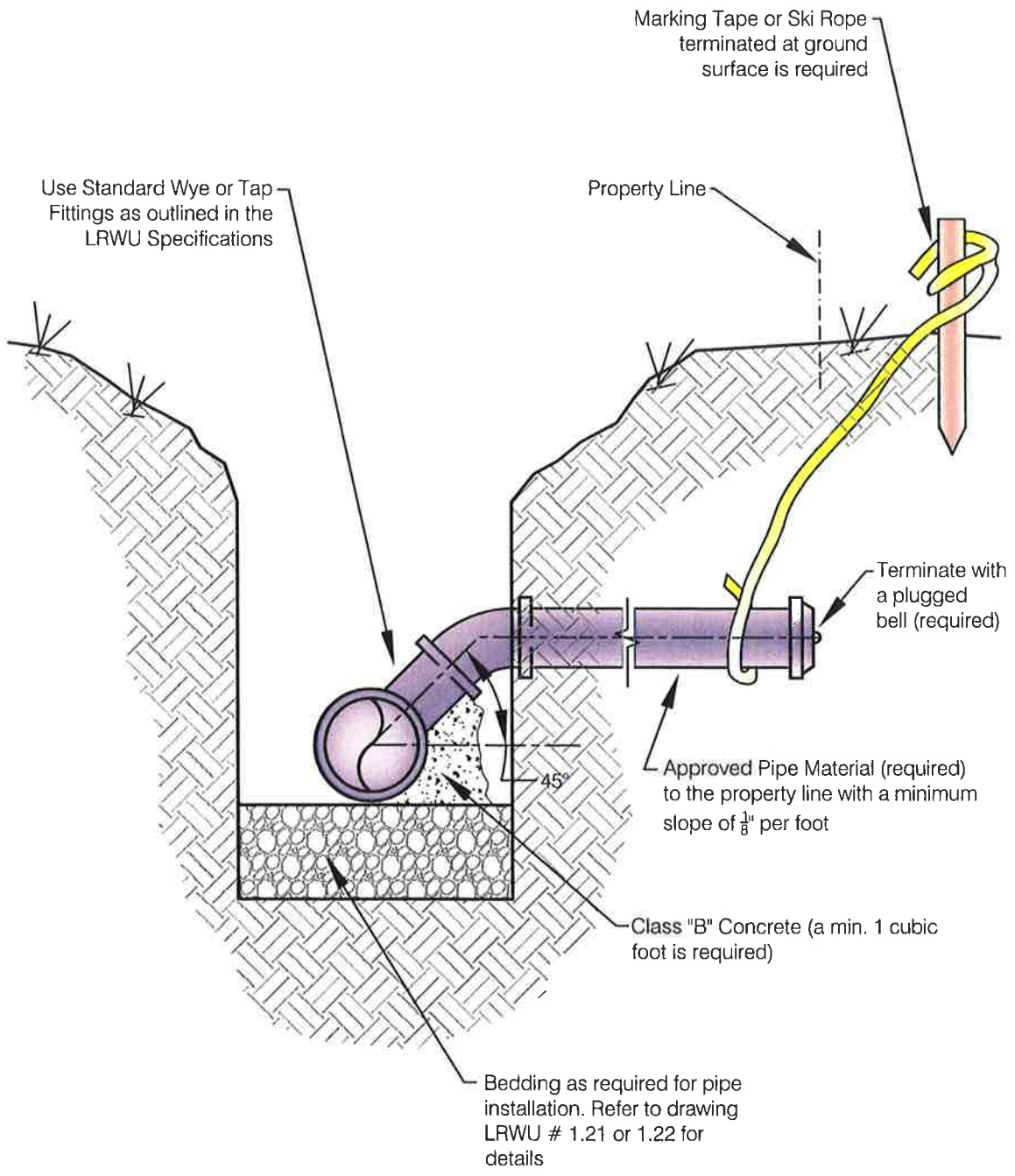
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:43:02 AM
Drawing Status:

APPROVED

Filename: LRWU 1.24 - New Construction Service
Connection.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE
APPROVED BY THE LRWU DIRECTOR OF
ENGINEERING.

Notes



**NEW CONSTRUCTION
SERVICE WYE DETAIL**

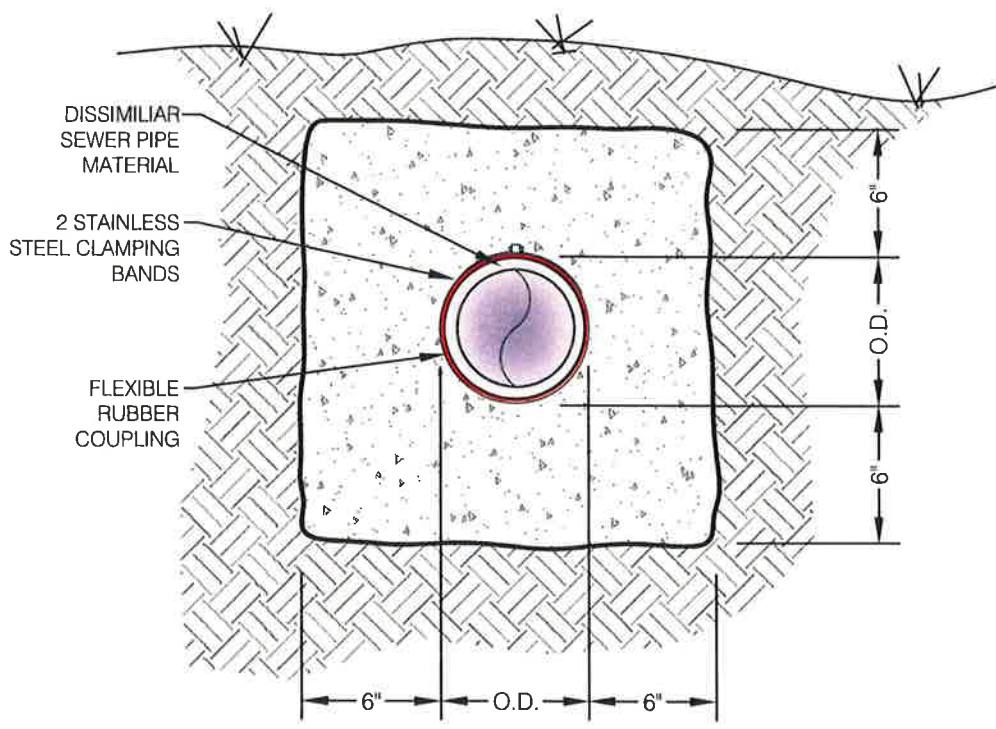
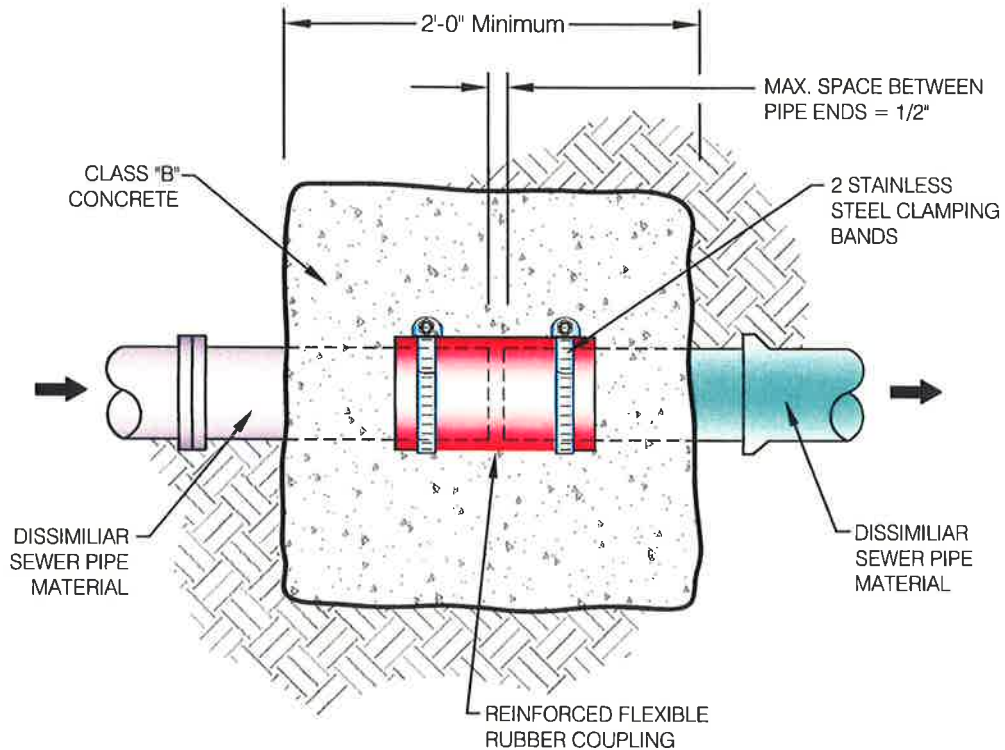
Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal
Update: 2/14/2006 8:37:47 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.25 - NEW CONSTRUCTION SERVICE WYE.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



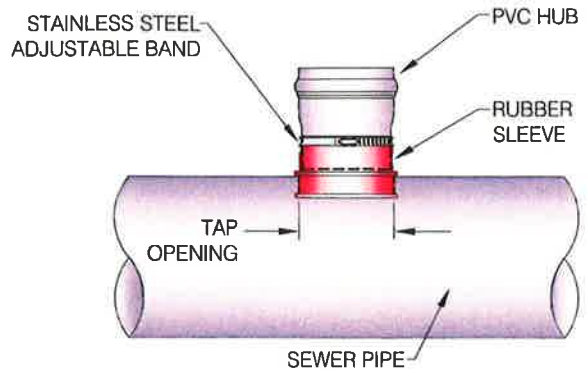
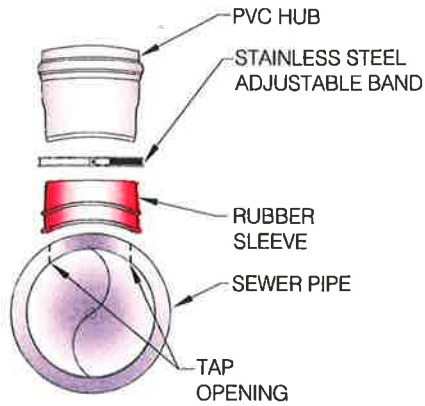
FLEXIBLE COUPLING DETAILS



Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 9:25:19 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.26 - FLEXIBLE COUPLING.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

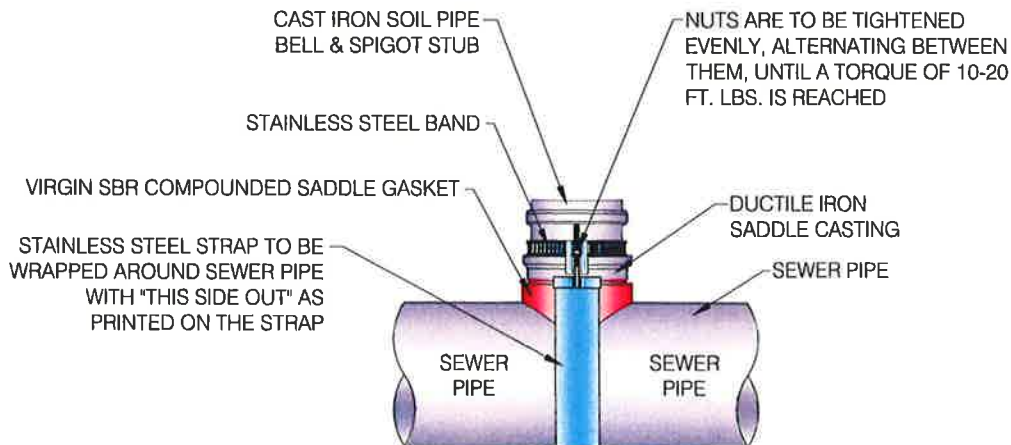
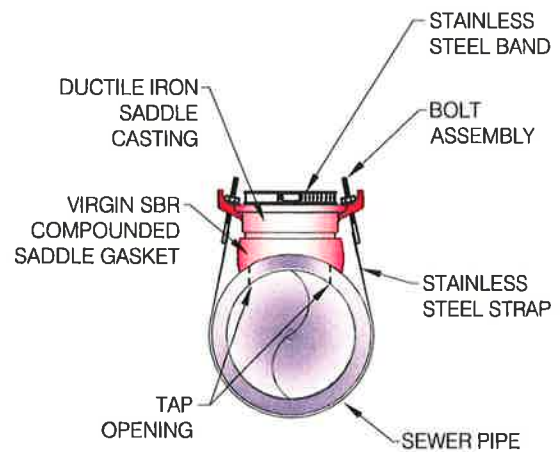
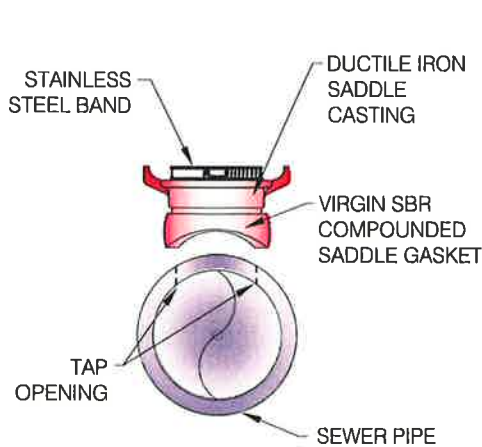


INSERTA TEE 3-PIECE
COMPRESSION FIT
SERVICE CONNECTION
(OR APPROVED EQUAL)
CONSISTS OF:

- PVC HUB
- RUBBER SLEEVE
- STAINLESS STEEL BAND

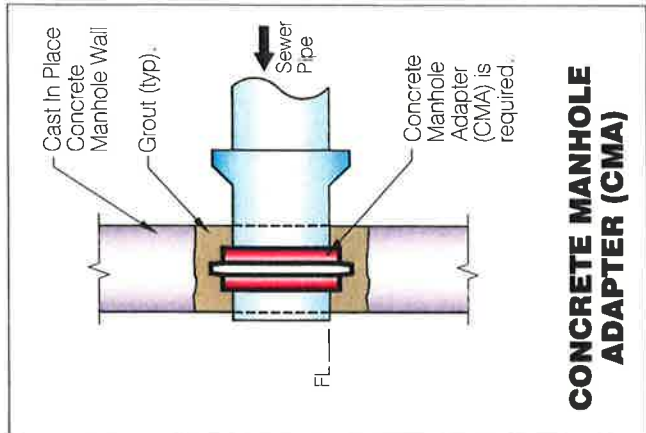
COMPRESSION FIT 3-PIECE SERVICE CONNECTION

(FOR 12" & LARGER DIAMETER PIPE ONLY)

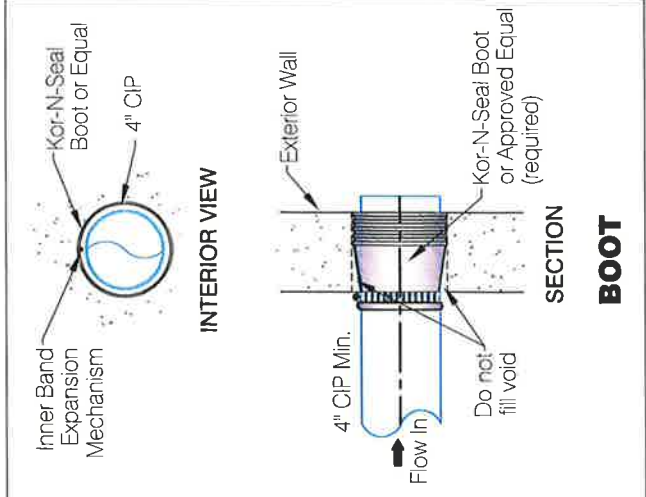


COMPOSITE SADDLE

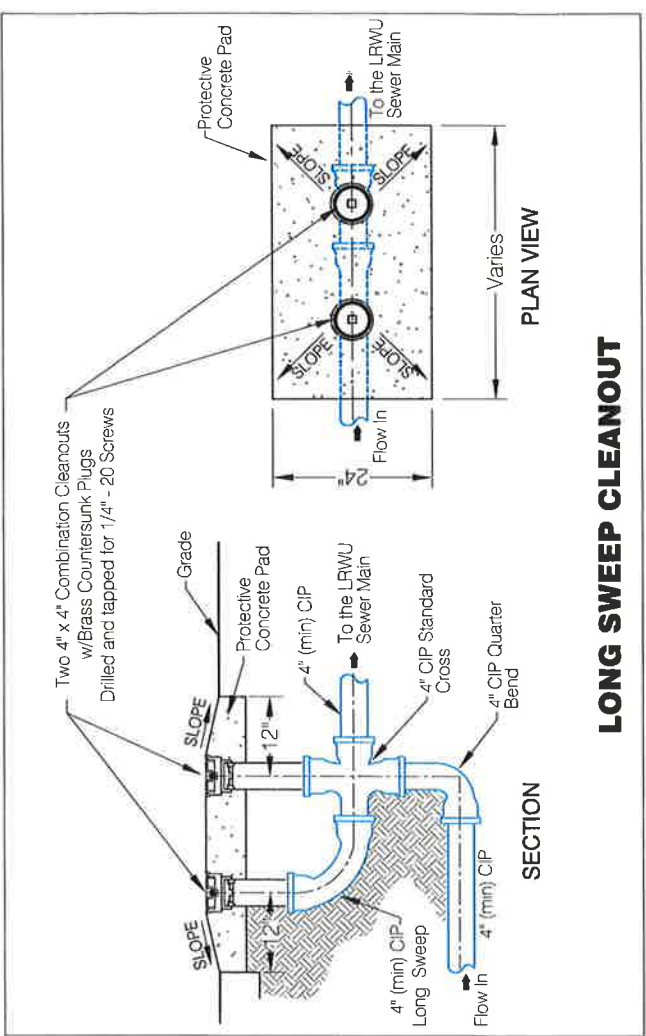




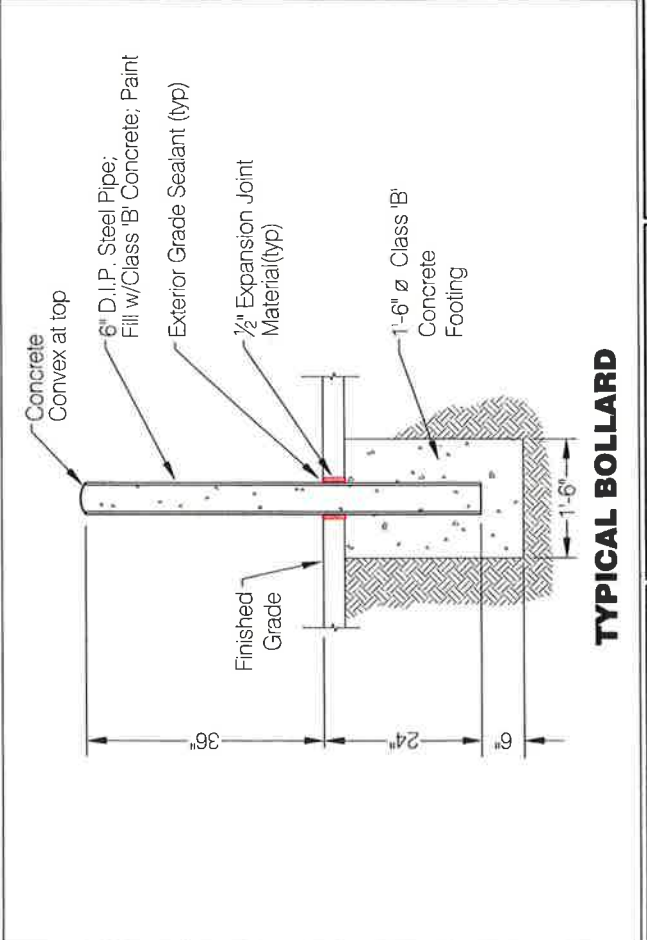
CONCRETE MANHOLE ADAPTER (CMA)



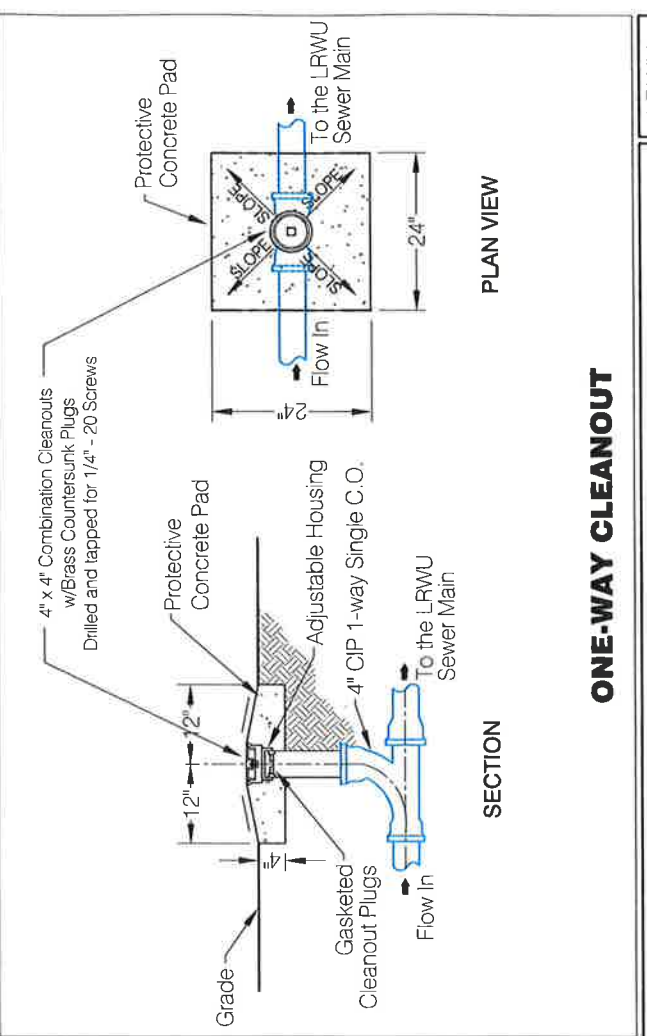
BOOT



LONG SWEEP CLEANOUT



TYPICAL BOLLARD



ONE-WAY CLEANOUT

Notes
 1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU MANAGER OF ENGINEERING.

Prepared By: Evangeline O'Neal
 Revised: 2/14/2006 8:50:21 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.29 - MISCELLANEOUS DETAILS.dwg



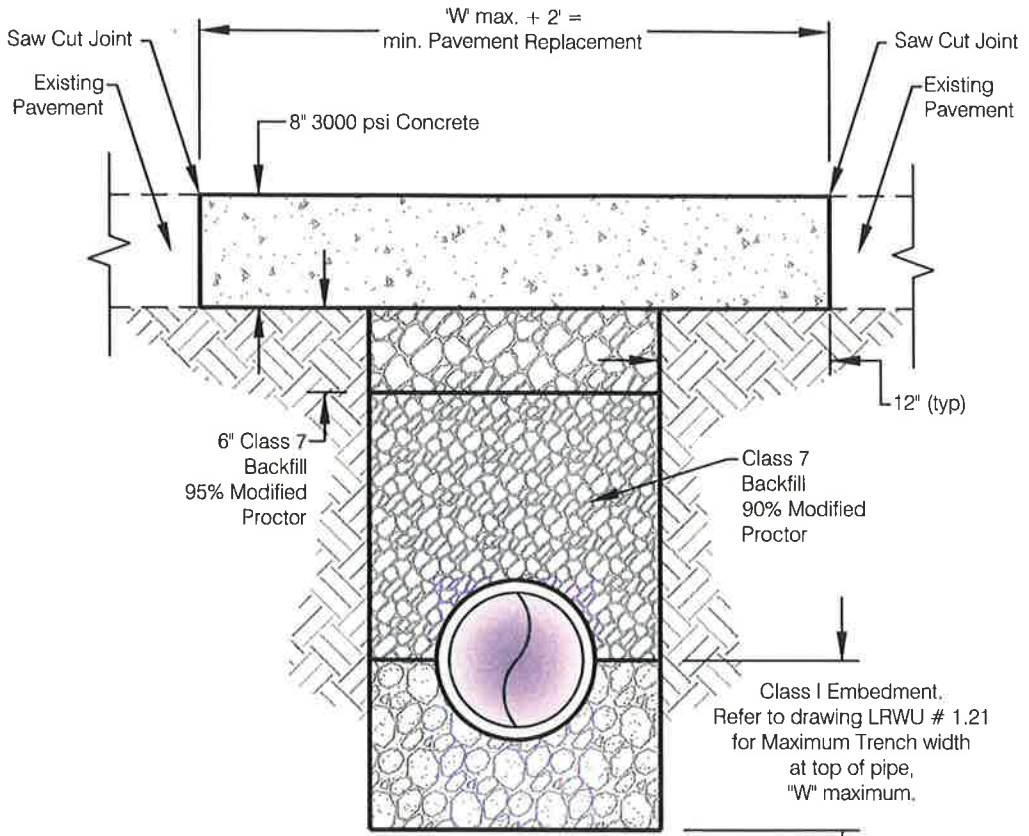
CITY & COUNTY STREET REPAIR DETAILS



Prepared By: Evangeline O'Neal
Update: 2/14/2006 8:52:56 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.30 - CITY & CTY ST REPAIR.dwg

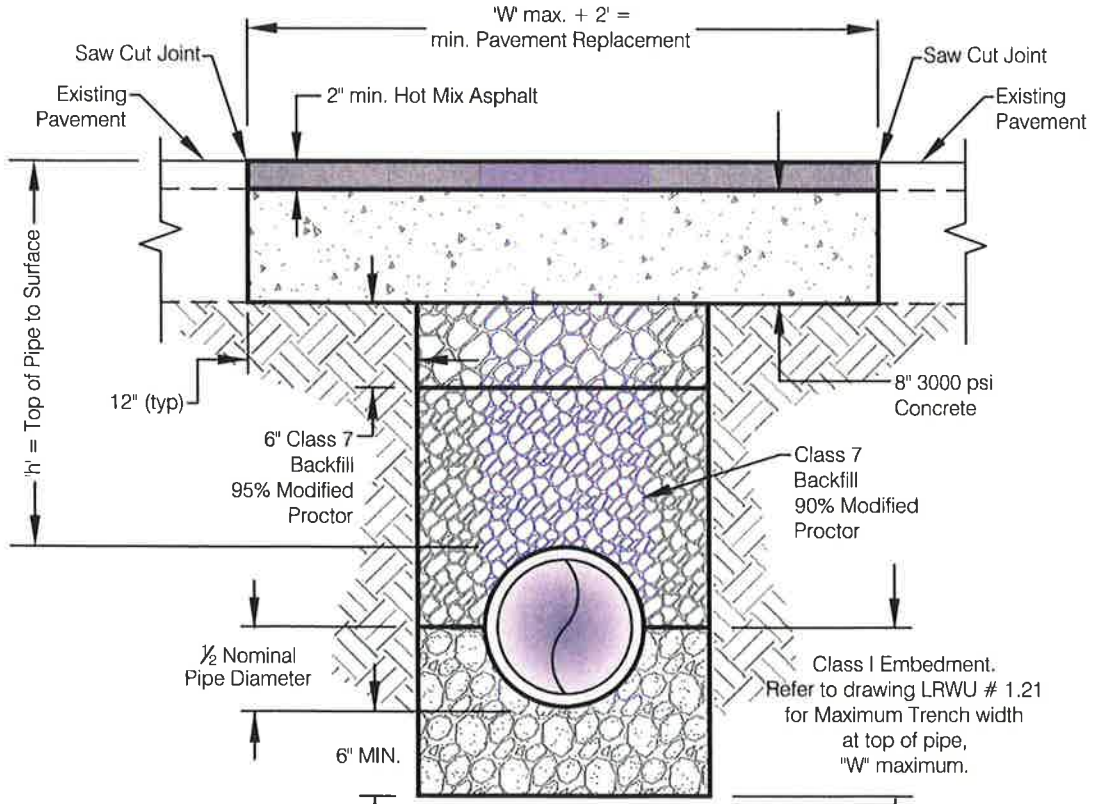
1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



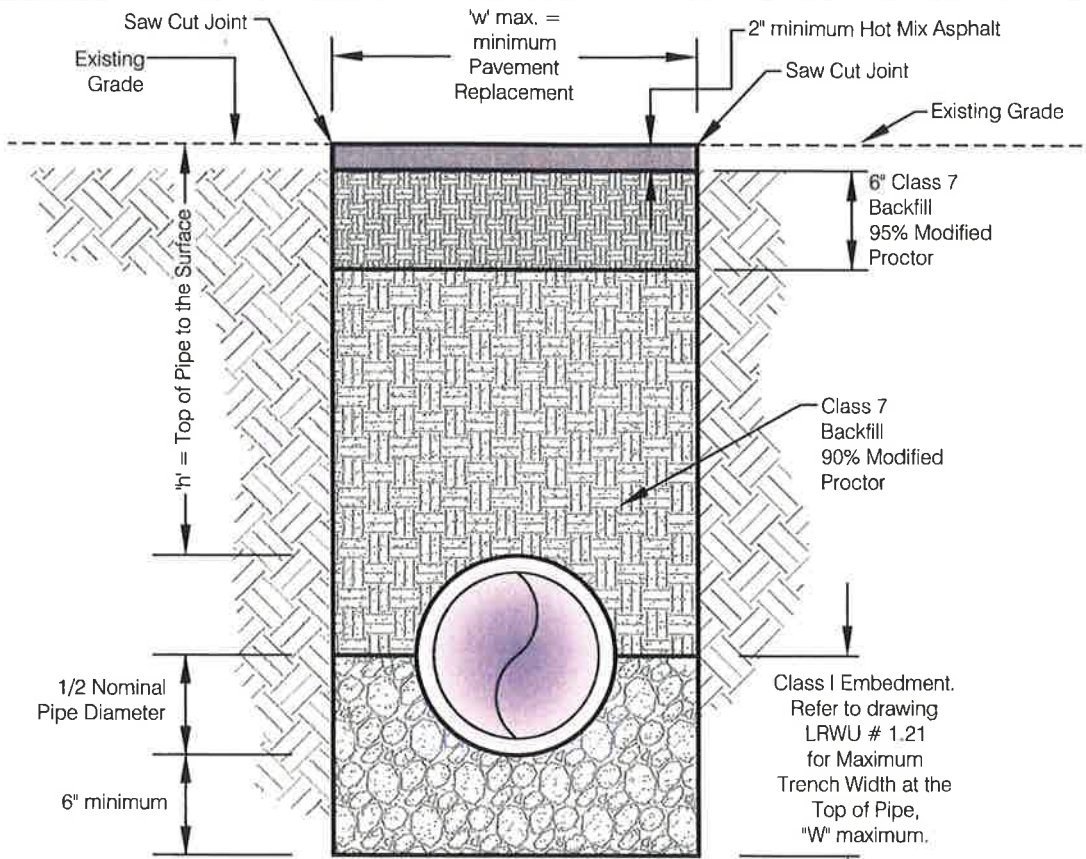
CONCRETE STREET

Note: Apply Tack Coat On Concrete Cap & Sides Of Cut Prior To Placing Hot Mix Asphalt



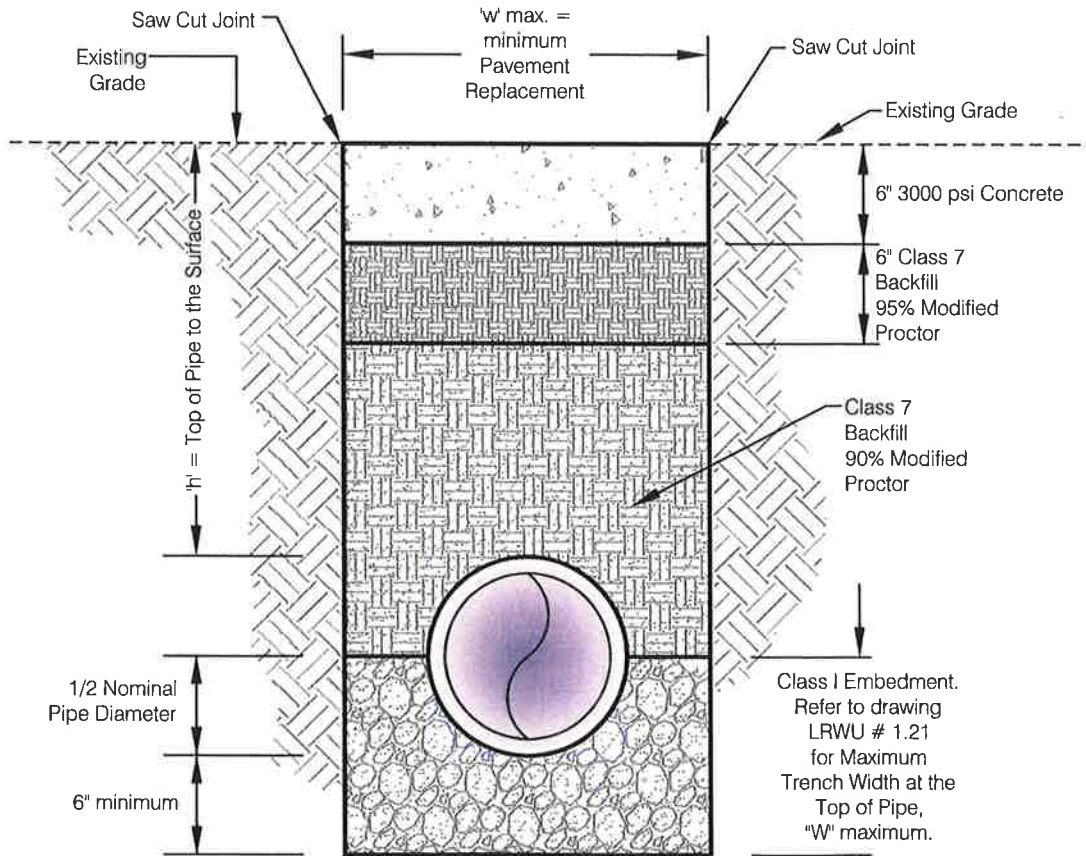
ASPHALT STREET

Note: Maximum Pavement Replacement Payment width = $2' + 'h' + 'w'$ max



ASPHALT ALLEY REPAIR

NOTE: Maximum Pavement Replacement Payment width = "w" max + "h"



CONCRETE ALLEY REPAIR

ALLEY REPAIR DETAILS

Little Rock Wastewater Utility

SPECIFICATIONS



Prepared By: Evangeline O'Neal

Updated: 2/14/2006 9:26:39 AM

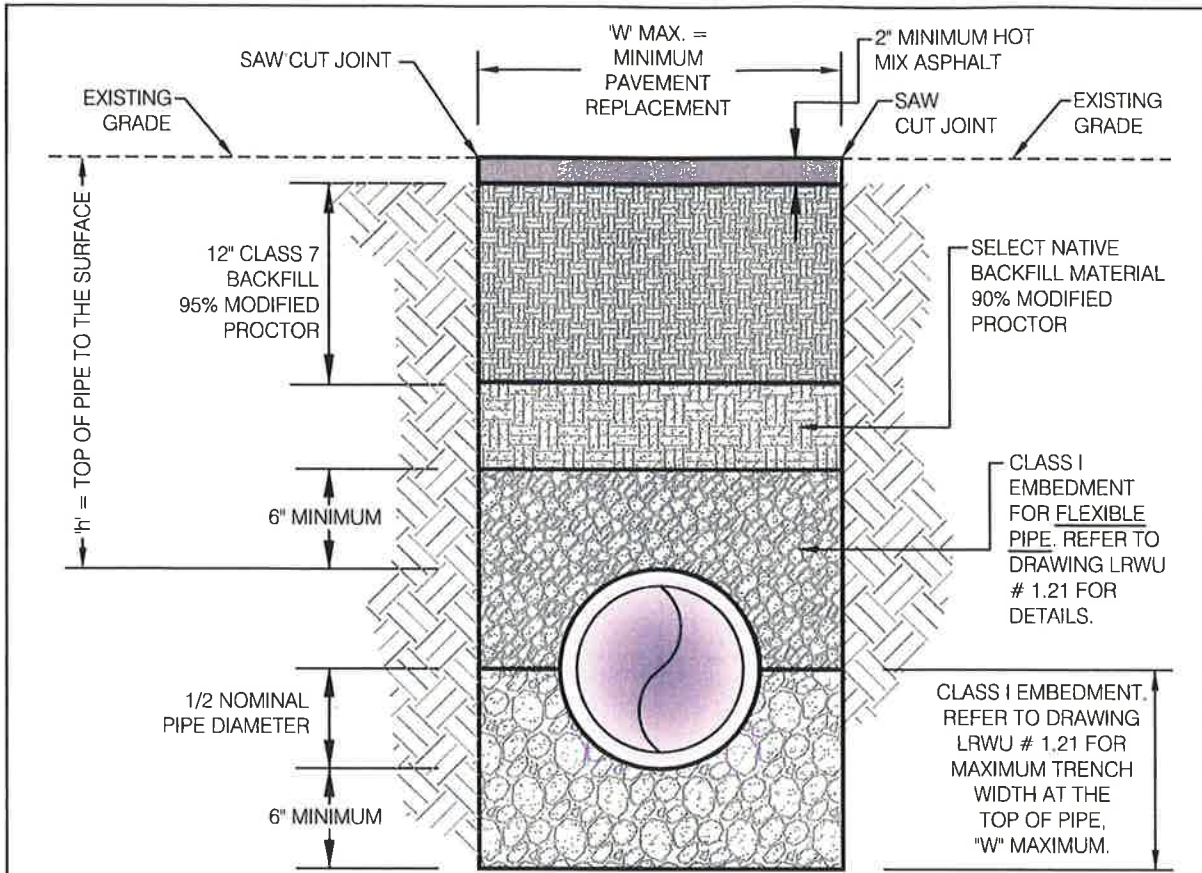
Drawing Status:

APPROVED

Filename: LRWU 1.31 - ALLEY REPAIR.dwg

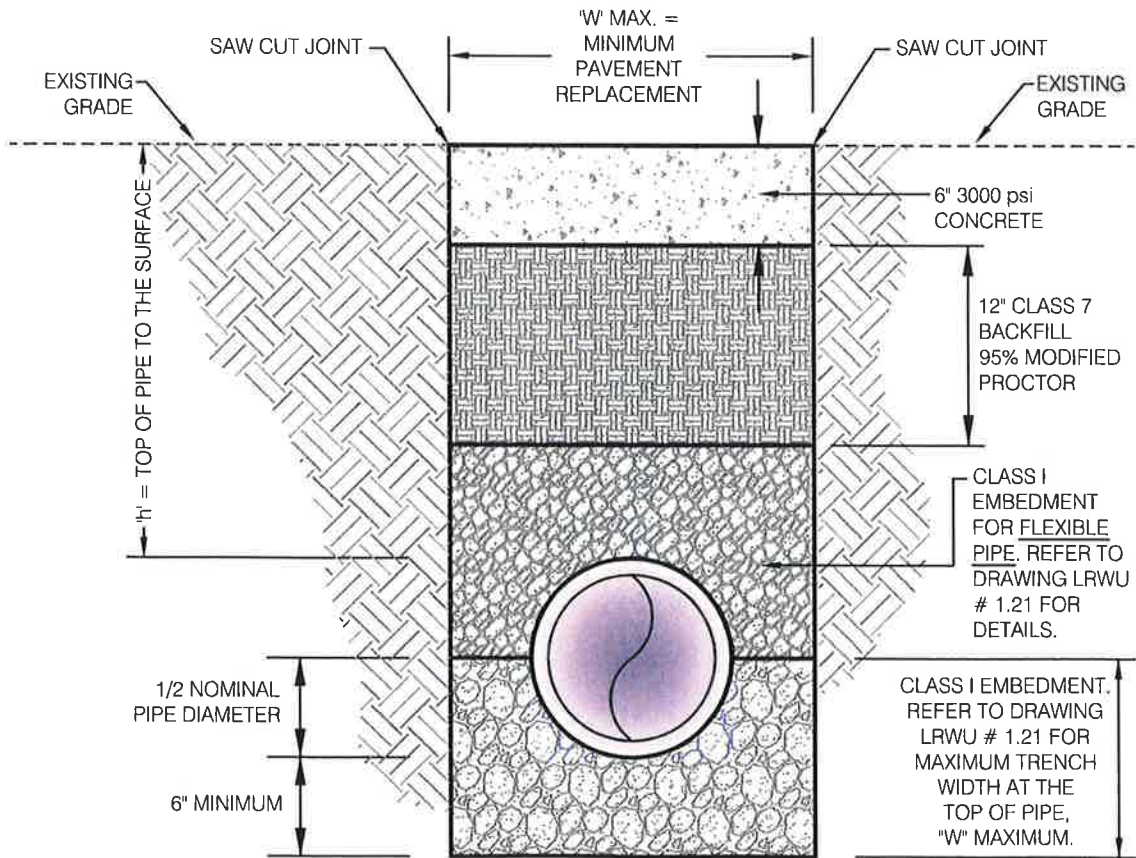
1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



ASPHALT DRIVE/PARKING AREA REPAIR

NOTE: MAXIMUM PAVEMENT REPLACEMENT PAYMENT WIDTH = "W" MAX + "h"



CONCRETE DRIVE/PARKING AREA REPAIR

LRWU

1.32

ASPHALT/CONCRETE DRIVE & PARKING AREA REPAIR DETAILS

Little Rock Wastewater Utility
SPECIFICATIONS



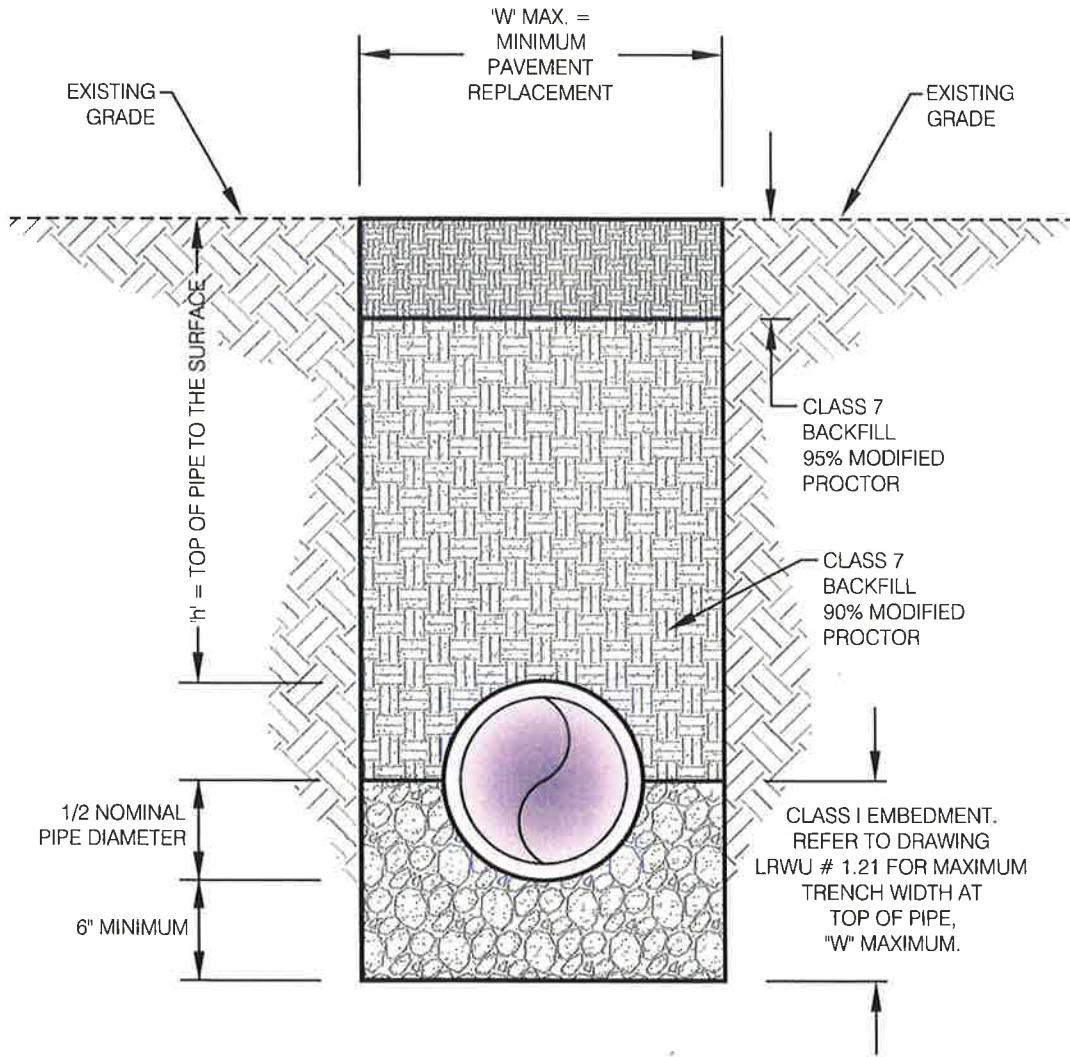
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:53:46 AM
Drawing Status:

APPROVED

Filename: LRWU 1.32 - ASPHALT
CONC DR & PKG AREA REPAIR.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



NOTE: MAXIMUM PAVEMENT REPLACEMENT PAYMENT WIDTH = "W" MAX. + "h"

GRAVEL ALLEY & STREET REPAIR DETAILS

Little Rock Wastewater Utility SPECIFICATIONS

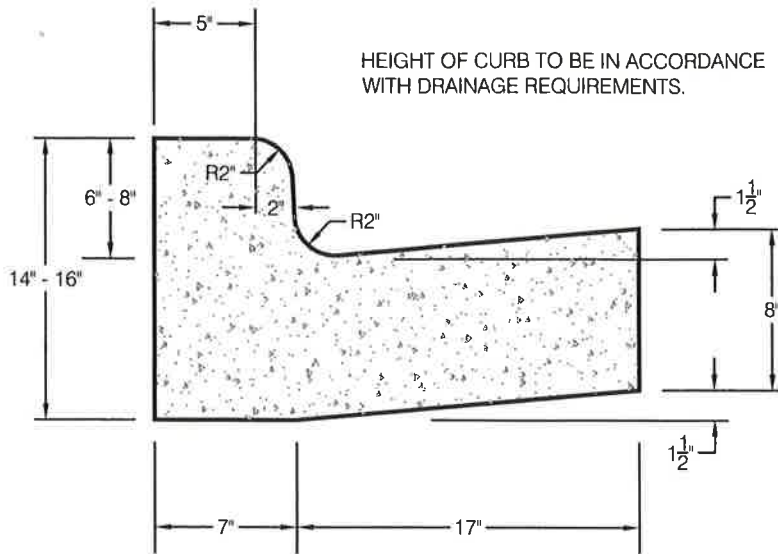


Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 9:27:46 AM
 Drawing Status: **APPROVED**

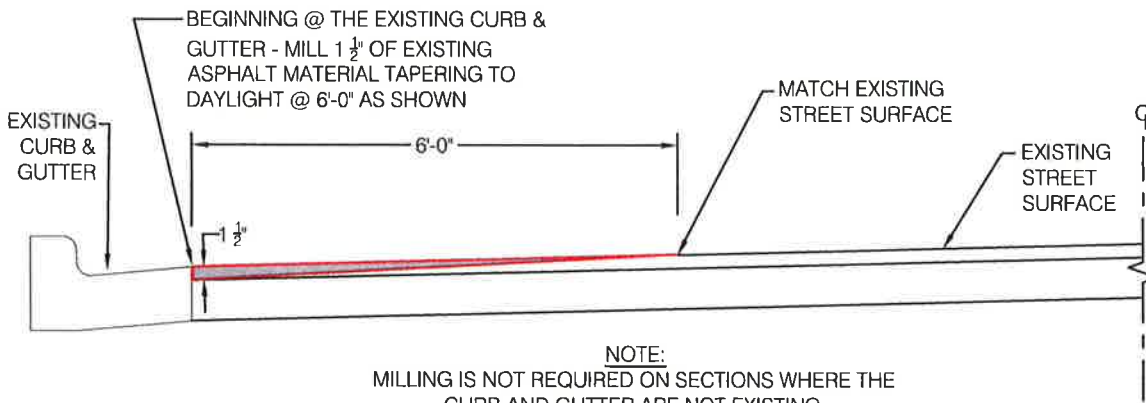
Filename: LRWU 1.33 - GRAVEL ALLEY OR ST REPAIR.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

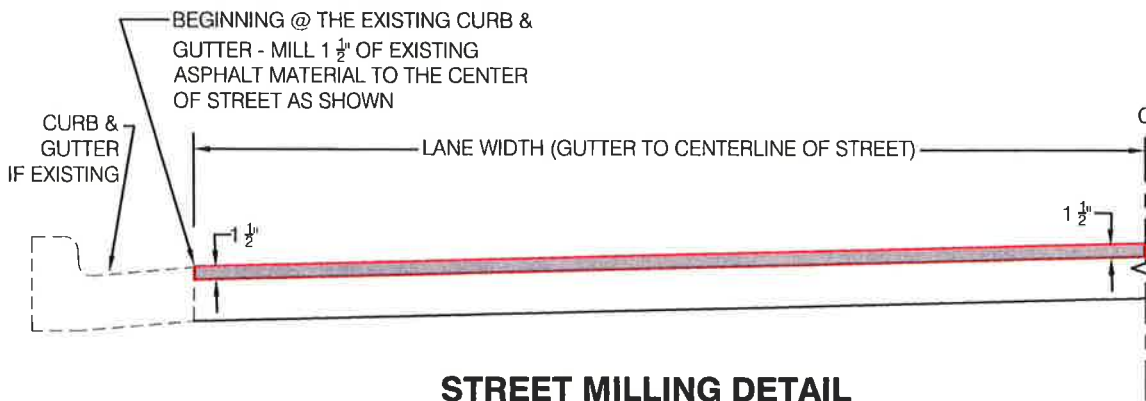


**CLASS 1 & 2 UPRIGHT
CURB AND GUTTER DETAIL**



NOTE:
MILLING IS NOT REQUIRED ON SECTIONS WHERE THE CURB AND GUTTER ARE NOT EXISTING.

**STREET MILLING DETAIL
FOR EXISTING CURB AND GUTTER
TWO LANE REPLACEMENT**



**STREET MILLING DETAIL
FOR
SINGLE LANE REPLACEMENT**

**CURB & GUTTER
INCLUDING STREET MILLING DETAILS
FOR EXISTING CURB & GUTTER**

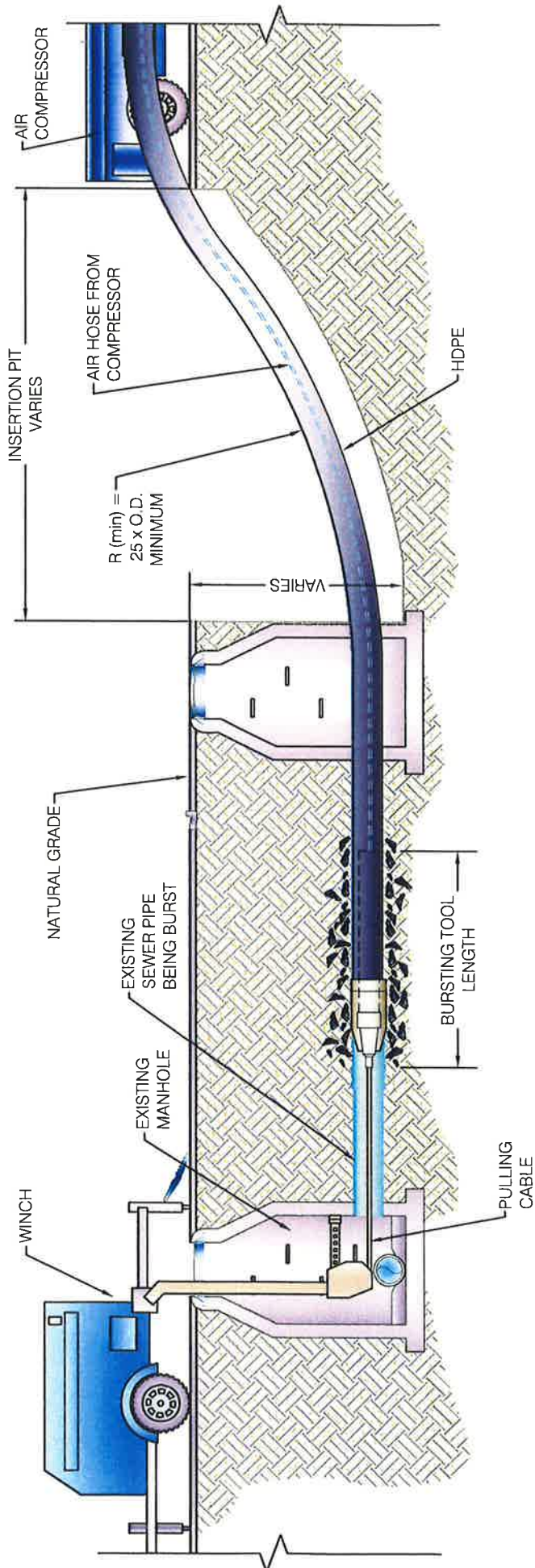
Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal
Update: 2/14/2006 8:54:49 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.34 - CURB & GUTTER.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



TYPICAL PIPE BURSTING OPERATION LAYOUT

- THE TOOL MUST BE LAUNCHED LEVEL.
- THE BOTTOM LENGTH OF THE INSERTION PIT - BEFORE SLOPING UP TO THE NATURAL GRADE - SHALL BE 2 TIMES THE LENGTH OF THE BURSTING TOOL, OR 12 TIMES THE PIPE DIAMETER, WHICHEVER IS GREATER.

Notes

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

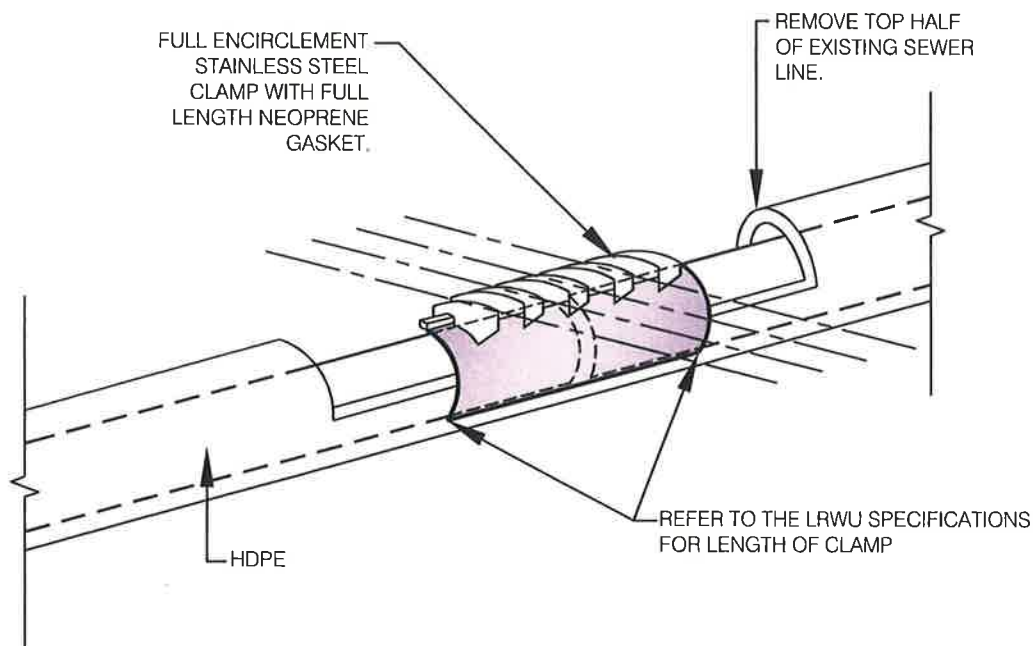
Prepared By: Evangeline CNeal
 Updated: 2/14/2006 9:28:49 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.35 - PIPE BURSTING.dwg



SEWER LINE REHABILITATION BY PIPE BURSTING WITH HDPE PIPE DETAILS

HDPE SPLICE DETAIL

Little Rock Wastewater Utility
SPECIFICATIONS



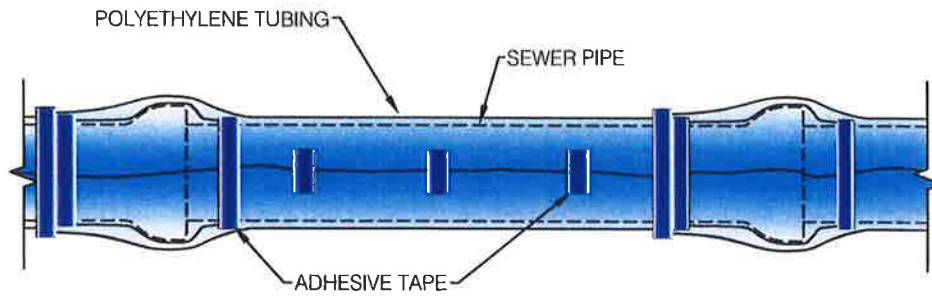
NOTES:

- EXPOSED HDPE AND CLAMP TO BE ENCASED WITH A 6" MINIMUM OF CLASS 'B' CONCRETE.
- JOINING THE TERMINAL ENDS OF THE HDPE TOGETHER IN THE TWO DIRECTION INSERTION PIT WITH MAXIMUM 1/2" GAP.

Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 8:55:38 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.36 - HDPE SPLICE.dwg

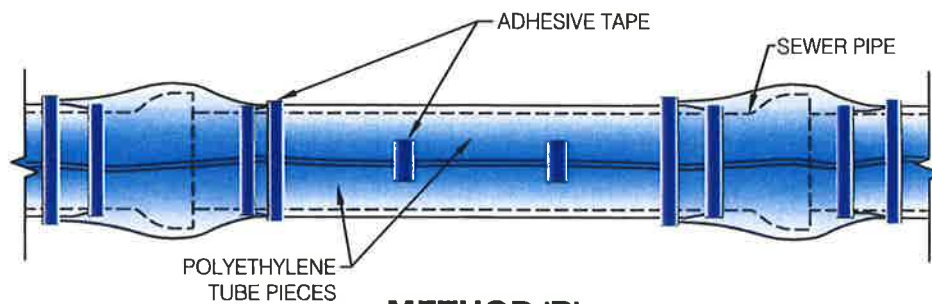
1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



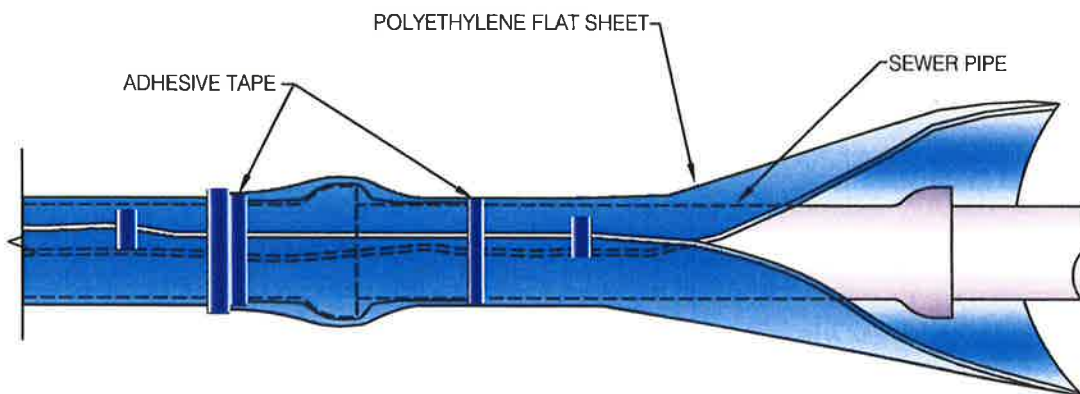
METHOD 'A'

METHOD 'A' USES ONE LENGTH OF POLYETHYLENE TUBE, OVERLAPPED AT THE JOINTS.



METHOD 'B'

METHOD 'B' USES SEPARATE PIECES OF POLYETHYLENE TUBE FOR THE BARREL OF THE PIPE AND THE JOINTS. THIS METHOD IS NOT RECOMMENDED FOR BOLTED-TYPE JOINTS UNLESS AN ADDITIONAL LAYER OF POLYETHYLENE IS PROVIDED OVER THE JOINT AREA AS IN METHODS 'A' AND 'C'.



METHOD 'C'

METHOD 'C' - EACH SECTION IS WRAPPED WITH A FLAT POLYETHYLENE SHEET.

THE ANSI/AWWA C105/A21.5 STANDARD OUTLINES THREE METHODS OF INSTALLING POLYETHYLENE ENCASEMENT/ SLEEVING.

INSTALLATION OF POLYETHYLENE ENCASEMENT DETAILS

Little Rock Wastewater Utility
SPECIFICATIONS



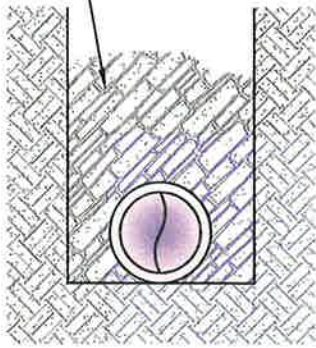
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:56:29 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.37 - INSTALLATION OF HDPE ENCASEMENT.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

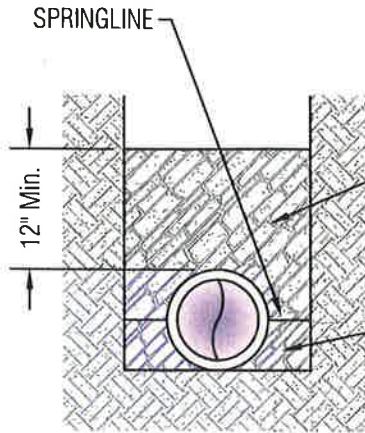
TYPE 1

- BACKFILL LOOSELY USING SELECT MATERIAL.



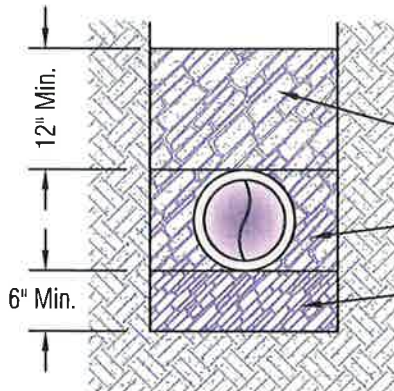
TYPE 2

- BACKFILL USING SELECT MATERIAL LIGHTLY COMPACTED TO THE SPRINGLINE OF THE PIPE.
- BACKFILL LOOSELY TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE, USING SELECT MATERIAL.



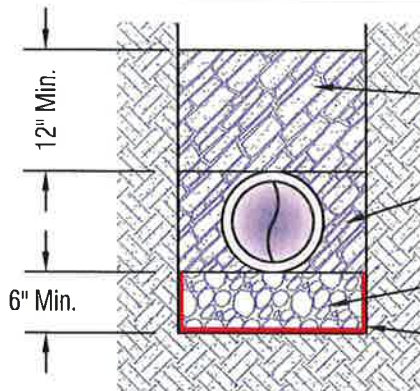
TYPE 3

- BACKFILL LOOSELY TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE, USING SELECT MATERIAL.
- BACKFILL USING SELECT MATERIAL LIGHTLY COMPACTED TO THE TOP OF THE PIPE.
- BED PIPE USING SELECT MATERIAL A MINIMUM OF 6".



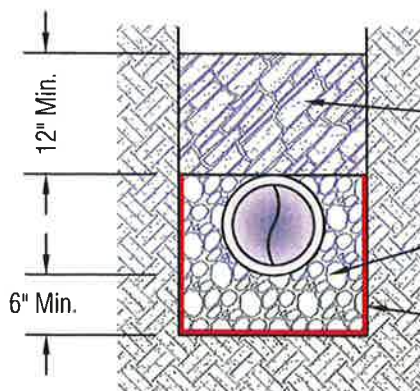
TYPE 4

- BACKFILL LOOSELY TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE USING SELECT MATERIAL.
- BACKFILL USING SELECT MATERIAL COMPACTED TO 80% STANDARD PROCTOR, AASHTO T99 TO THE TOP OF THE PIPE.
- BED PIPE USING CLASS I EMBEDMENT MATERIAL TO A DEPTH OF $\frac{1}{8}$ THE PIPE DIAMETER A MINIMUM OF 6".
- USE FILTER FABRIC AS SHOWN HERE AS A BOLD RED LINE.



TYPE 5

- BACKFILL USING SELECT MATERIAL LOOSELY TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE.
- BACKFILL USING CLASS I EMBEDMENT COMPACTED 90% STANDARD PROCTOR, AASHTO T99 TO TOP OF PIPE.
- BED PIPE USING CLASS I EMBEDMENT MATERIAL TO A DEPTH OF $\frac{1}{8}$ PIPE DIAMETER A MINIMUM OF 6".
- USE FILTER FABRIC, AS SHOWN HERE WITH A BOLD RED LINE.



FITTING	THRUST PER 100 psi PRESSURE THRUST (tons)									
	6"	8"	12"	16"	20"	24"	30"	36"	42"	48"
11 $\frac{1}{4}$ "	0.3	0.5	1.1	2.0	3.1	4.4	6.9	10.0	13.6	17.7
15	0.4	0.7	1.5	2.6	4.1	5.9	9.2	13.3	18.1	23.6
22 $\frac{1}{2}$ "	0.6	1.0	2.2	3.9	6.1	8.8	13.8	19.9	27.0	35.3
30	0.7	1.3	2.9	5.2	8.1	11.7	18.3	26.3	35.3	46.8
45	1.1	1.9	4.3	7.7	12.0	17.3	27.1	39.0	53.0	69.2
90	2.0	3.6	8.0	14.2	22.2	32.0	50.0	72.0	98.0	128.0
PLUG (DEAD END)	1.4	2.5	5.7	10.1	15.7	22.6	35.3	50.3	69.3	90.5

TYPE OF SOIL	SUGGESTED SAFE BEARING VALUES (TONS/SQ. FT.)
SOLID ROCK	25
HARD SLATE	6
MEDIUM SHALE	4
SOFT SHALE	2
DRY CLAY GRAVEL	4
SOFT CLAY	1.5
DRY SAND OR LOAM	2.5
WET CLAY	0.75

Little Rock Wastewater Utility

SPECIFICATIONS



Prepared By: Evangeline O'Neal

Updated: 2/14/2006 9:02:50 AM

Drawing Status:

APPROVEDFilename: LRWU 1.39 - CONCRETE
THRUST BLOCK & COLLAR BEARING
TABLES.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST
BE APPROVED BY THE LRWU
DIRECTOR OF ENGINEERING.

Notes

CONCRETE THRUST BLOCK & COLLAR BEARING TABLES

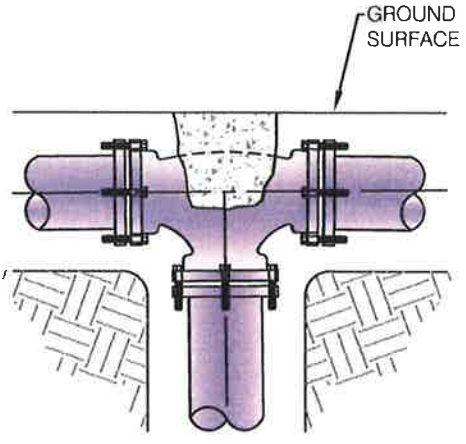
**BLOCKING
DETAILS**

Little Rock Wastewater Utility
SPECIFICATIONS

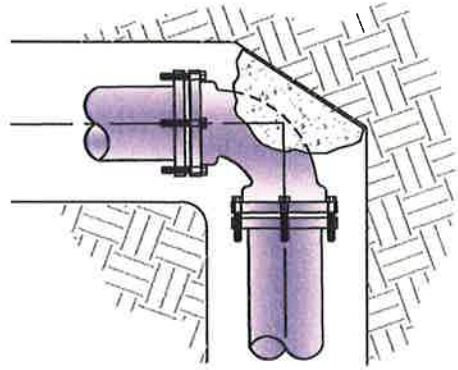


Prepared By: Evangelina O'Neal
Updated: 2/14/2006 9:35:54 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.40 - BLOCKING.dwg

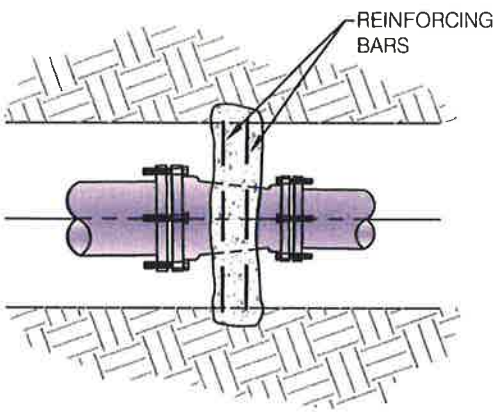
Notes
1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



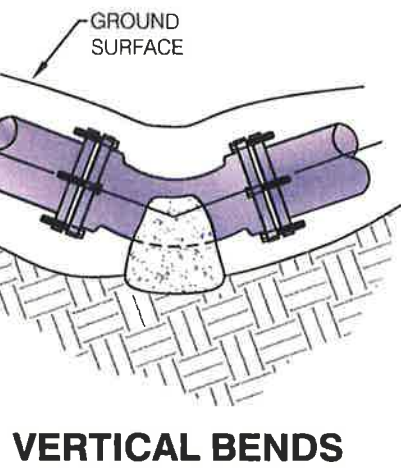
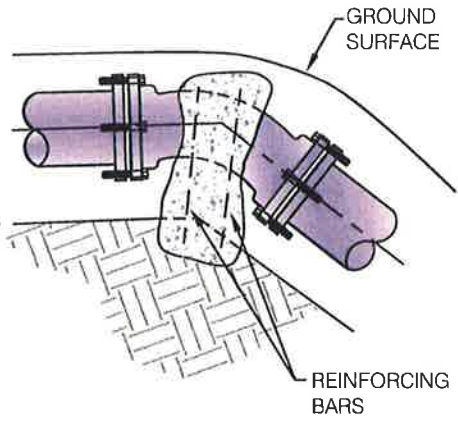
**BLOCKING
FOR TEE**



**HORIZONTAL
BENDS**



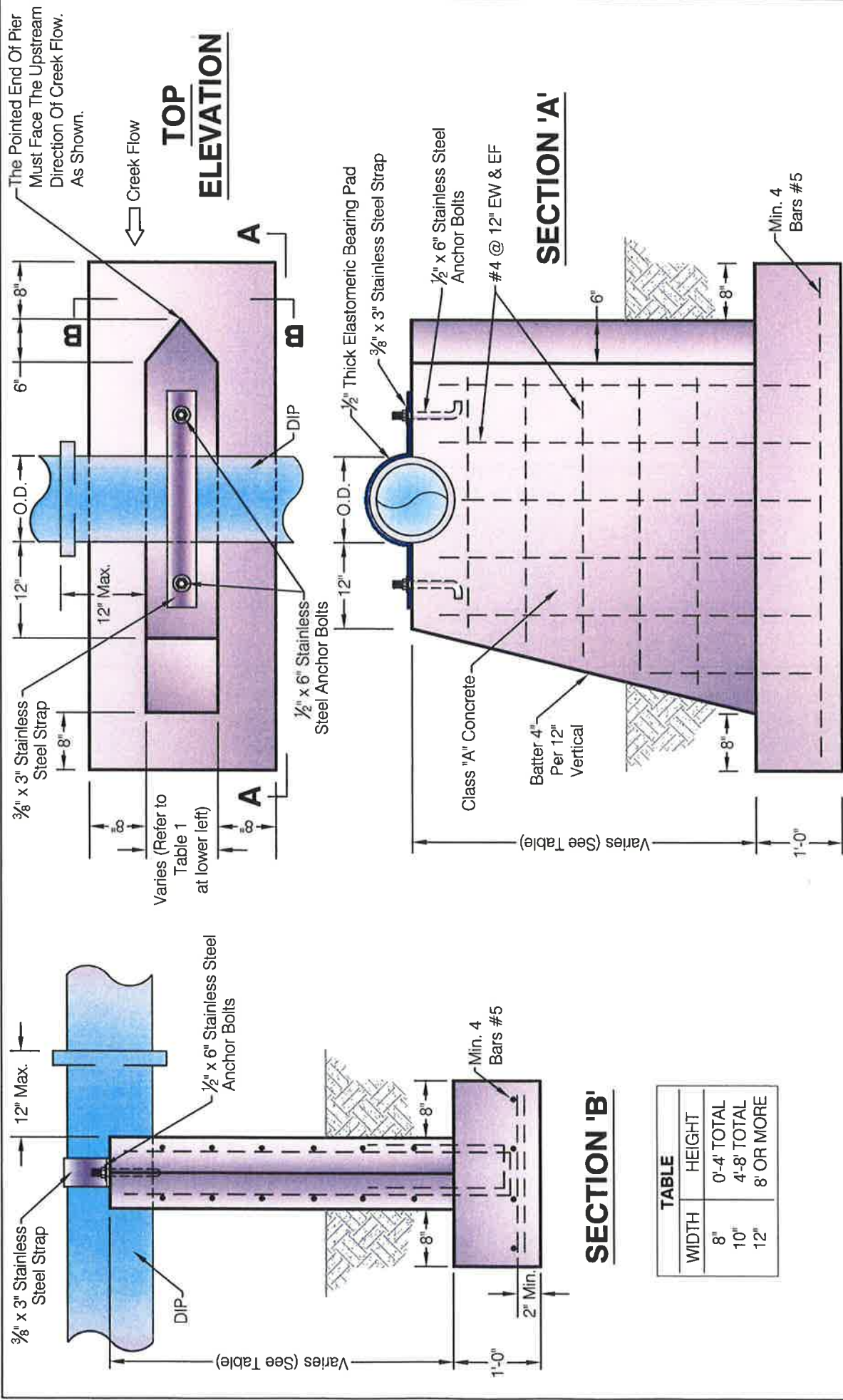
**THRUST SUPPORT FOR
REDUCER CONNECTION**



VERTICAL BENDS

THRUST BLOCKING NOTES:

- ALL BLOCKING SHALL BE AGAINST UNDISTURBED HAND DUG SOIL.
- WHERE SOIL CONDITIONS MAKE IT NECESSARY TO POUR CONCRETE BLOCKING OVER JOINTS, THE ENDS OF THE ADJACENT PIPES MUST HAVE A KICKER BLOCK TO RESIST ANY MOVEMENT OF THESE JOINTS.



TOP ELEVATION

SECTION 'A'

SECTION 'B'

TABLE	WIDTH	HEIGHT
	8"	0'-4" TOTAL
	10"	4'-8" TOTAL
	12"	8' OR MORE

Little Rock Wastewater Utility
SPECIFICATIONS



PIER DETAILS

LRWU

1.41

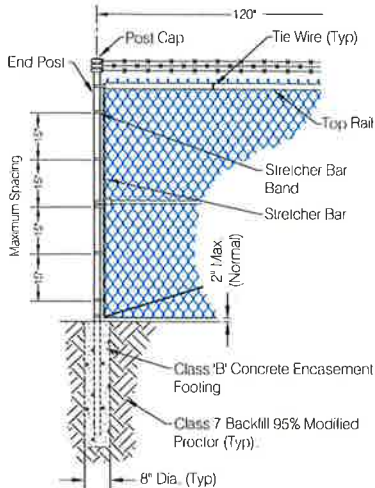
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 9:05:24 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.41 - PIER DETAILS.dwg

Notes
1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

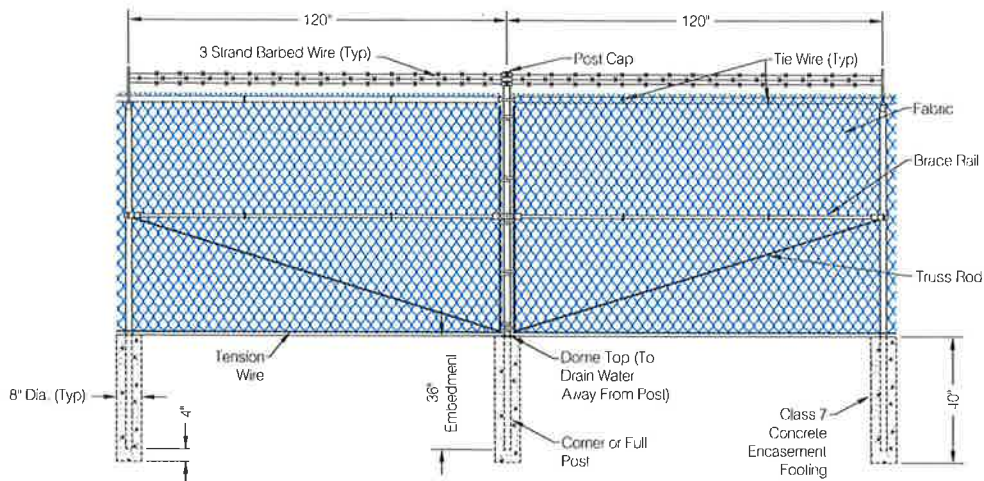
CHAIN LINK FENCE NOTES

- Tension wires: Shall be secured to all terminal, pull, or corner posts with stretcher bar bands.
- Brace rail: Shall be provided at all terminal, pull, or corner posts halfway between the top rail and ground level, and shall extend from such post to the first adjacent line post.
- Fabric: All chain link fence fabric shall consist of woven wire in the form of approximately uniform square mesh, having parallel sides and horizontal and vertical diagonals of approximately uniform dimensions.
- Gate Frame: Shall be constructed of tubular members assembled by use of malleable fittings or by welding. All gates shall have one horizontal support extending the width of the gate at the midpoints of vertical frame members. The complete frame shall be rigid and have ample strength to be free from sag and twist.

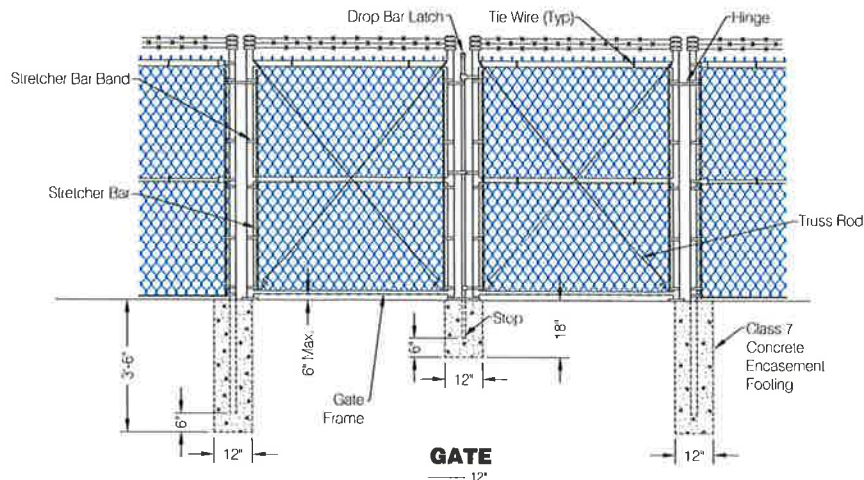
- Hinges: Shall be of heavy pattern, of adequate strength for gate, with large bearing surfaces for clamping in position. The hinge shall be of the proper type to allow for 180 degree of swing. The hinge shall not twist or turn under the action of the gate. The gate shall be capable of being opened and closed easily by one person.
- Latches and stops: Shall be provided for all gates. Gates shall have a drop bar latch. Latches shall be set in concrete and engage the plunger of the bar latch.
- Expansion Sleeve: Shall be the outside type, minimum 6" in length and self centering. Minimum thickness of material from which sleeves shall be made will be .042".
- Class "B" Concrete: Shall be required for the embedment of all posts and shall have a 28 day compressive strength of at least 2500 P.S.I.
- Posts: Shall be spaced equidistant on a maximum of 10'0" centers.



END PANEL



POST SPACING



GATE

Notes

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 9:13:29 AM
 Drawing Status:
APPROVED
 Filename: LRWU 1.44 - CHAIN LINK FENCE
 DETAILS.dwg

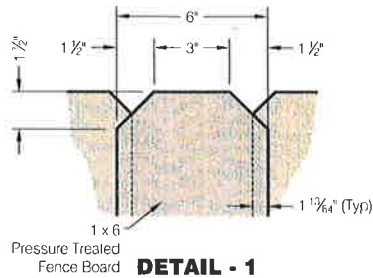


Little Rock Wastewater Utility
 SPECIFICATIONS

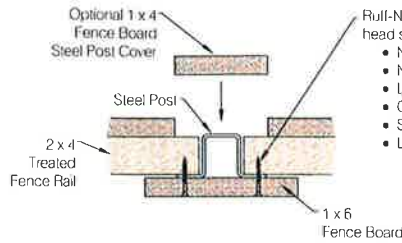
CHAIN LINK FENCE DETAILS

LRWU

1.44

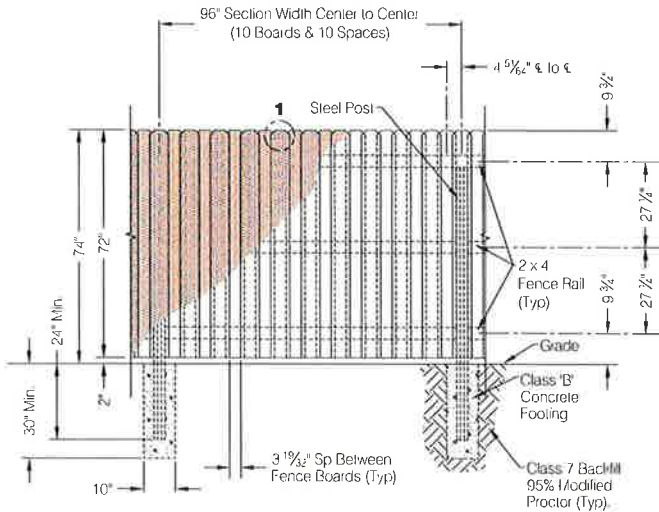


DETAIL - 1

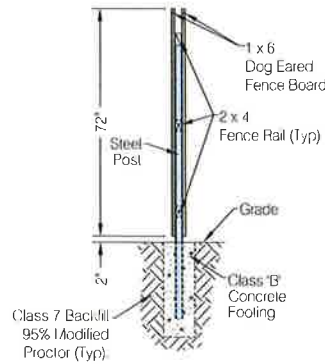


DETAIL - 2

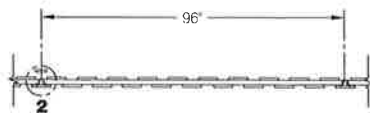
- Rulf-Nex (or approved equal) one step installation square drive head self drilling heat treated ultra coated steel screws.
- No pre drilling needed
 - No plates needed
 - Low profile pancake head - no need to countersink
 - Oversized head eliminates the need for a washer
 - Self drilling gimlet point guides fastener into wood
 - Lubricious corrosion resistant coating for long life



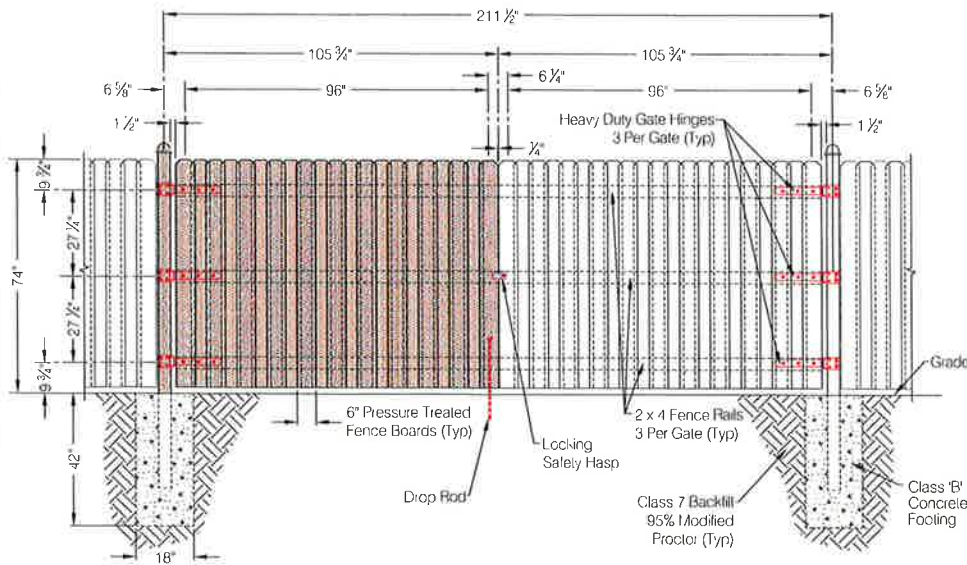
FENCE SECTION ELEVATION



FENCE END VIEW



FENCE PLAN VIEW



WOOD SHADOWBOX DOG EARED PRIVACY FENCE DETAILS

FENCE NOTES

1. Use three back rails (6' fence), two back rails (4', 5' fence), or 4 back rails (8' fence) for more hold-down points.
2. Use only hot-dipped galvanized, or stainless steel fasteners with a ring or spiral shank to minimize warp and rust stains.
3. Treat the surfaces of fence boards with a water-repellent solution to reduce the rate that moisture is absorbed and released. This solution should also have a good UV inhibitor if you don't want the fence to gray.
4. Follow a regular maintenance program of cleaning and refinishing every few years with a "clear" or "toner" water repellent containing UV inhibitors. This will revitalize a dingy appearance caused by dirt, mildew or graying.

GATE NOTES

1. Drive gates are to be made from full fence panels.
2. For security, drive gate hardware (hinges and drop rod) are to be installed on the inside of gate section per manufacturers instructions.
3. The Safety Hasp shall be a Bright Zinc Steel Westward 4" Key Locking Hasp model 4PE49 or approved equal.
4. Drive gate posts are to be 4 x 4 pressure treated posts. The hinges are to be mounted on the post flush, as shown.

Notes

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Prepared By: Evangeline O'Neal

Updated: 2/14/2006 9:12:25 AM

Drawing Status:

APPROVED

Filename: LRWU 1.45 - WOOD PRIVACY FENCE DETAILS.dwg

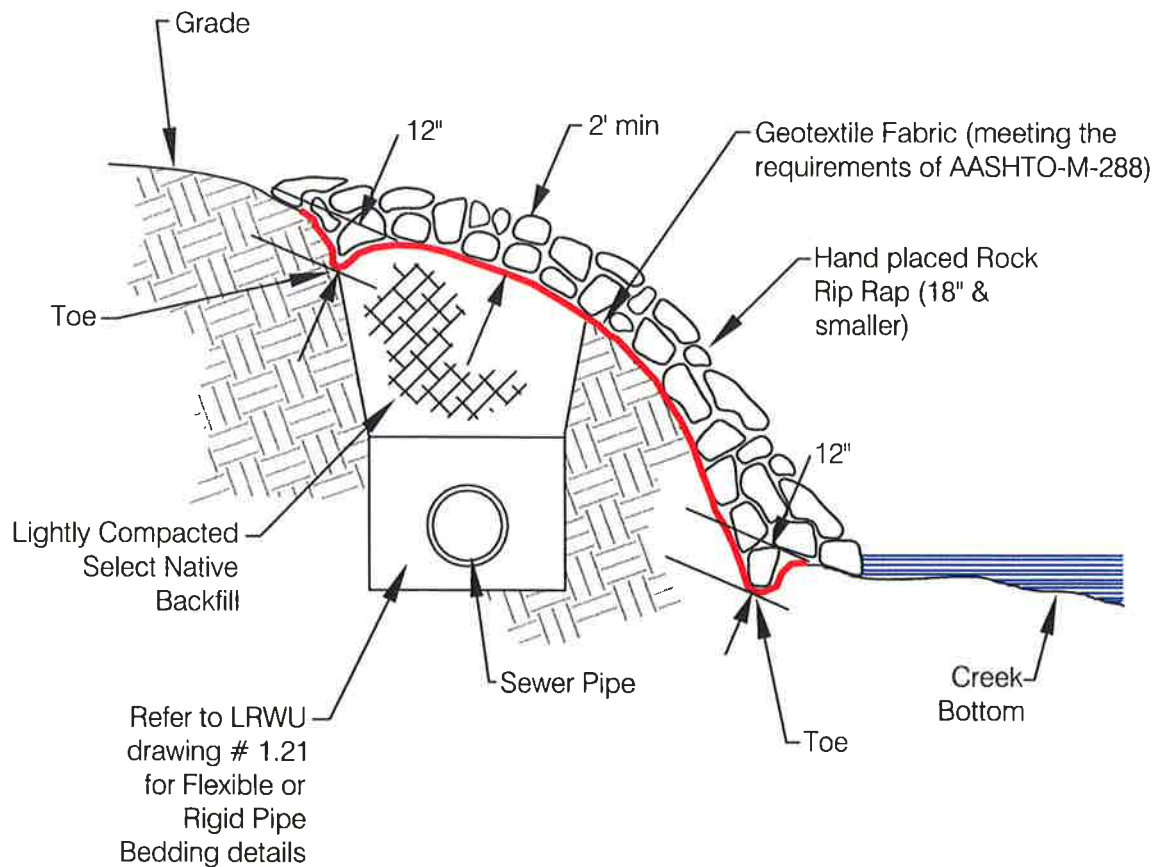


Little Rock Wastewater Utility
SPECIFICATIONS

**WOOD
PRIVACY FENCE
DETAILS**

LRWU

1.45



Refer to LRWU drawing # 1.21 for Flexible or Rigid Pipe Bedding details

**STANDARD
RIP RAP DETAIL**

Little Rock Wastewater Utility
SPECIFICATIONS

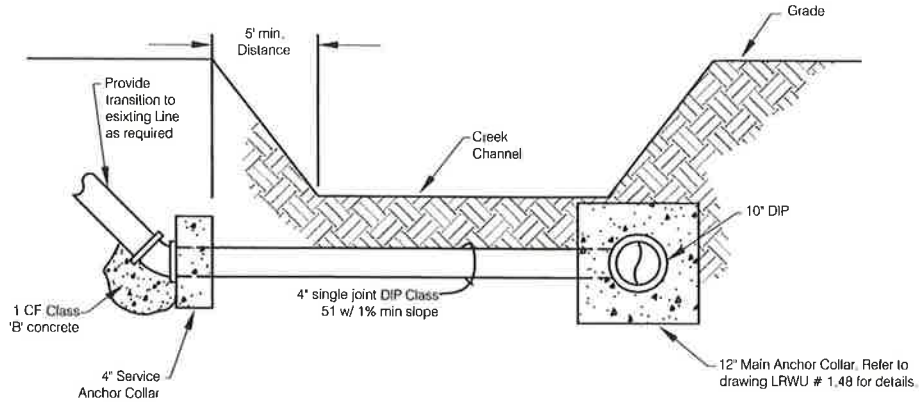


Prepared By: Evangeline O'Neal
Updated: 2/14/2006 9:14:23 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.46 - RIP RAP.dwg

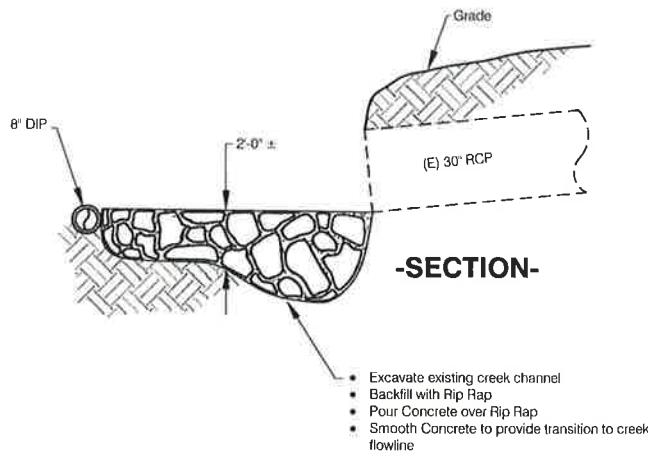
1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

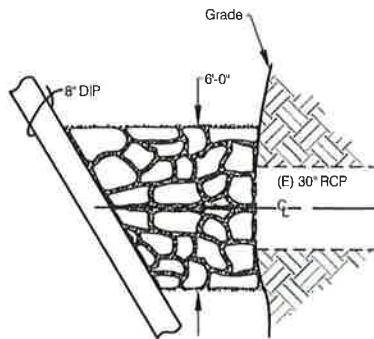
**STANDARD SPLASH PAD
DETAILS**



**TYPICAL SERVICE LINE
CREEK CROSSING**



- Excavate existing creek channel
- Backfill with Rip Rap
- Pour Concrete over Rip Rap
- Smooth Concrete to provide transition to creek flowline



-PLAN VIEW-

NOTE-

- 4" Service Line Reinstatements crossing an existing creek channel shall be constructed using 4" Ductile Iron Pipe (DIP).
- 4" Anchor Collar installed on the 4" service & a 12" Anchor Collar constructed around the tap or wye connection on the new main as shown in the above detail.

Little Rock Wastewater Utility

SPECIFICATIONS



Prepared By: Evangeline O'Neal

2/14/2006 9:40:55 AM

Drawing Status: **APPROVED**

Filename: LRWU 1.47 - SPLASH BLOCK.dwg

ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

ANCHOR COLLAR DETAILS

Little Rock Wastewater Utility
SPECIFICATIONS



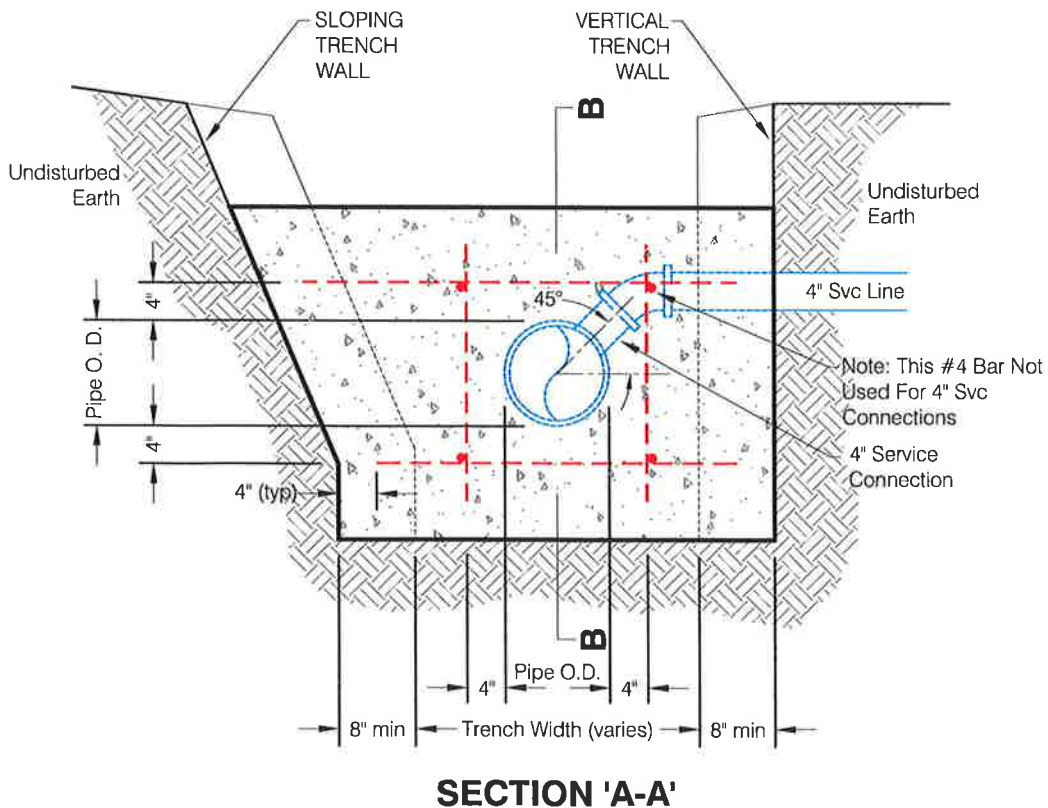
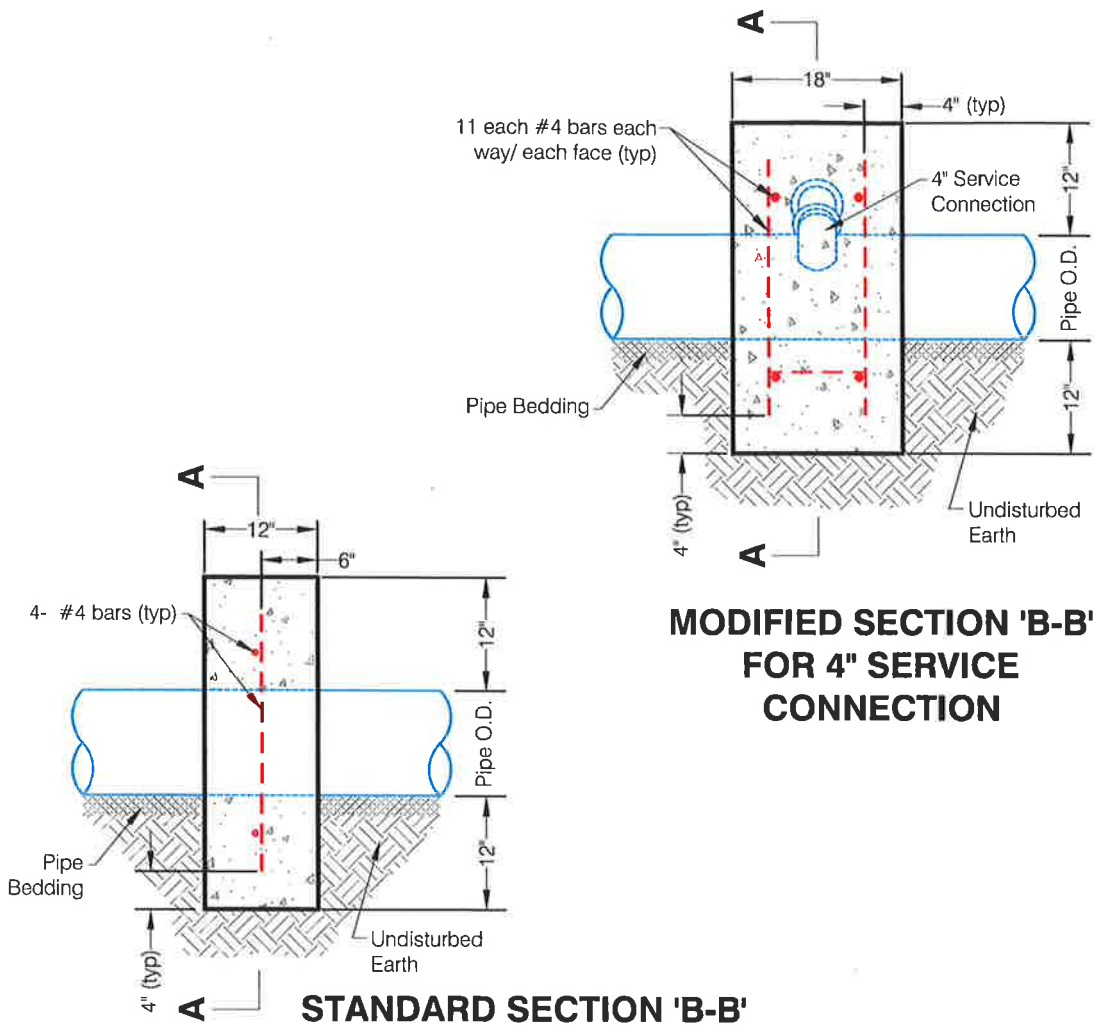
Prepared By: Evangeline O'Neal
2/14/2006 9:15:15 AM
Drawing Status:

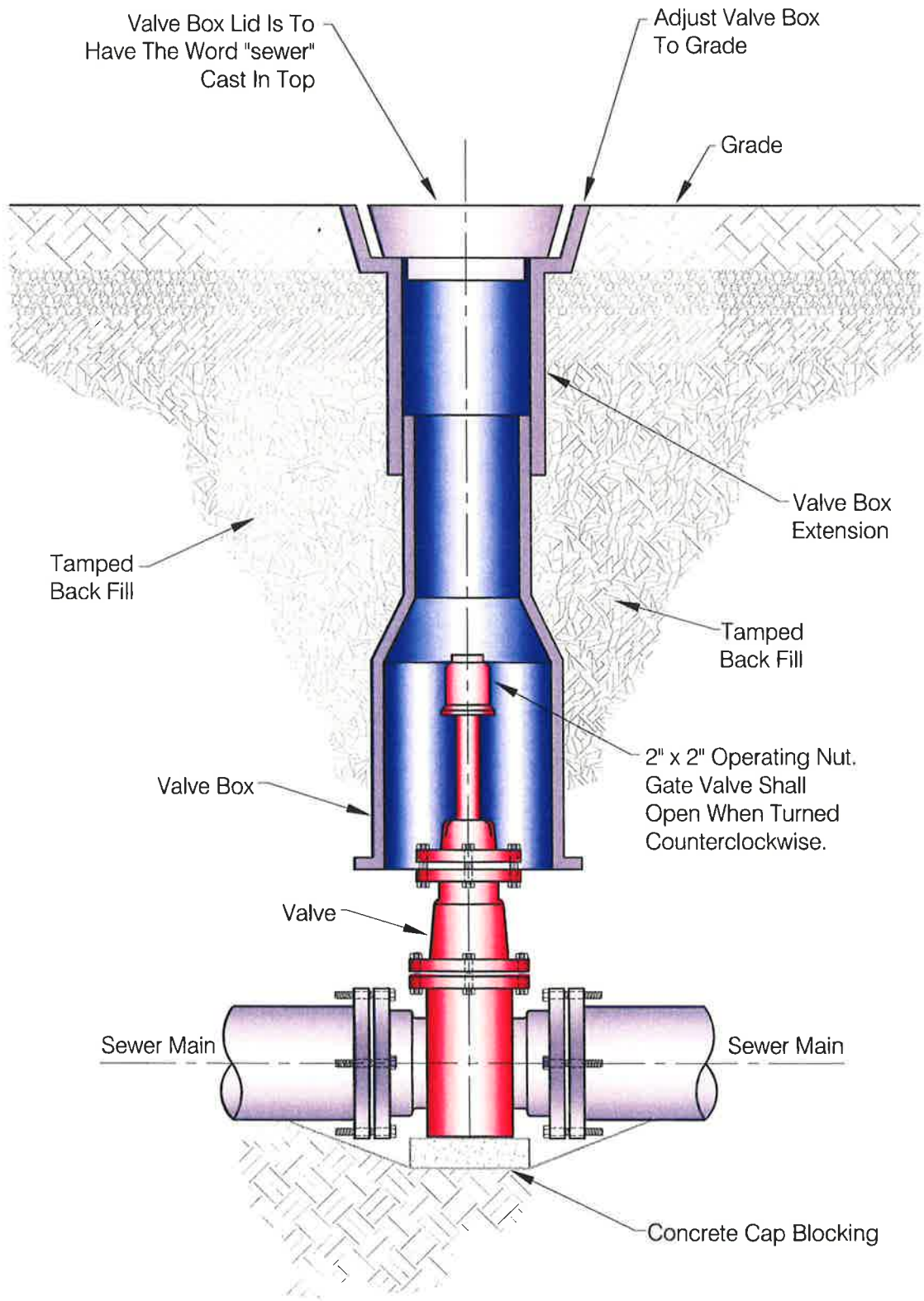
APPROVED

Filename:
LRWU 1.48 - ANCHOR COLLAR.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes





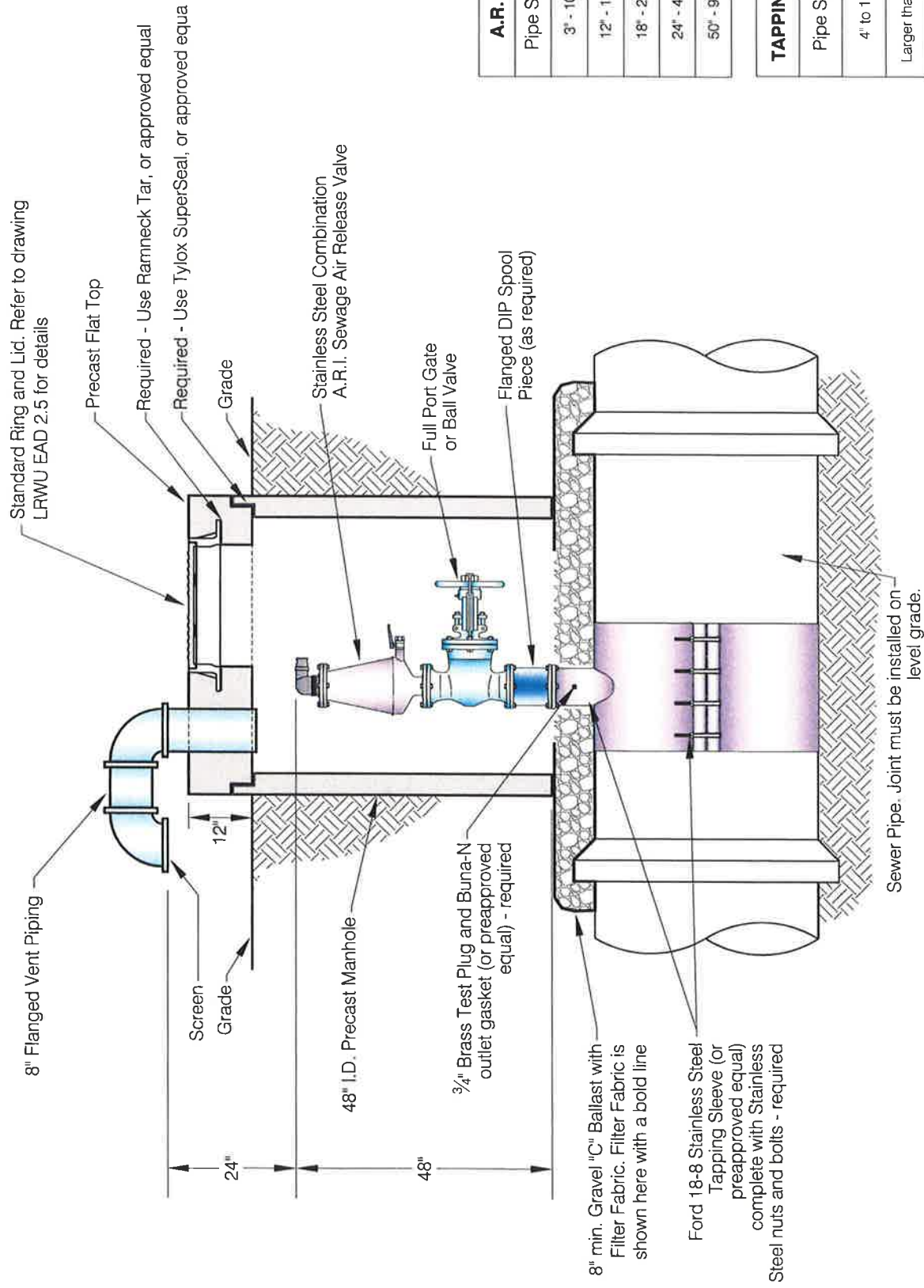
**GATE VALVE
DETAIL**



Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 9:41:59 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.49 - GATE VALVE.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



Standard Ring and Lid. Refer to drawing LRWU EAD 2.5 for details

Precast Flat Top

Required - Use Ramneck Tar, or approved equal

Required - Use Tylox SuperSeal, or approved equal

Grade

Stainless Steel Combination A.R.I. Sewage Air Release Valve

Full Port Gate or Ball Valve

Flanged DIP Spool Piece (as required)

8\" Flanged Vent Piping

Screen

Grade

12\"

48\" I.D. Precast Manhole

3/4\" Brass Test Plug and Buna-N outlet gasket (or preapproved equal) - required

8\" min. Gravel \"C\" Ballast with Filter Fabric. Filter Fabric is shown here with a bold line

Ford 18-8 Stainless Steel Tapping Sleeve (or preapproved equal) complete with Stainless Steel nuts and bolts - required

Sewer Pipe. Joint must be installed on level grade.

A.R.I. VALVE SIZING	
Pipe Size	Valve Size
3\" - 10\"	2\"
12\" - 16\"	3\"
18\" - 22\"	4\"
24\" - 48\"	6\"
50\" - 96\"	8\"

TAPPING SLEEVE SIZING	
Pipe Size	Tapping Sleeve Size
4\" to 12\"	Pipe Size x 2
Larger than 12\"	Pipe Size x 4

NOTES
 1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Prepared By: Evangeline O'Neal
 Updated: 5/19/2006 11:16:45 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.50.dwg

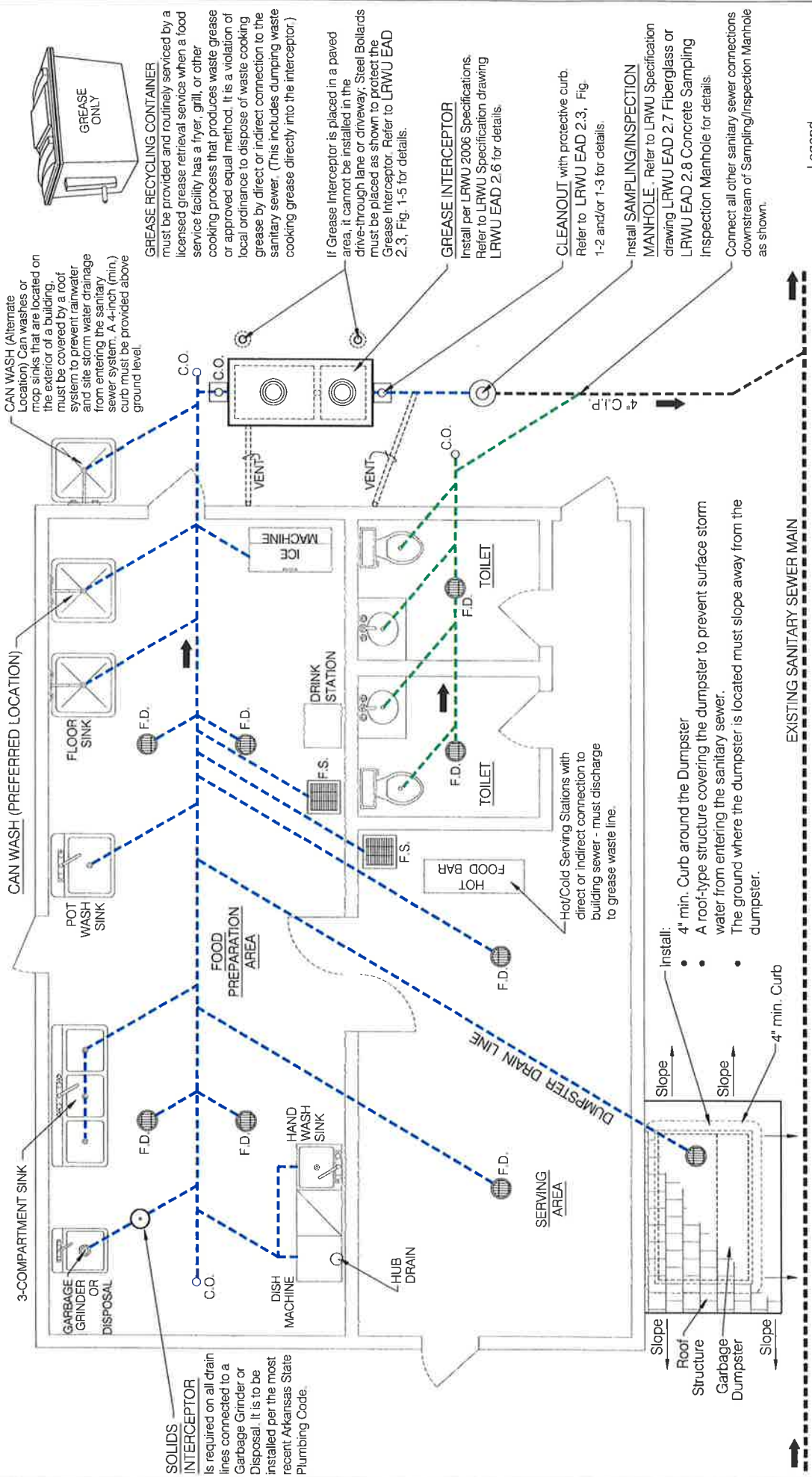


Little Rock Wastewater Utility SPECIFICATIONS

COMBINATION SEWAGE - AIR RELEASE VALVE DETAILS

LRWU

1.50



CAN WASH (Alternate Location) Can washes or mop sinks that are located on the exterior of a building, must be covered by a roof system to prevent rainwater and site storm water drainage from entering the sanitary sewer system. A 4-inch (min.) curb must be provided above ground level.

GREASE RECYCLING CONTAINER must be provided and routinely serviced by a licensed grease retrieval service when a food service facility has a fryer, grill, or other cooking process that produces waste grease or approved equal method. It is a violation of local ordinance to dispose of waste cooking grease by direct or indirect connection to the sanitary sewer. (This includes dumping waste cooking grease directly into the interceptor.)

If Grease Interceptor is placed in a paved area, it cannot be installed in the drive-through lane or driveway. Steel Bollards must be placed as shown to protect the Grease Interceptor. Refer to LRWU EAD 2.3, Fig. 1-5 for details.

GREASE INTERCEPTOR
Install per LRWU 2006 Specifications. Refer to LRWU Specification drawing LRWU EAD 2.6 for details.

CLEANOUT with protective curb. Refer to LRWU EAD 2.3, Fig. 1-2 and/or 1-3 for details.

INSTALL SAMPLING/INSPECTION MANHOLE - Refer to LRWU Specification drawing LRWU EAD 2.7 Fiberglass or LRWU EAD 2.8 Concrete Sampling Inspection Manhole for details.

Connect all other sanitary sewer connections downstream of Sampling/Inspection Manhole as shown.

Legend
F.D. Floor Drain
C.O. Cleanout
F.S. Floor Sink

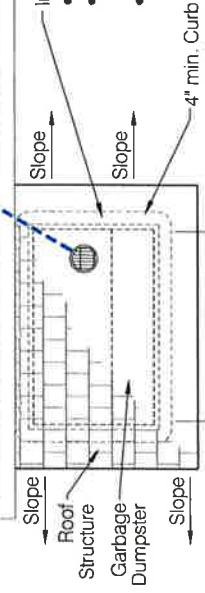
CAN WASH (PREFERRED LOCATION)

SOLIDS INTERCEPTOR
Is required on all drain lines connected to a Garbage Grinder or Disposal. It is to be installed per the most recent Arkansas State Plumbing Code.

Hot/Cold Serving Stations with direct or indirect connection to building sewer - must discharge to grease waste line.

Install:

- 4" min. Curb around the Dumpster
- A roof-type structure covering the dumpster to prevent surface storm water from entering the sanitary sewer.
- The ground where the dumpster is located must slope away from the dumpster.



EXISTING SANITARY SEWER MAIN

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NOTE: FOR A EXAMPLE RISER DIAGRAM, REFER TO LRWU EAD 2.0.B

Prepared By: Evangeline ONeal
Revised: 5/19/2006 9:17:59 AM
Drawing Status: **APPROVED**
Filename: LRWU EAD 2.0.A.dwg

Little Rock Wastewater Utility
SPECIFICATIONS



EXAMPLE GREASE INTERCEPTOR SITE PLAN & PIPING LAYOUT

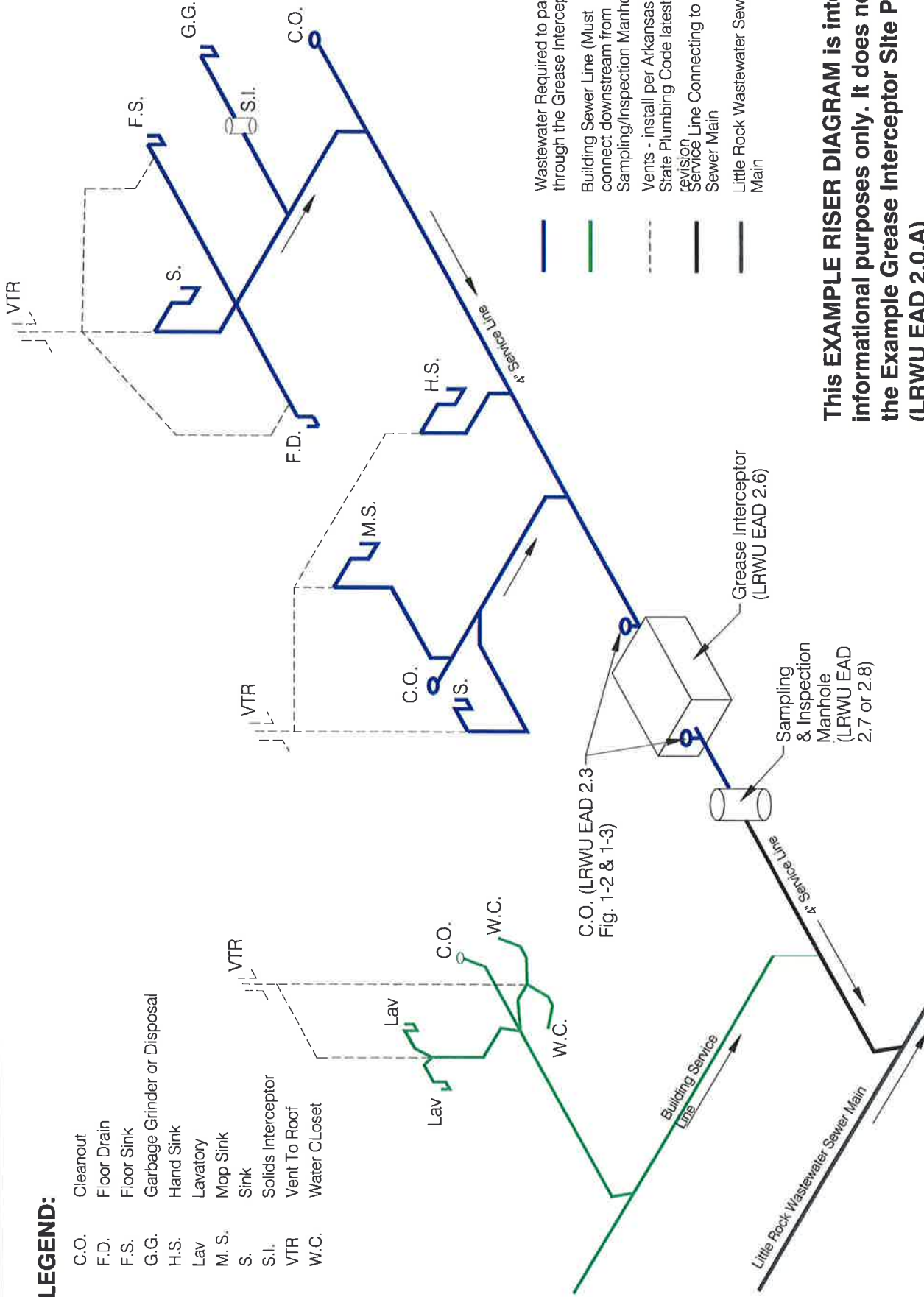
LRWU
EAD 2.0.A

Notes

- All changes/revisions/etc. must be approved by the LRWU Director of Environmental Assessment.
- This is a Typical Site Plan Grease Interceptor & Piping Layout drawing, and is for informational purposes only.
- Each owner must submit a detailed Site Plan, Piping Layout and any additional information required by LRWU.
- Once the owner's submittal is complete, LRWU will issue a Grease Interceptor sizing and approval form.
- The Grease Interceptor must be accessible for inspection and cleaning at all times.
- If the Grease Interceptor is going to be placed in a parking area, Bollards must be constructed to prevent parking on top of the manhole lids.

LEGEND:

- C.O. Cleanout
- F.D. Floor Drain
- F.S. Floor Sink
- G.G. Garbage Grinder or Disposal
- H.S. Hand Sink
- Lav Lavatory
- M. S. Mop Sink
- S. Sink
- S.I. Solids Interceptor
- VTR Vent To Roof
- W.C. Water Closet



- Wastewater Required to pass through the Grease Interceptor
- Building Sewer Line (Must connect downstream from Sampling/Inspection Manhole)
- Vents - install per Arkansas State Plumbing Code latest revision
- Service Line Connecting to Sewer Main
- Little Rock Wastewater Sewer Main

This EXAMPLE RISER DIAGRAM is intended for informational purposes only. It does not match the Example Grease Interceptor Site Plan (LRWU EAD 2.0.A)

Prepared By: Evangeline O'Neal
 Revised: 5/19/2006 9:20:54 AM
 Drawing Status: **APPROVED**
 Filename: LRWU EAD 2.0.B.dwg



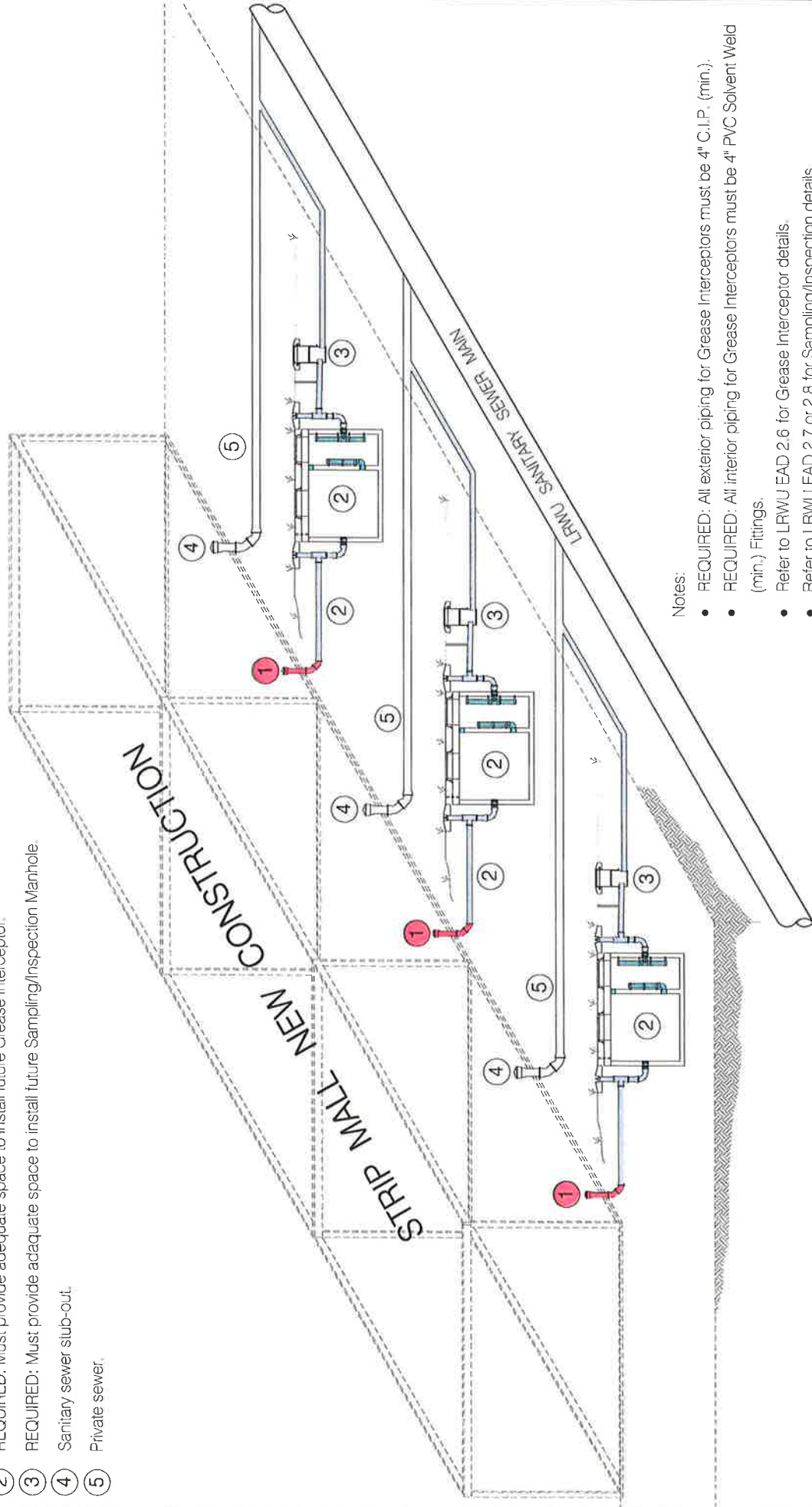
EXAMPLE PLUMBING RISER DIAGRAM WHEN GREASE INTERCEPTORS ARE USED

LRWU
EAD 2.0.B

Notes

- All changes/revisions/etc. must be approved by the LRWU Director of Environmental Assessment.
- This drawing is the property of Little Rock Wastewater Utility, and is not to be modified in whole or in part. It is to be used for project(s) associated with Little Rock Wastewater Utility.

- 1 REQUIRED: Stub-out must be provided for future grease waste line to Grease Interceptor.
- 2 REQUIRED: Must provide adequate space to install future Grease Interceptor.
- 3 REQUIRED: Must provide adequate space to install future Sampling/Inspection Manhole
- 4 Sanitary sewer stub-out.
- 5 Private sewer.



Notes:

- REQUIRED: All exterior piping for Grease Interceptors must be 4" C.I.P. (min.).
- REQUIRED: All interior piping for Grease Interceptors must be 4" PVC Solvent Weld (min.) Fittings.
- Refer to LRWU EAD 2.6 for Grease Interceptor details.
- Refer to LRWU EAD 2.7 or 2.8 for Sampling/Inspection details.
- Refer to LRWU EAD 2.3, figure 1-2 and/or 1-3 for Cleanout details.

Prepared By: Evangelina Oneal
 Revised: 5/19/2006 9:22:28 AM

Drawing Status: **APPROVED**

Filename: LRWU EAD 2.1.dwg

Little Rock Wastewater Utility
 SPECIFICATIONS



NEW CONSTRUCTION
- FLEX SPACE/STRIP MALL -
PLUMBING CONFIGURATION

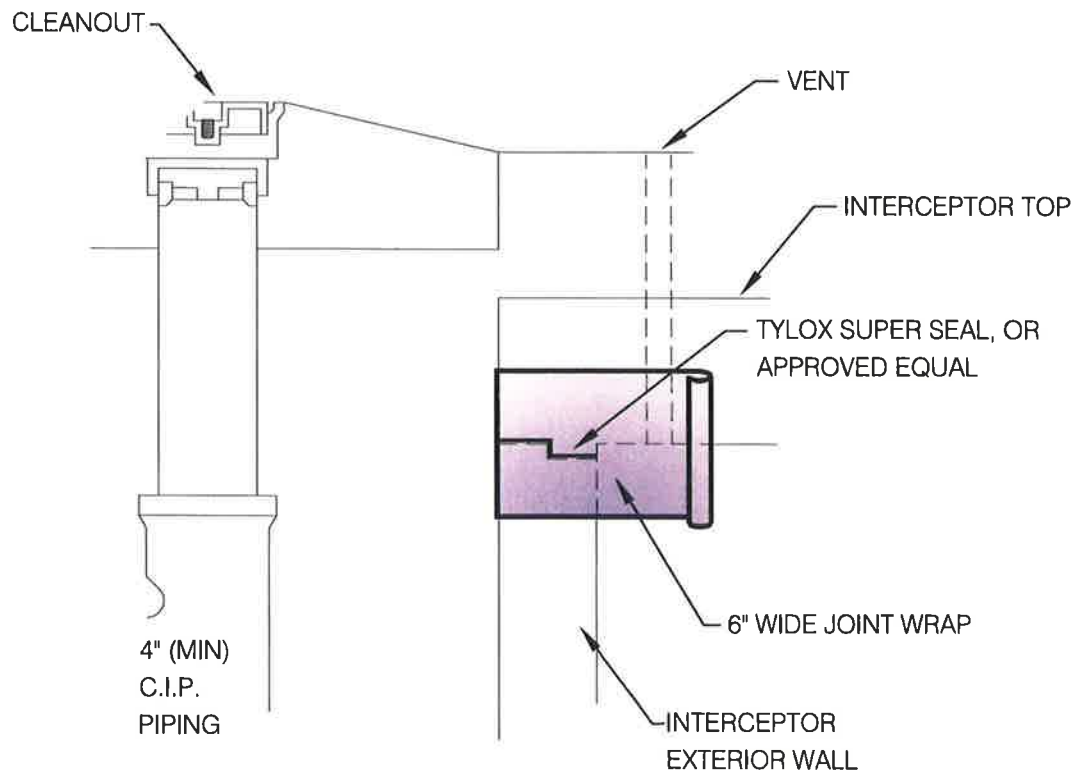
LRWU

EAD

2.1

Notice

1. This drawing represents a recommended Flex Space Plumbing Configuration for New Construction.
2. Changes/Revisions/etc. must be approved by the LRWU Director of Environmental Assessment.
3. This drawing is the property of Little Rock Wastewater Utility, and is not to be modified in whole or in part. It is to be used for project(s) associated with Little Rock Wastewater Utility.



NOTES:

JOINT WRAP TO BE USED:

- ON OUTSIDE ALL COLD JOINTS.
- ON THE OUTSIDE ALL INTERCEPTOR JOINTS.

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Notes

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Prepared By: Evangeline O'Neal
 Updated: 5/19/2006 9:24:08 AM
 Drawing Status:
APPROVED
 Filename: LRWU EAD 2.2.dwg

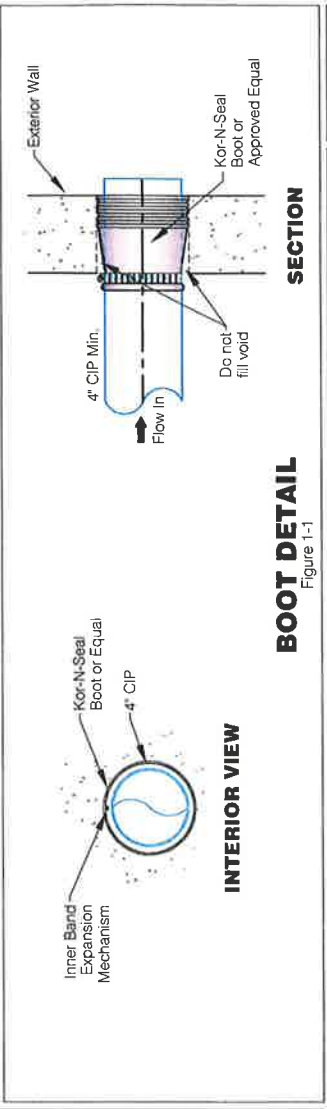
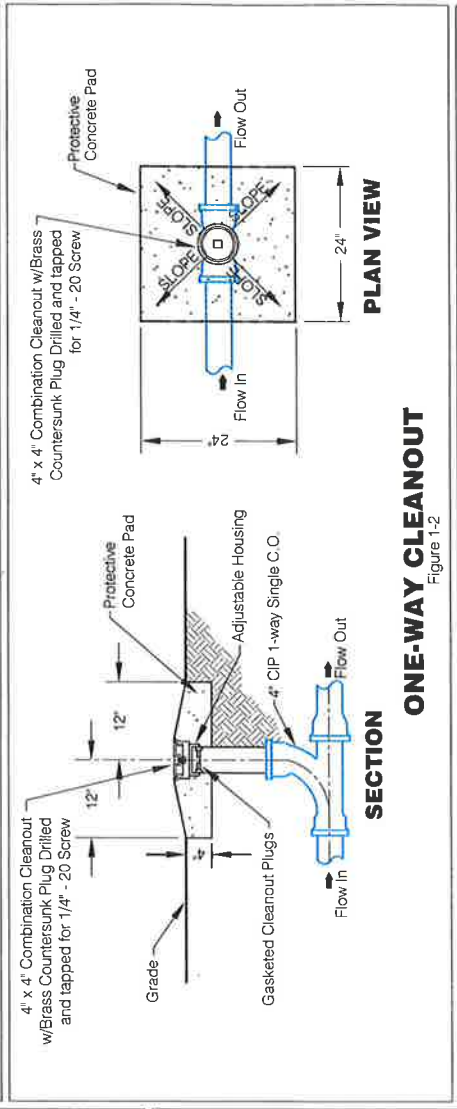
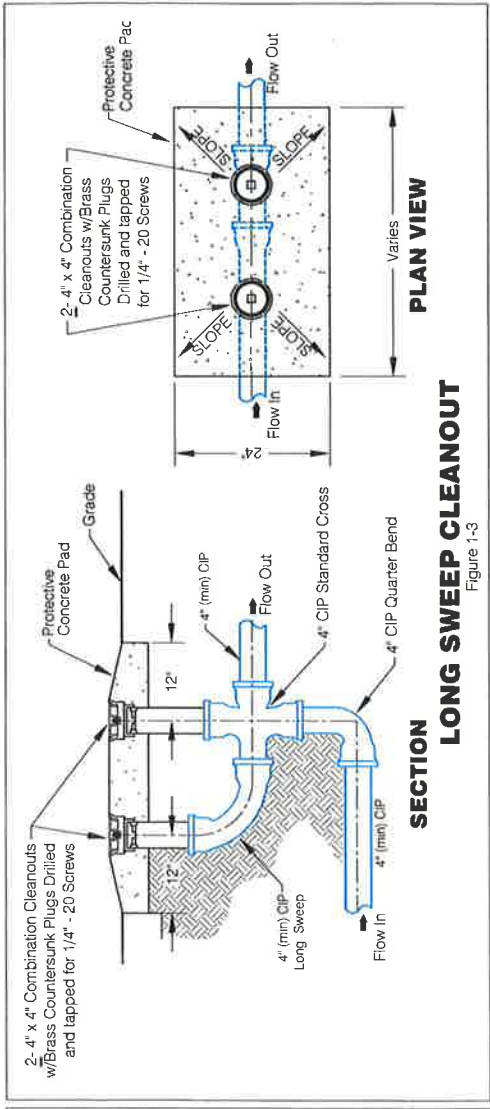
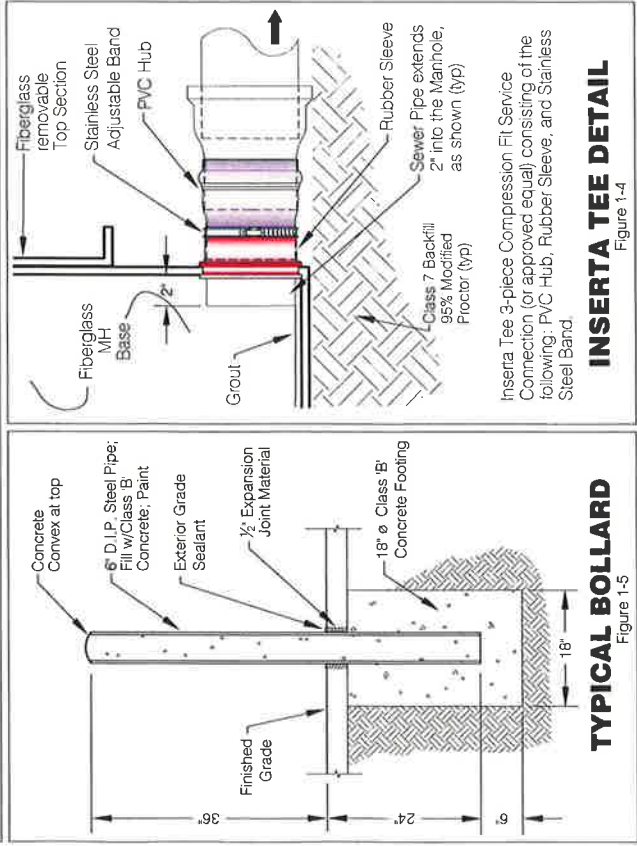
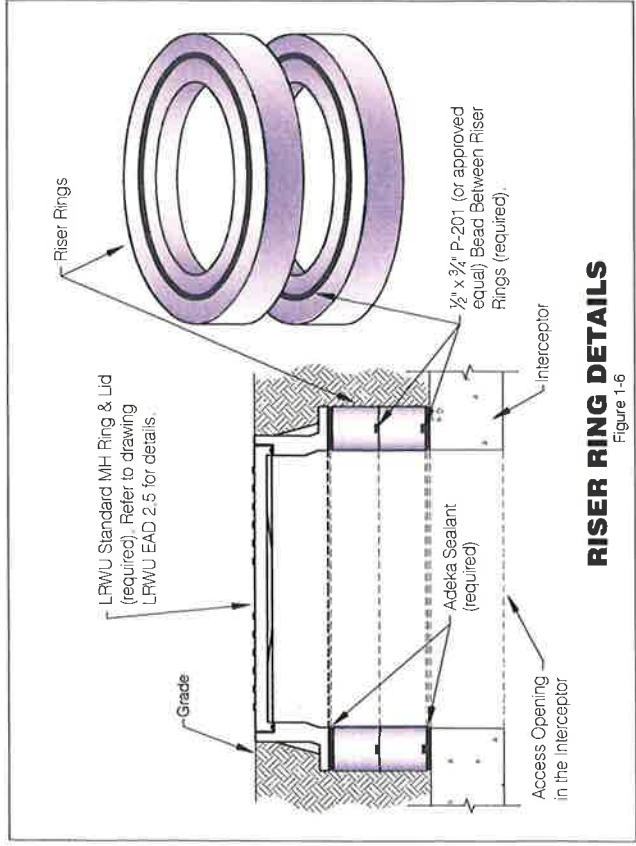


Little Rock Wastewater Utility
 SPECIFICATIONS

**JOINT WRAP
 DETAIL**

LRWU

**EAD
 2.2**



Prepared By: Evangeline O'Neal
Updated: 5/19/2006 9:27:41 AM
Drawing Status: **APPROVED**
Filename: LRWU EAD 2.3.dwg

Little Rock Wastewater Utility
SPECIFICATIONS

TRAP CONTROL & MISCELLANEOUS DETAILS

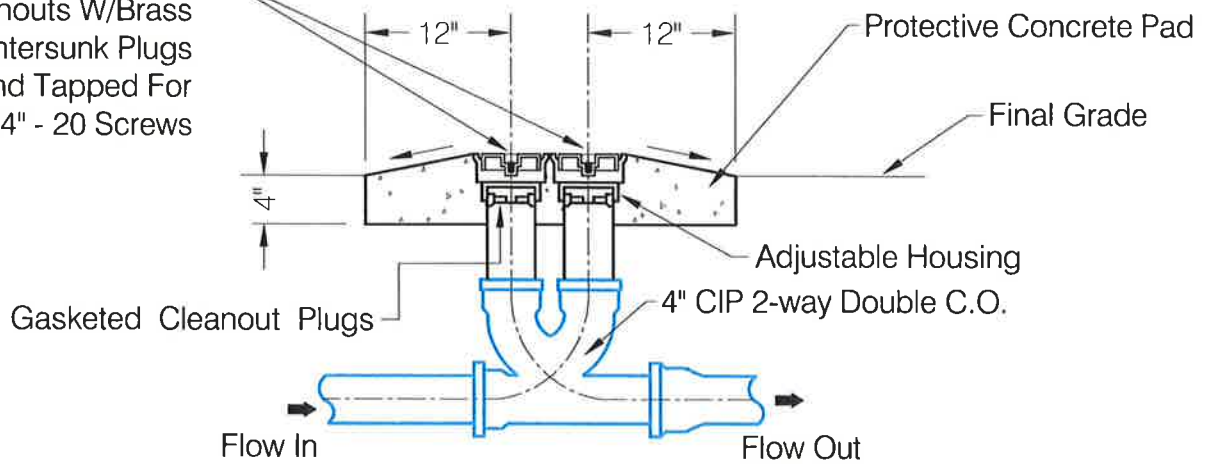
LRWU

EAD 2-3

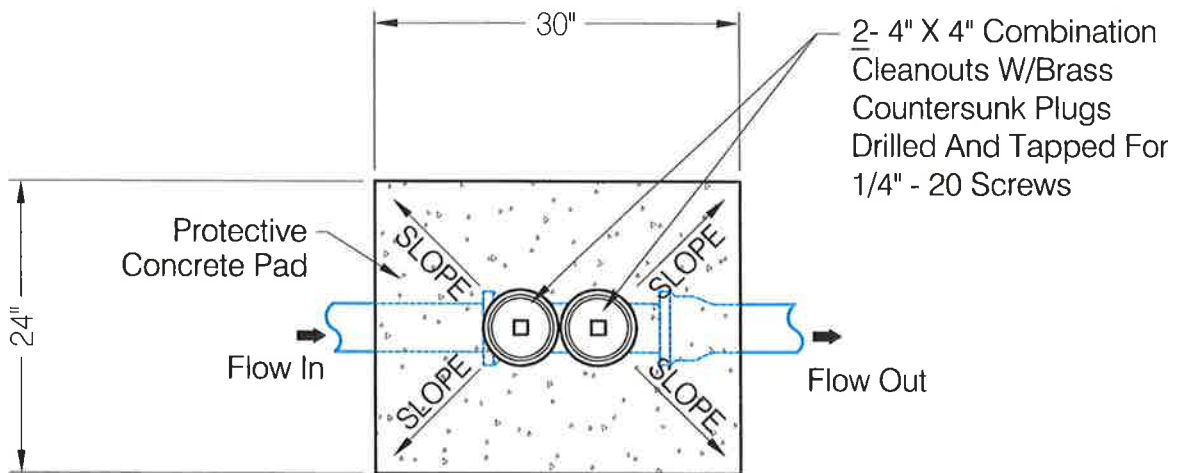
Notes

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2- 4" X 4" Combination Cleanouts W/Brass Countersunk Plugs Drilled And Tapped For 1/4" - 20 Screws



SECTION



PLAN VIEW

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Notes

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENVIRONMENTAL ASSESSMENT.

Prepared By: Evangeline O'Neal
Revised: 5/19/2006 8:56:51 AM

Drawing Status: **APPROVED**
Filename: LRWU EAD 2.4 2-way
Double Cleanout - Use By EAD
Only.dwg



Little Rock Wastewater Utility
SPECIFICATIONS

TWO-WAY DOUBLE CLEANOUT DETAILS

LRWU

EAD
2.4

**STANDARD RING & LID
DETAILS**

Little Rock Wastewater Utility
SPECIFICATIONS



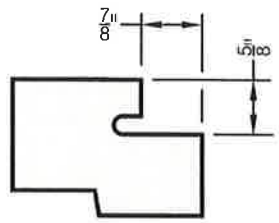
Prepared By: Evangeline O'Neal
Updated: 2/24/2006 10:47:31 AM
Drawing Status:

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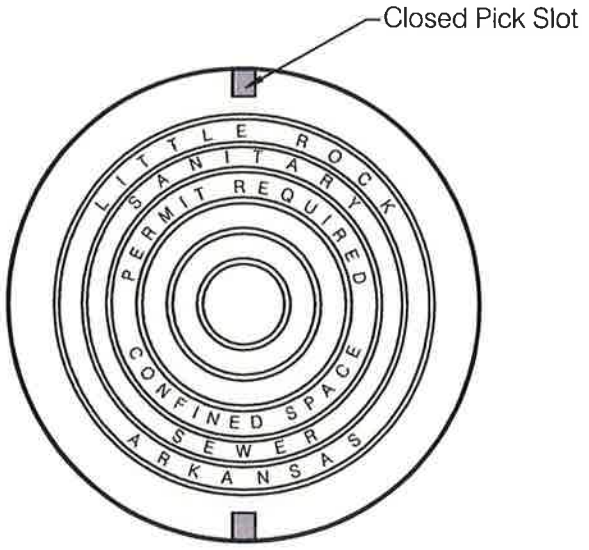
Filename: LRWU EAD 2.5.dwg

1. ALL CHANGES/REVISIONS/ETC.
MUST BE APPROVED BY THE LRWU
DIRECTOR OF ENGINEERING.

Notes

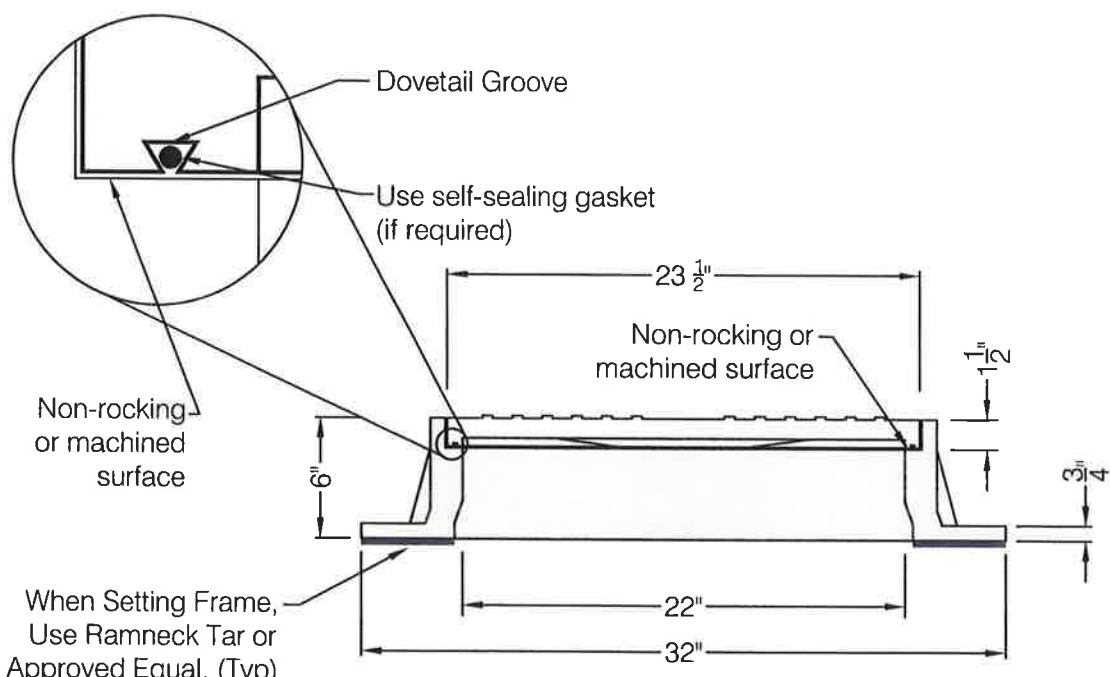


**CLOSED PICK
SLOT DETAIL**



LID DETAIL

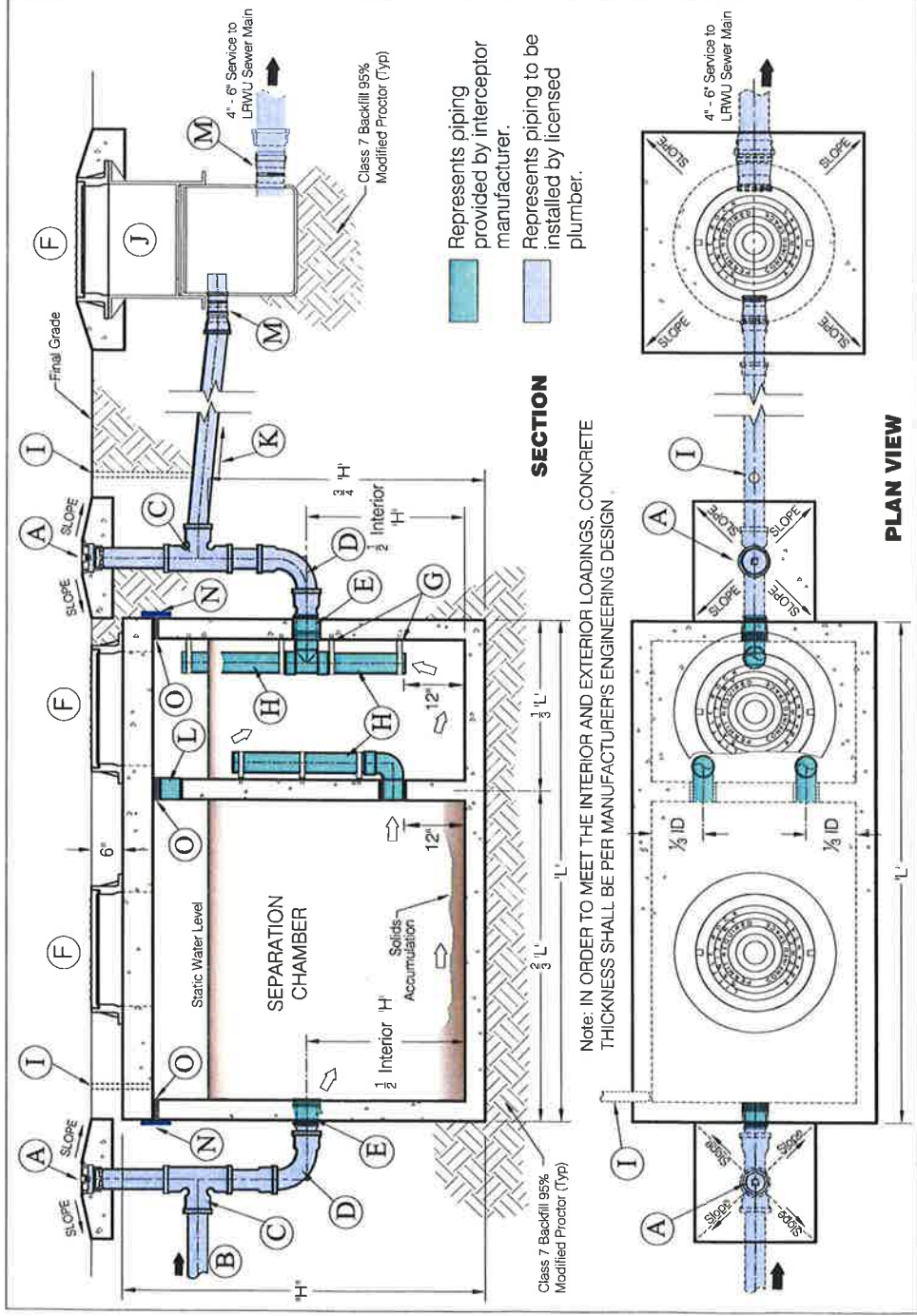
1. Minimum weight of ring: 125 pounds
2. Minimum weight of lid: 115 pounds
3. Lids are furnished with two closed pick slots.
4. Castings shall be "Made In USA"



RING DETAIL

Note:
Dimensions shown may vary by $\pm 1/2$ " with the exception of the Lid dimension.

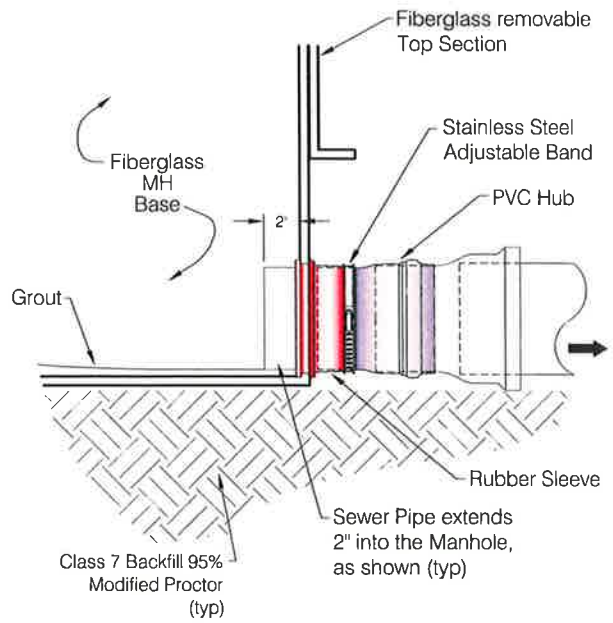
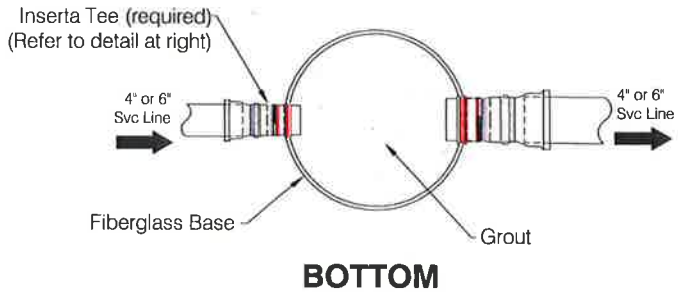
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ADDITIONAL NOTES:

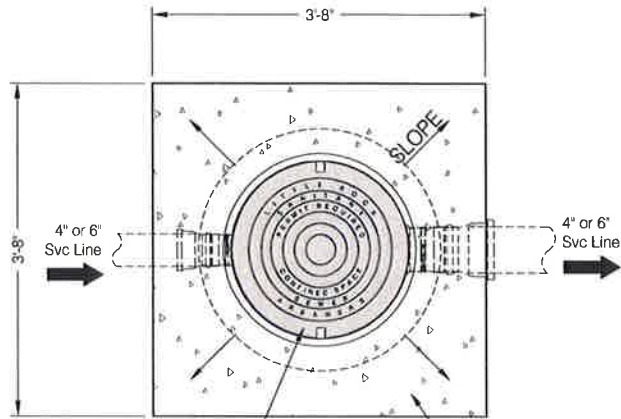
1. All Grease Interceptors must have two compartments, Standard Manhole Frames and Lids are to be installed centered on each compartment and to grade per LRWU Specifications. Refer to LRWU EAD 2.5 for details.
2. All Grease Interceptor in-tank piping must be 4" Schedule 80 PVC Solvent Weld, and is to be secured at the top and bottom with stainless steel bands and bolts or preapproved equal.
3. All Grease Interceptors must be accessible for inspection, and cleaning at all times.
4. Kor-N-Seals or approved equal Boots are required where piping passes through the exterior interceptor walls. Refer to LRWU EAD 2.3, Fig. 1-1 for detail.
5. Vents are to be installed per Arkansas State plumbing code latest revision.
6. Cleanouts used on the exterior portion of tanks shall be 4" x 4" combination cleanouts w/brass countersunk plugs and tapped for 1/4" - 20 screws. Refer to LRWU EAD 2.3, Fig. 1-2 and 1-3 for Cleanout and pad details.
7. This drawing is for informational purposes only. Each owner must submit a detailed site and floor plan that show all plumbing fixtures and their corresponding piping layouts. Each owner must submit an isometric plumbing riser that shows the grease waste piping, as well as, the other sanitary building sewer drains. associated piping. LRWU may require additional information as needed to evaluate the owner's submittal before final approval will be granted.
8. Once the owner's submittal is complete, LRWU will issue a Grease Interceptor sizing and approval form.
9. The owner must purchase a Grease Interceptor from a manufacturer that has been pre-approved by Little Rock Wastewater Utility.

- (A) 4" x 4" Cleanout & Pad - see additional note 6.
- (B) 4" min. CIP.
- (C) 4" min CIP Tee.
- (D) 4" min. CIP Quarter Bend.
- (E) Kor-N-Seal Boot - see additional note 4.
- (F) LRWU Standard 24" MH Frames & Lids - see additional note 1.
- (G) Stainless Steel Bands & Bolts - see additional note 2.
- (H) 4" Schedule 80 PVC Solvent Weld - see additional note 2.
- (I) Vent - see additional note 5.
- (J) Sampling/Inspection MH - refer to LRWU EAD 2.7 or 2.8 for details.
- (K) 4" min. CIP to Sampling/Inspection MH - min. slope 1/8" per foot.
- (L) 4" Schedule 80 Solvent Weld in Tank Vent Pipe.
- (M) Inserta Tee. Refer to drawing LRWU EAD 2.3, Fig. 1-4 for details.
- (N) Joint Wrap is to be installed around all exterior joints - required. Refer to LRWU EAD 2.2 for detail.
- (O) Adeka Sealant (or approved equal) is to be used between Interceptor Top and Wall - Required.



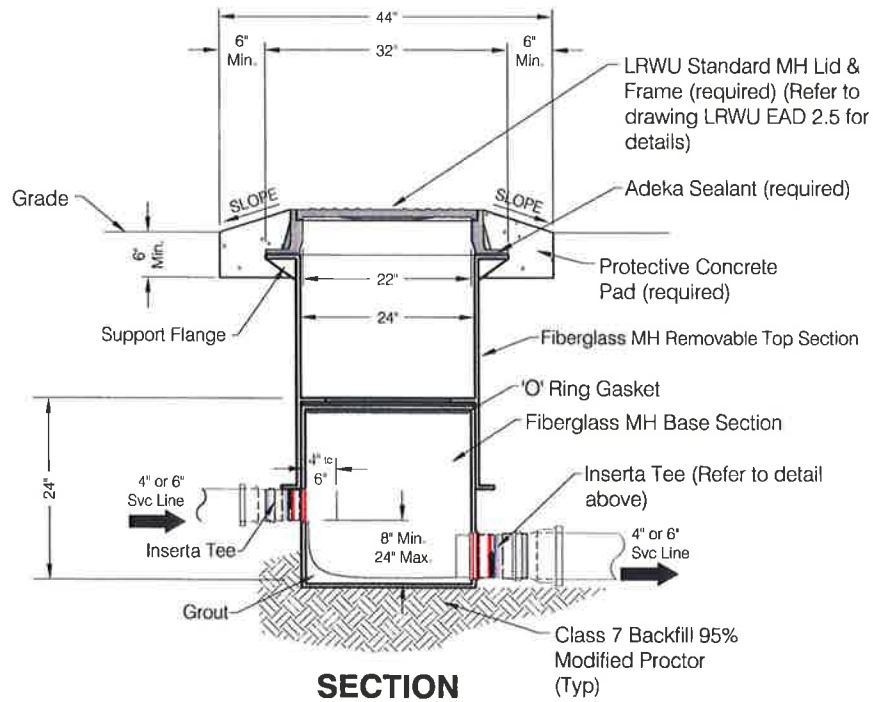
INSERTA TEE DETAIL

Inserta Tee 3-piece Compression Fit Service Connection (or approved equal) consisting of the following: PVC Hub, Rubber Sleeve, and Stainless Steel Band.



LRWU Standard MH Lid & Frame (required) (Refer to drawing LRWU EAD 2.5 for details)

Protective Concrete Pad (required)



- 2-ft Manholes shall be manufactured from commercial grade polyester resin or other suitable polyester or vinyl, ester resins, with fiberglass reinforcements.
- Shall consist of two sections, a removable top section and a base section.
- Manufactured to meet or exceed all specifications of A.S.T.M. D-3753 latest edition.
- Base section shall include a gasket system to provide a seal between the top and base sections.

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Notes

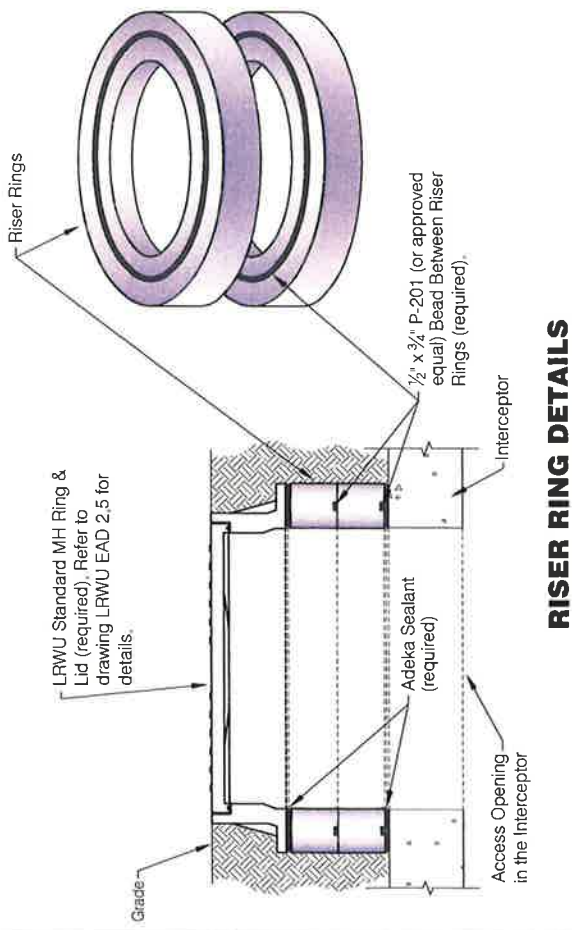
1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENVIRONMENTAL ASSESSMENT.

Prepared By: Evangeline O'Neal
 Updated: 5/19/2006 9:46:12 AM
 Drawing Status: **APPROVED**
 Filename: LRWU EAD 2.7.dwg

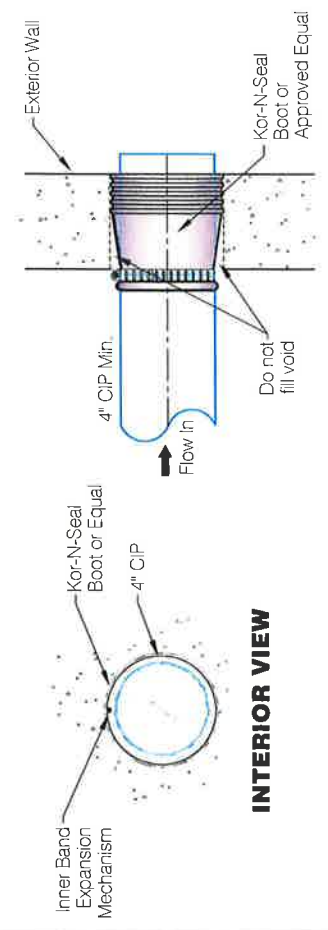


FIBERGLASS SAMPLING/INSPECTION MANHOLE DETAILS

LRWU
EAD 2.7



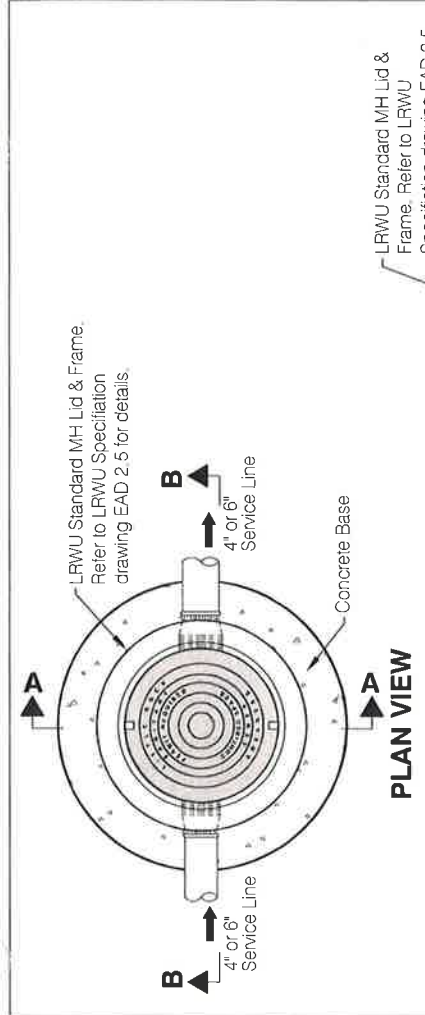
RISER RING DETAILS



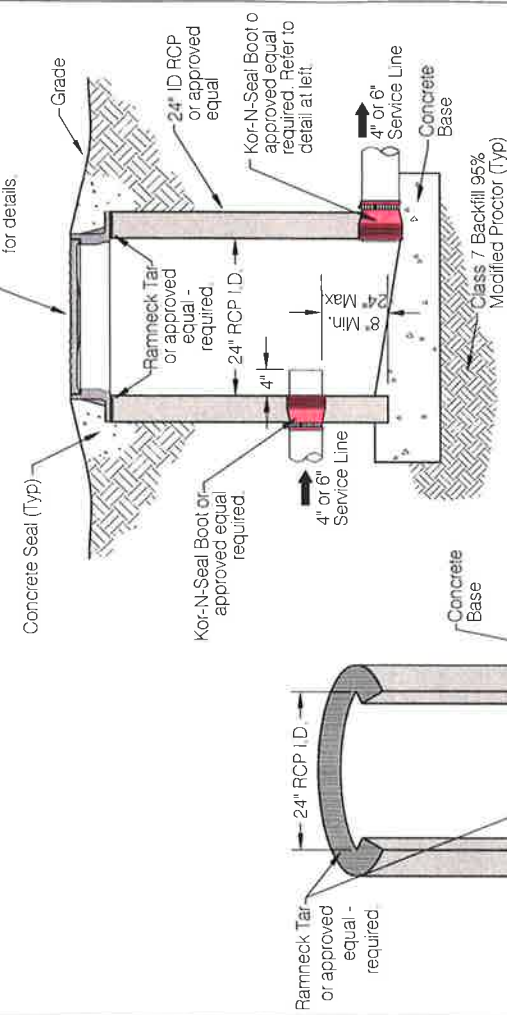
SECTION

INTERIOR VIEW

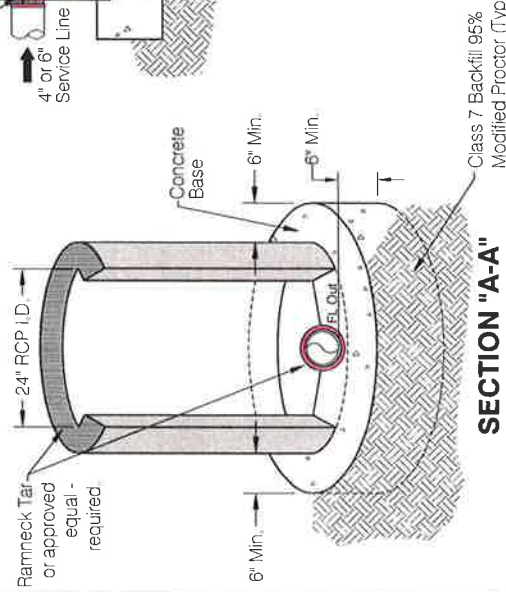
BOOT DETAIL



PLAN VIEW



SECTION "B-B"



SECTION "A-A"

RCP

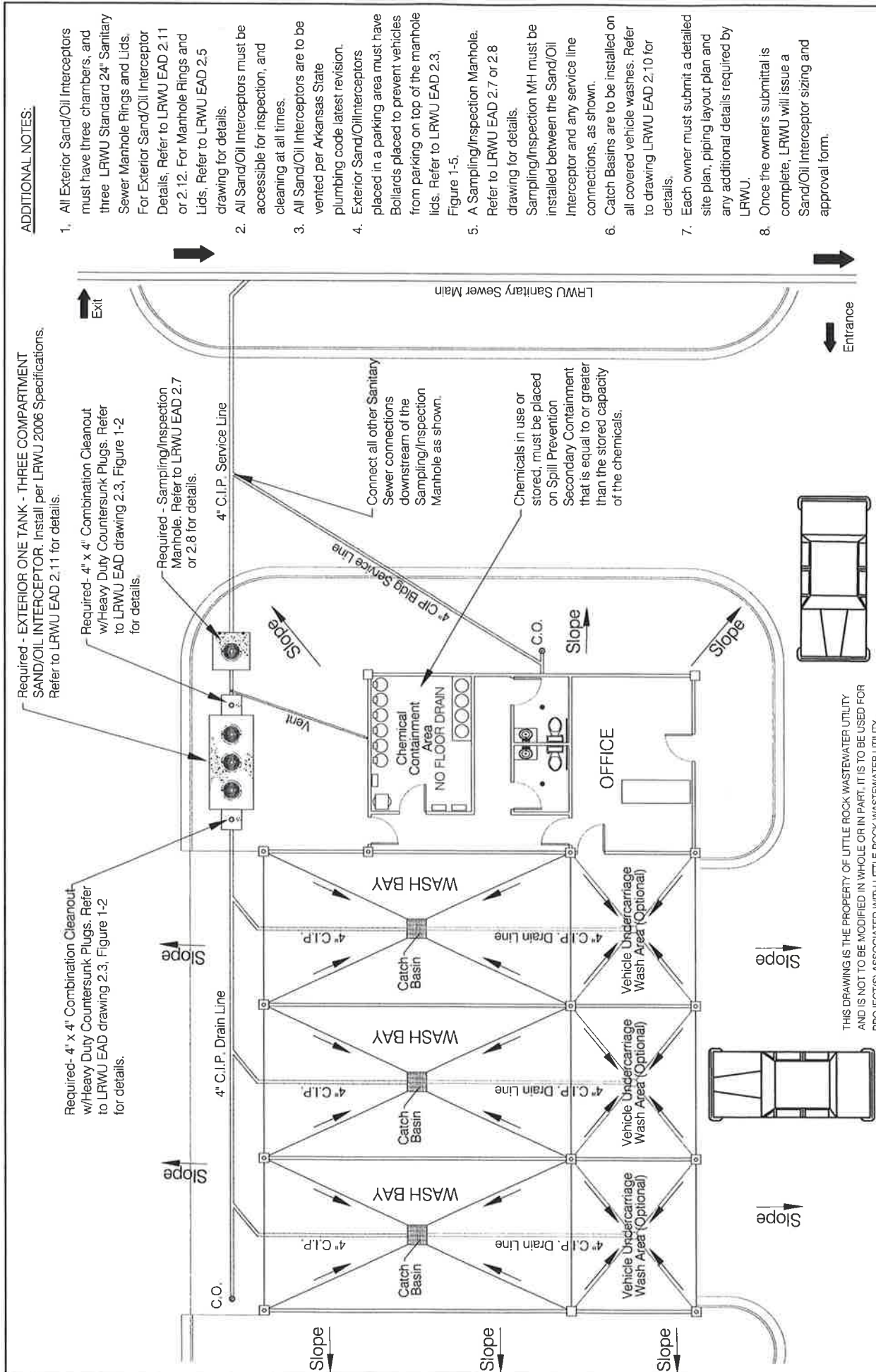
NOTES

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 Updated: 5/19/2006 9:49:17 AM
 Drawing Status: **APPROVED**
 Filename: LRWU-EAD 2.8.dwg



CONCRETE SAMPLING/INSPECTION MANHOLE DETAILS



ADDITIONAL NOTES:

1. All Exterior Sand/Oil Interceptors must have three chambers, and three LRWU Standard 24" Sanitary Sewer Manhole Rings and Lids. For Exterior Sand/Oil Interceptor Details, Refer to LRWU EAD 2.11 or 2.12. For Manhole Rings and Lids, Refer to LRWU EAD 2.5 drawing for details.
2. All Sand/Oil Interceptors must be accessible for inspection, and cleaning at all times.
3. All Sand/Oil Interceptors are to be vented per Arkansas State plumbing code latest revision.
4. Exterior Sand/Oil Interceptors placed in a parking area must have Bollards placed to prevent vehicles from parking on top of the manhole lids. Refer to LRWU EAD 2.3, Figure 1-5.
5. A Sampling/Inspection Manhole. Refer to LRWU EAD 2.7 or 2.8 drawing for details. Sampling/Inspection MH must be installed between the Sand/Oil Interceptor and any service line connections, as shown.
6. Catch Basins are to be installed on all covered vehicle washes. Refer to drawing LRWU EAD 2.10 for details.
7. Each owner must submit a detailed site plan, piping layout plan and any additional details required by LRWU.
8. Once the owner's submittal is complete, LRWU will issue a Sand/Oil Interceptor sizing and approval form.

Required - EXTERIOR ONE TANK - THREE COMPARTMENT SAND/OIL INTERCEPTOR. Install per LRWU 2006 Specifications. Refer to LRWU EAD 2.11 for details.

Required - 4" x 4" Combination Cleanout w/Heavy Duty Countersunk Plugs. Refer to LRWU EAD drawing 2.3, Figure 1-2 for details.

Required - 4" x 4" Combination Cleanout w/Heavy Duty Countersunk Plugs. Refer to LRWU EAD drawing 2.3, Figure 1-2 for details.

Required - Sampling/Inspection Manhole. Refer to LRWU EAD 2.7 or 2.8 for details.

Connect all other Sanitary Sewer connections downstream of the Sampling/Inspection Manhole as shown.

Chemicals in use or stored, must be placed on Spill Prevention Secondary Containment that is equal to or greater than the stored capacity of the chemicals.

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 Revised: 5/19/2006 9:56:09 AM
 Drawing Status: **APPROVED**
 Filename: LRWU EAD 2.9.dwg

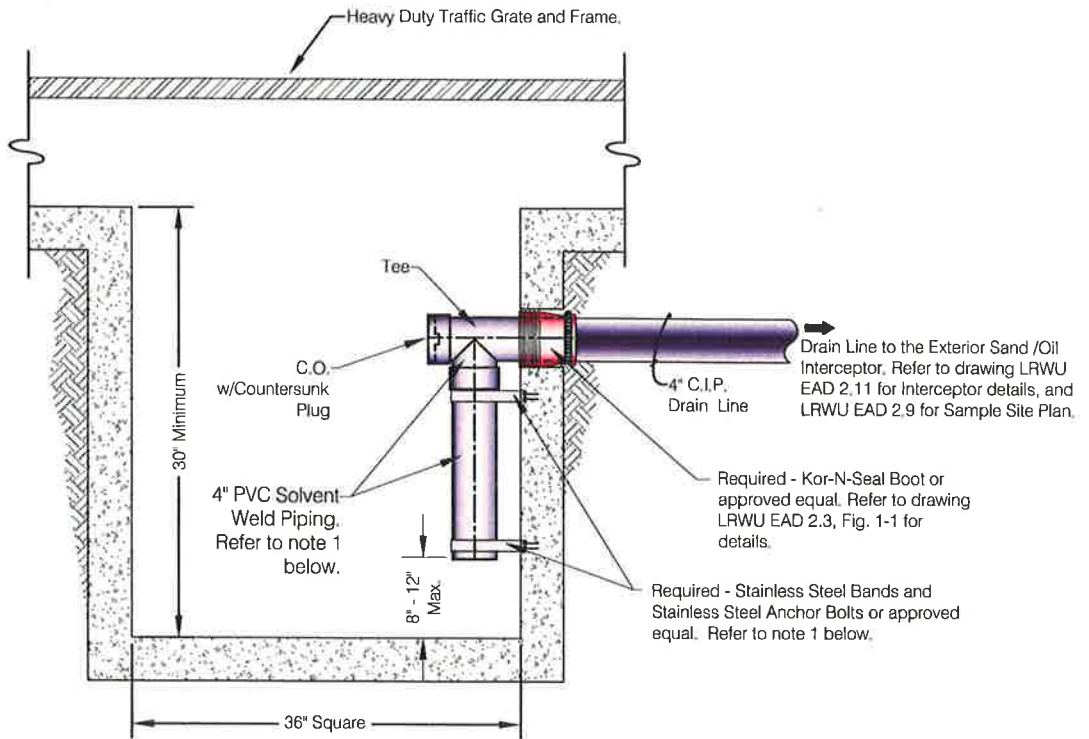
Notes

1. This drawing represents a "Typical Covered Vehicle Wash piping layout with Exterior Sand/Oil Interceptor".
2. All changes/revisions/etc. Must be approved by the LRWU Director of Environmental Assessment.

Little Rock Wastewater Utility
 SPECIFICATIONS

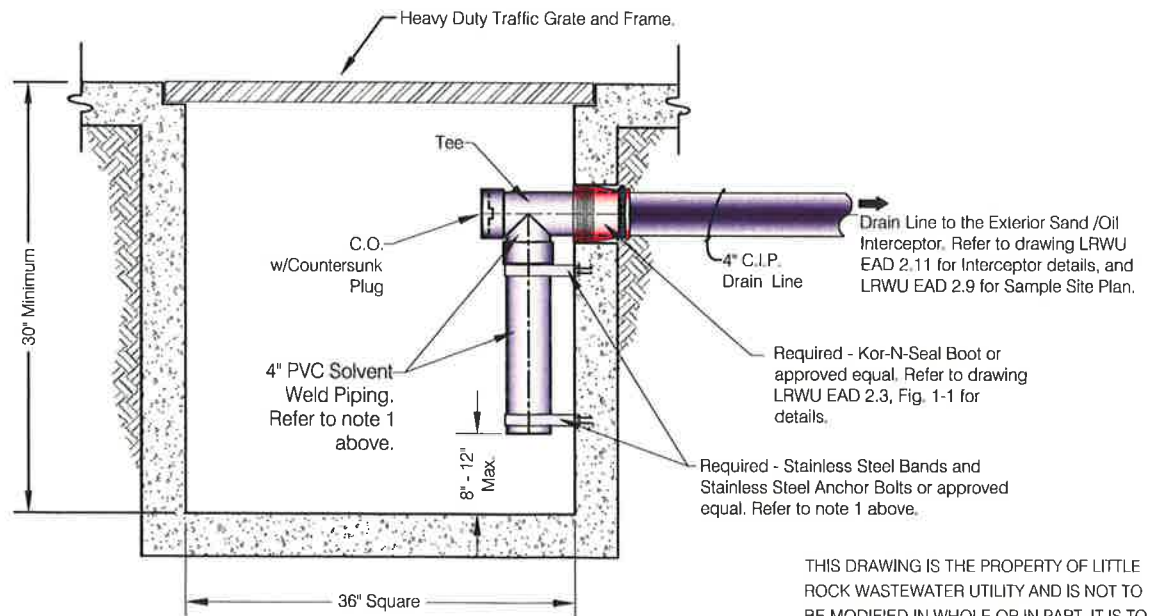


**EXAMPLE VEHICLE WASH
 PIPING LAYOUT FOR USE WITH
 EXTERIOR SAND/OIL INTERCEPTOR
 & CATCH BASINS**



ADDITIONAL NOTES:

1. Required - All interior piping must be 4" PVC Solvent Weld, and must be secured at the top and bottom with Stainless Steel Bands and Stainless Steel Anchor Bolts or approved equal.
2. Required - Kor-N-Seal Boot System connections or approved equal are required where piping passes through the Interceptor exterior walls.



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Notes

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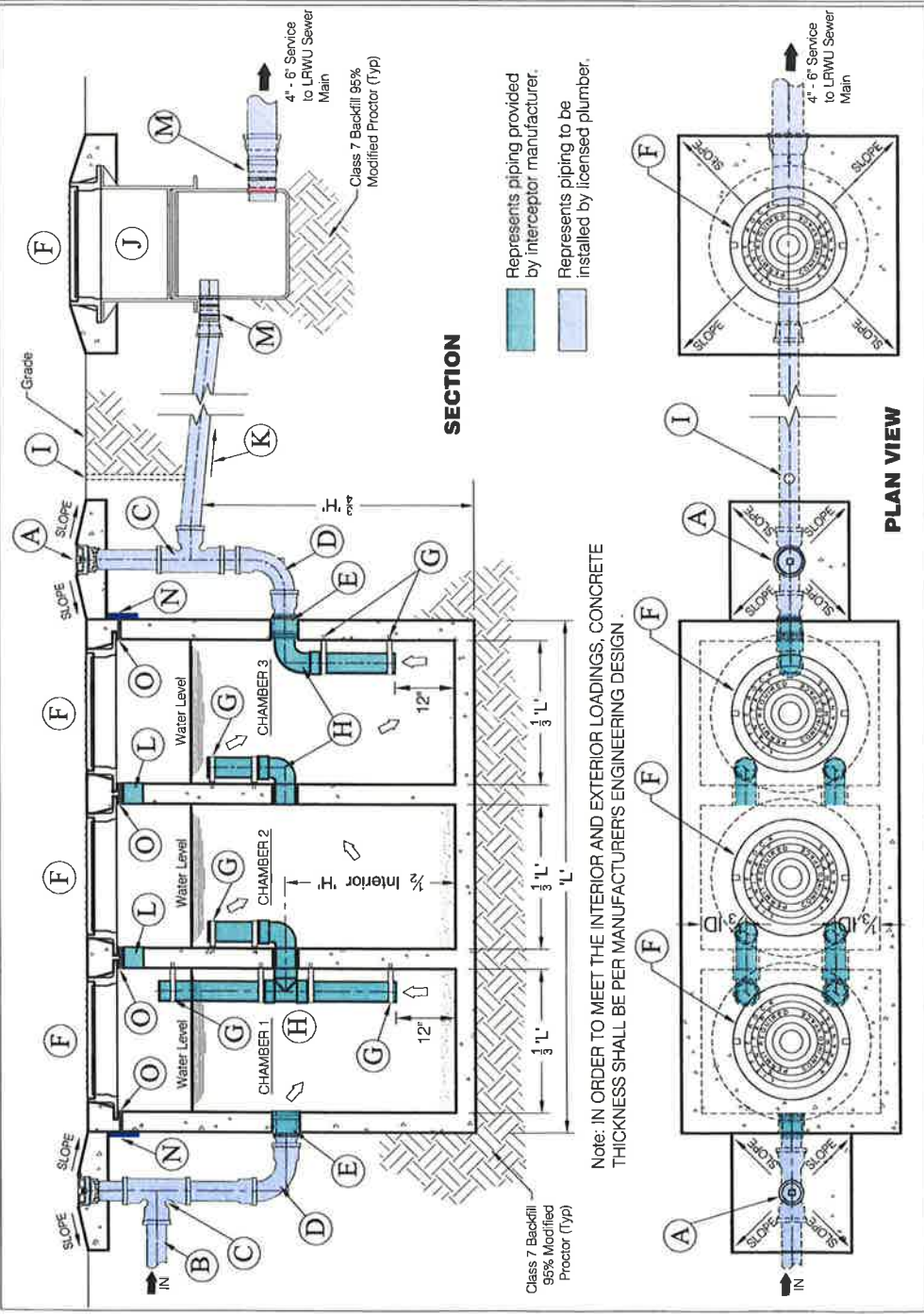


Little Rock Wastewater Utility
 SPECIFICATIONS

CATCH BASIN DETAILS
 (TO BE USED IN CONJUNCTION
 WITH COVERED VEHICLE
 WASH/SERVICE BAYS)

LRWU

**EAD
 2.10**



ADDITIONAL NOTES:

1. The Exterior Sand/Oil Interceptor is to be used in conjunction with one or more catch basins, i.e. as in a covered vehicle wash or service garage with three or more bays. Refer to drawing LRWU EAD 2.9 for sample site plan, and drawing LRWU EAD 2.10 for Catch Basin details.
2. All Exterior Sand/Oil Interceptors must have three chambers and three LRWU standard 24" sanitary sewer manhole rings and lids, as noted on drawing. Refer to drawing LRWU EAD 2.5 for details.
3. All Sand/Oil Interceptor in-tank piping must be 4" Schedule 80 PVC Solvent Weld, and is to be secured at the top and bottom with stainless steel bands and bolts or preapproved equal.
4. All Sand/Oil Interceptors must be accessible for inspection, and cleaning at all times.
5. Kor-N-Seals or approved equal Boots are required where piping passes through the exterior interceptor walls. Refer to drawing LRWU EAD 2.3, Fig. 1-1 for detail.
6. Vents are to be installed per Arkansas State plumbing code latest revision.
7. If Exterior Sand/Oil Interceptors are located in a parking area, Bollards must be constructed to prevent parking on top of the manhole lids. Refer to drawing LRWU EAD 2.3, Fig. 1-5.
8. Refer to drawing LRWU EAD 2.3, Fig. 1-2 or 1.3 for Cleanout and pad details.
9. This drawing is for informational purposes only, each owner must submit a detailed site plan, piping layout plan and any additional details required by LRWU. Once the owner's submittal is complete, LRWU will issue an Exterior Sand/Oil Interceptor sizing and approval form.
10. The owner must purchase a Sand/Oil Interceptor from a manufacturer that has been pre-approved by Little Rock Wastewater Utility.

- (A) 4" x 4" Cleanout & Pad required. See additional note 8.
- (B) 4" min. CIP.
- (C) 4" min CIP Tee.
- (D) 4" min. CIP Quarter Bend.
- (E) Kor-N-Seal Boot - see additional note 5.
- (F) LRWU Standard 24" MH Frames & Lids - see additional note 2.
- (G) Stainless Steel Bands & Bolts - see additional note 3.
- (H) 4" Schedule 80 PVC Solvent Weld - see additional note 3.
- (I) Vent - see additional note 6.
- (J) Sampling/Inspection MH - refer to LRWU EAD 2.7 or 2.8 for details.
- (K) 4" min. CIP to Sampling/Inspection MH - min. slope $\frac{1}{8}$ " per ft.
- (L) 4" Schedule 80 PVC Solvent Weld In Tank Vent Pipe.
- (M) Inserta Tee. Refer to drawing LRWU EAD 2.3, Fig. 1-4 for detail.
- (N) Joint Wrap is to be installed around all exterior joints - required. Refer to LRWU EAD 2.2 for detail.
- (O) Adeka Sealant or approved equal - required.

Notes

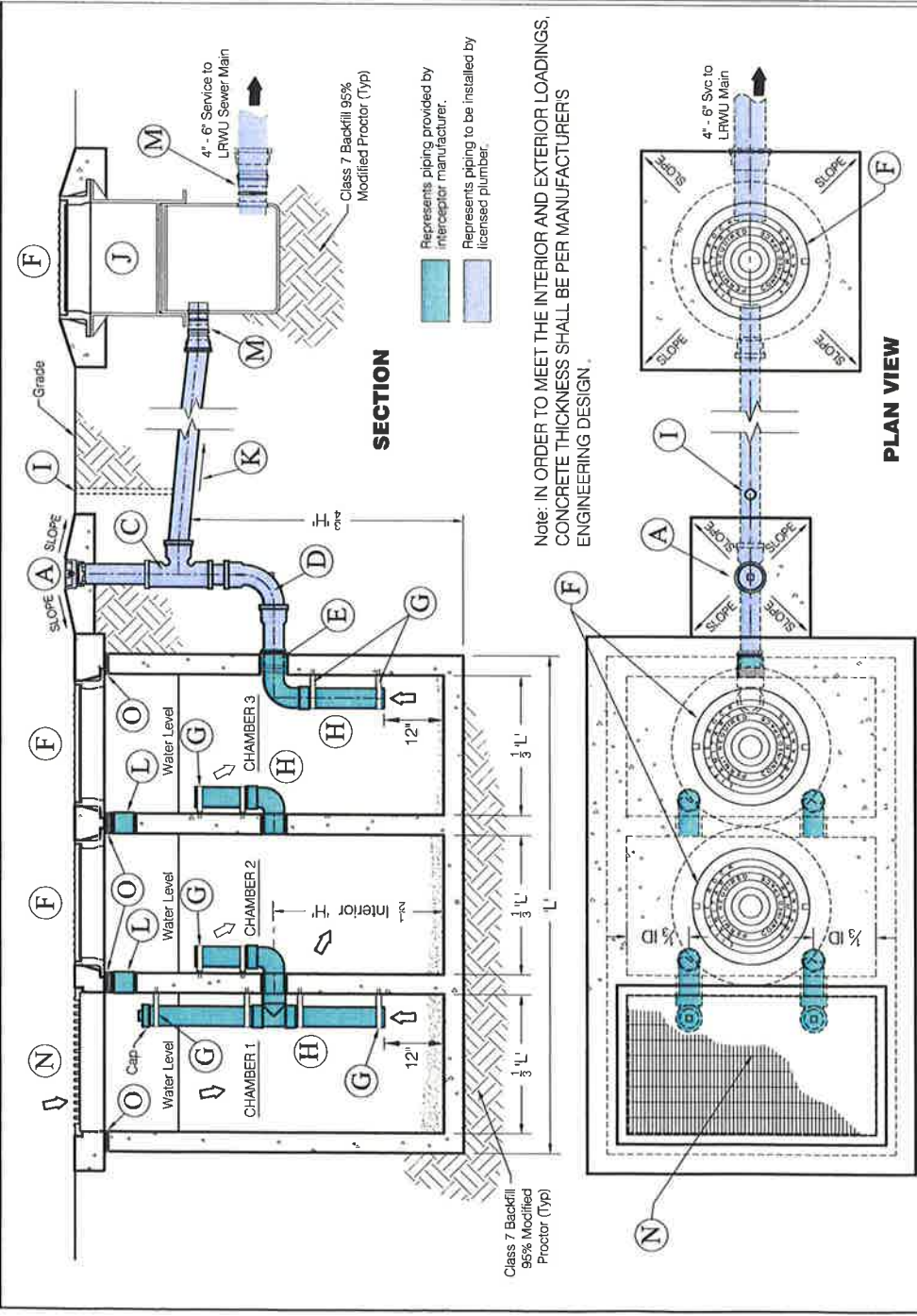
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2. This Drawing is the Property of Little Rock Wastewater Utility (LRWU), and IS NOT TO BE MODIFIED IN WHOLE OR IN PART. It is to be used for Project(s) Associated with Little Rock Wastewater Utility.

Prepared By: Evangeline O'Neal
 Latest Revision: 5/22/2006 12:07:10 PM
 Drawing Status: **APPROVED**
 Filename: LRWU EAD 2.11.dwg

Little Rock Wastewater Utility
LRWU
 SPECIFICATIONS

**STANDARD EXTERIOR
 ONE TANK - THREE COMPARTMENT
 SAND/OIL INTERCEPTOR DETAILS**

LRWU
EAD 2.11



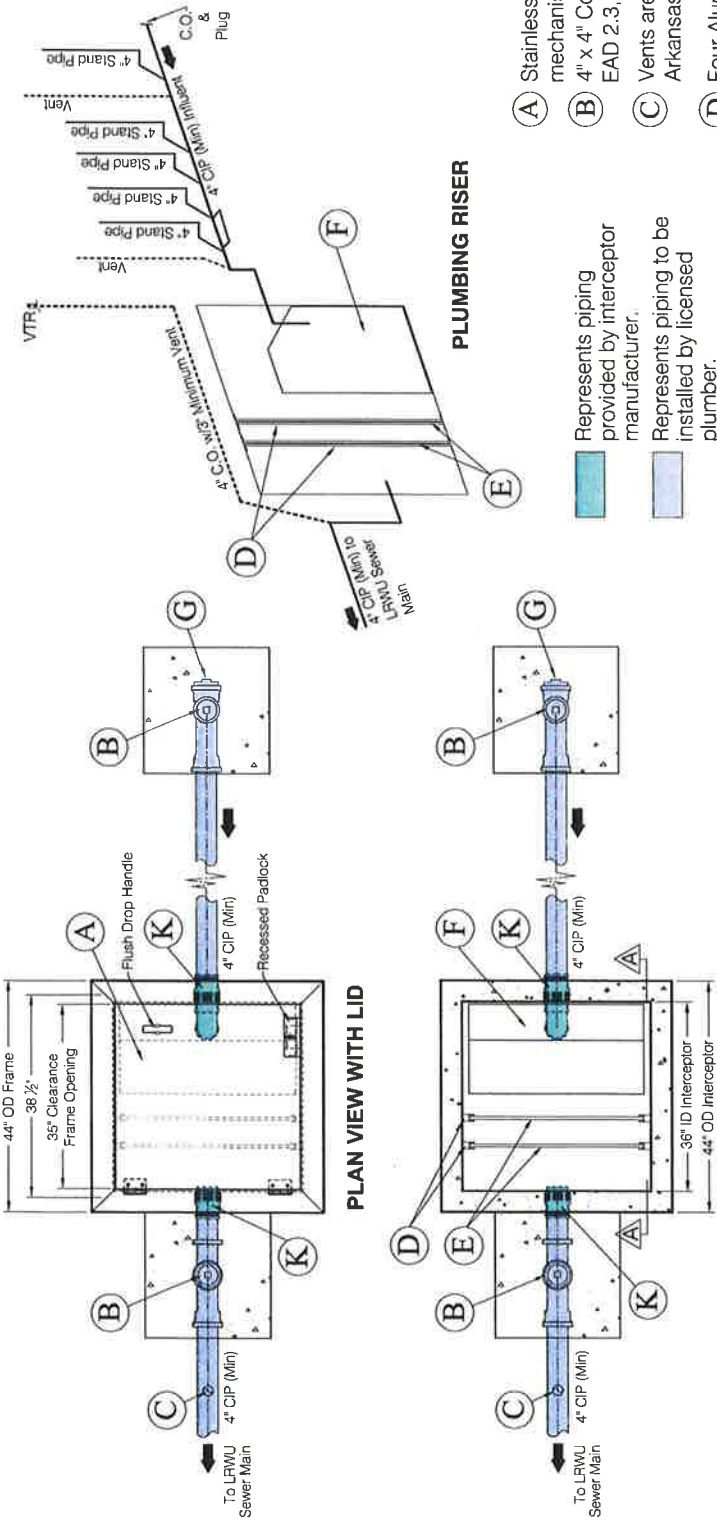
ADDITIONAL NOTES:

1. The Interior Sand/Oil Interceptor is to be used as an inter-bay single sand removal device, i.e. a roof covered wash bay.
2. For larger capacity interceptors - sizing, etc. be approved by LRWU's Environmental Assessment Division.
3. All Interior Sand/Oil Interceptors must have three chambers. The first chamber having a grate; chambers two and three having LRWU standard 24" sanitary sewer manhole rings and lids, as noted on drawing. Refer to drawing EAD LRWU 2.5 for Manhole Ring & Lid details.
4. The grate and manhole lids to be installed to grade and centered on each chamber.
5. All Sand/Oil Interceptor in-tank piping must be 4" Schedule 80 PVC Solvent Weld, and is to be secured at the top and bottom with stainless steel bands and bolts or preapproved equal.
6. All Sand/Oil Interceptors must be accessible for inspection, and clearing at all times.
7. Kor-N-Seal Boot System connections or approved equal are required where piping passes through the exterior interceptor walls. Refer to drawing LRWU EAD 2.3, Fig. 1-1 for detail.
8. Vents are to be installed per Arkansas State plumbing code latest revision.
9. Refer to drawing LRWU EAD 2.3, Figures 1-2 and 1-3 for Cleanout and pad details.
10. This drawing is meant for information only, each owner must submit a detailed site plan, piping layout plan and any additional details required by LRWU.
11. Once the owner's submittal is complete, LRWU will issue a Interior Sand/Oil Interceptor sizing and approval form.
12. The owner must purchase a Sand/Oil Interceptor from a manufacturer that has been pre-approved by Little Rock Wastewater Utility.

- (A) 4" x 4" Cleanout & Pad - see additional note 9.
- (B) 4" min. CIP.
- (C) 4" min CIP Tee.
- (D) 4" min. CIP Quarter Bend.
- (E) Kor-N-Seal Boot - see additional note 7.
- (F) LRWU Standard 24" MH Frames & Lids - see additional note 3.
- (G) Stainless Steel Bands & Bolts - see additional note 5.
- (H) 4" Schedule 80 PVC Solvent Weld - see additional note 5.
- (I) Vent - see additional note 8.
- (J) Sampling/Inspection MH - refer to LRWU EAD 2.7 or 2.8 for details.
- (K) 4" min. CIP to Sampling/Inspection MH - min. slope $\frac{3}{8}$ " per ft.
- (L) 4" Schedule 80 PVC Solvent Weld In Tank Vent Pipe.
- (M) Inserta Tee. Refer to drawing LRWU EAD 2.3, Fig. 1-4 for details.
- (N) Heavy Duty Traffic Grate & Frame.
- (O) Adeka Sealant or approved equal - required.

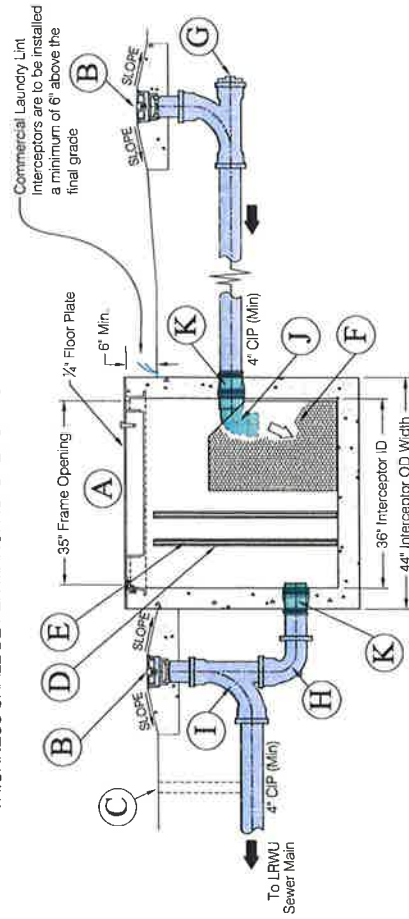
ADDITIONAL NOTES:

1. Area of Frame in contact with concrete is to be painted with bituminous coating.
2. In the event the interceptor is to be located in a parking area, Steel Bollards are to be used to protect the Interceptor and Lid. Refer to drawing LRWU EAD 2.3, Fig. 1-5 for detail.



PLAN VIEW BEFORE THE LID IS INSTALLED

Note: IN ORDER TO MEET THE INTERIOR AND EXTERIOR LOADINGS, CONCRETE THICKNESS SHALL BE PER MANUFACTURERS ENGINEERING DESIGN.



SECTION 'A' WITH LID IN CLOSED POSITION

1. All Changes/Revisions/etc. must be approved by the LRWU Director Of Environmental Assessment.
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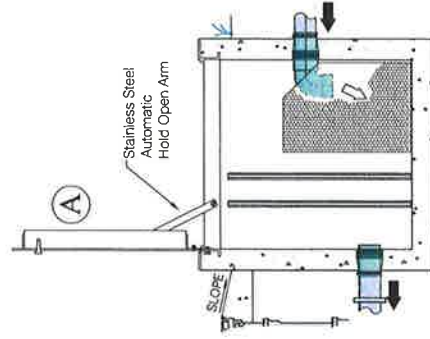
Prepared By: Evangelina O'Neal
 Latest Revision: 5/22/2006 11:57:06 AM
 Drawing Status: **APPROVED**
 Filename: LRWU EAD 2.13.dwg



TYPICAL COMMERCIAL LAUNDRY LINT INTERCEPTOR DETAILS

PLUMBING RISER

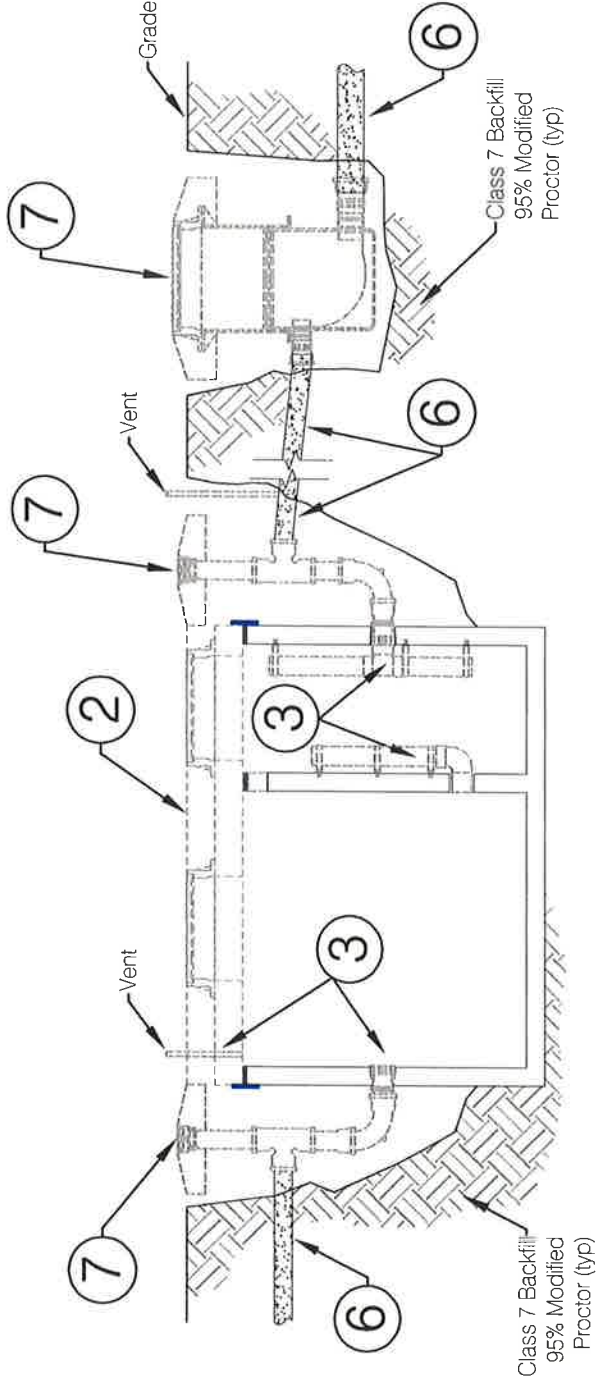
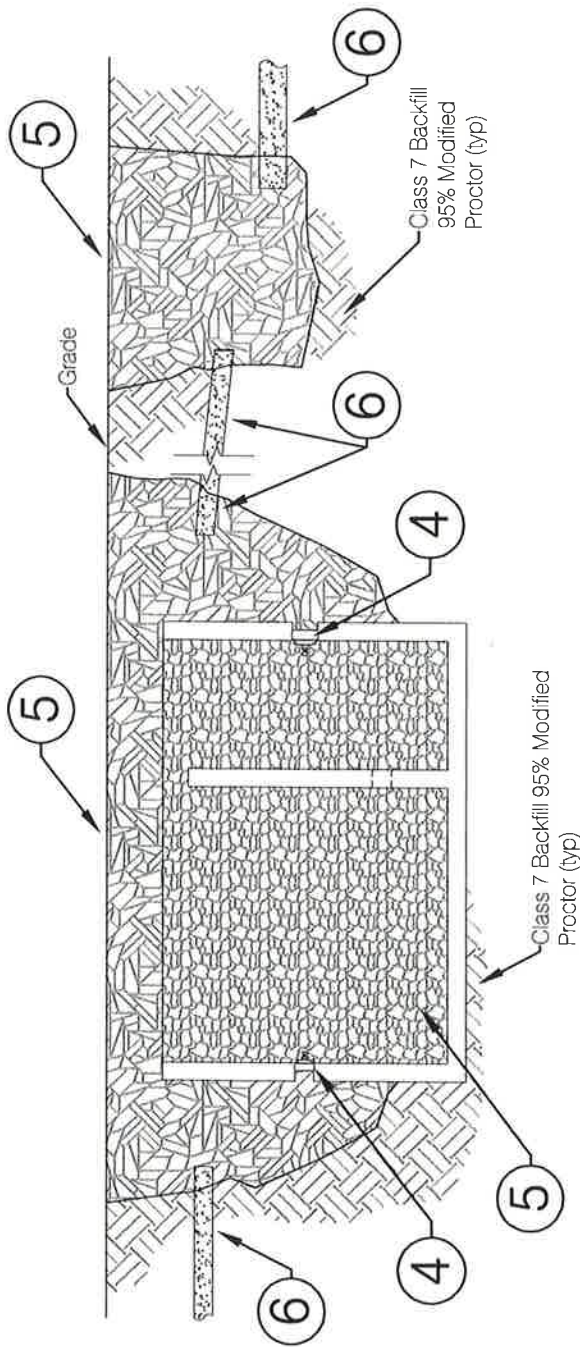
- (A) Stainless Steel Fabricated Lid with locking mechanism.
- (B) 4" x 4" Combination C.O.. Refer to drawing LRWU EAD 2.3, Fig 1-2 for details.
- (C) Vents are to be installed per the latest revision of the Arkansas State Plumbing Code.
- (D) Four Aluminum Channels are to be installed and bolted to the Interceptor walls (as shown) with stainless steel bolts. The channels hold the Stainless Steel Mesh Lint Screens.
- (E) Removable Stainless Steel Mesh Lint Screens (2 ea.).
- (F) 1/2" Removable Stainless Steel Mesh Basket.
- (G) 4" CIP Plug.
- (H) 4" CIP Quarter Bend.
- (I) 4" CIP 1-way Single C.O. Refer to drawing LRWU EAD 2.3, Fig. 1-2 and 1-3 for details.
- (J) 4" Schedule 80 PVC Solvent Weld piping inside interceptor.
- (K) Kor-N-Seal Boot or approved equal - required where piping penetrates the interceptor exterior walls. Refer to drawing LRWU EAD 2.3, Fig. 1-1 for detail.



SECTION 'A' WITH LID IN OPEN POSITION

REQUIRED ABANDONMENT STEPS

1. A licensed Grease Interceptor pumper is required to pump the liquid, sludge and scum from the tank.
2. Remove and dispose of the tank top properly.
3. Disconnect and remove any internal fixtures including vent pipes.
4. Plug Interceptor exterior wall openings where piping enters and exits tank using Cast Aluminum Expansion Plugs or preapproved equal.
5. Fill the Interceptor with Class I Bedding Material. In Paved Areas, backfill Abandonment's and perform pavement repair per LRWU Specifications appropriate detail. In Non-paved areas, backfill Abandonment's with select native material to natural grade and establish a vegetative cover.
6. Grout fill all external abandoned piping.
7. Remove cleanouts and connected piping, as well as Sampling Manhole, and backfill the area to the natural grade and establish a vegetative cover.



Notes

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 Drawing Status: **APPROVED**
 Filename:LRWU EAD 2.14.dwg

Little Rock Wastewater Utility
 SPECIFICATIONS



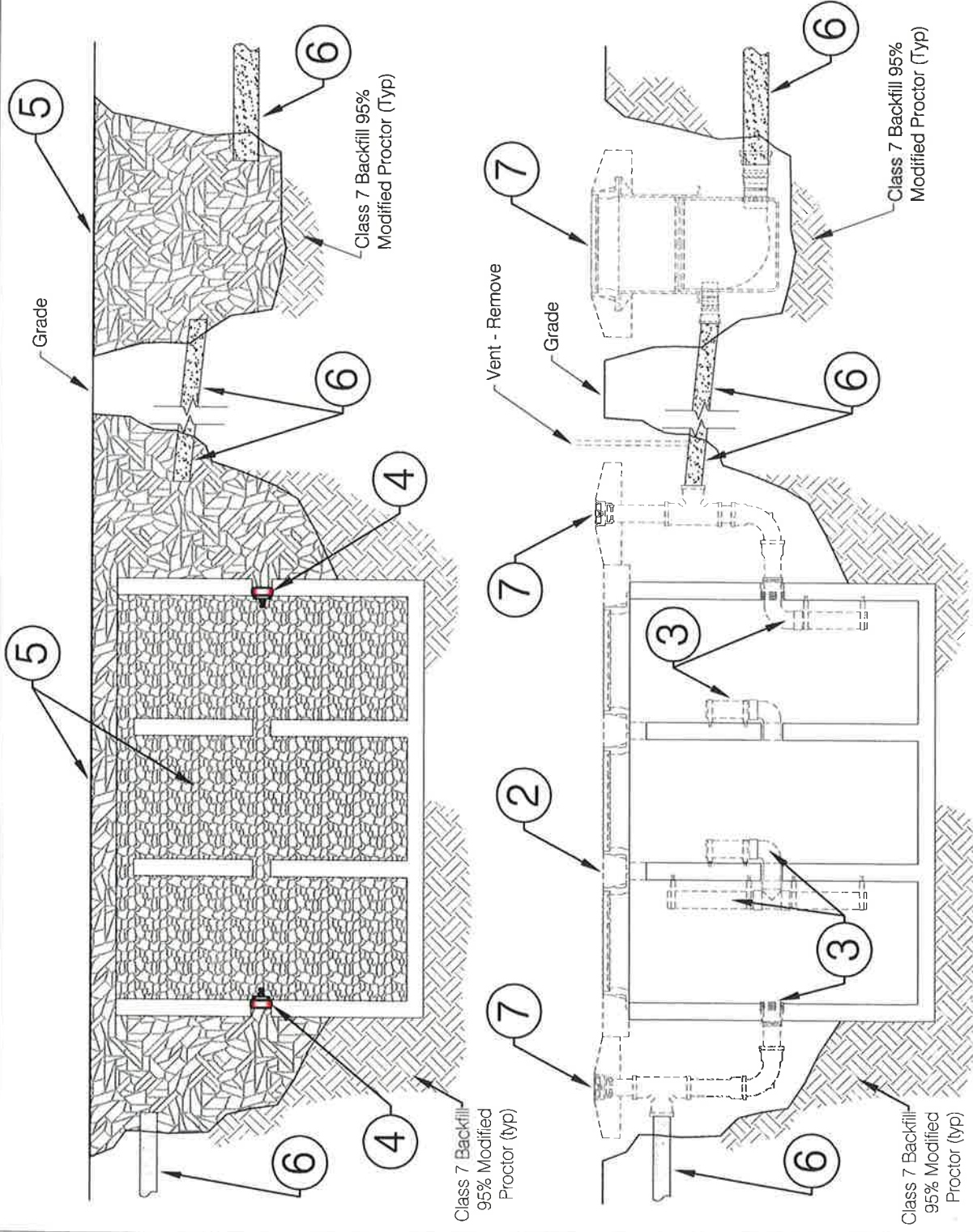
**GREASE INTERCEPTOR
 ABANDONMENT & SEAL
 DETAILS**

LRWU

EAD
2.14

REQUIRED ABANDONMENT STEPS

1. A licensed Sand/Oil Interceptor pumper is required to pump the liquid, sludge and scum from the tank.
2. Remove and dispose of the tank top properly. Reuse the manhole lids, if possible.
3. Disconnect and remove any internal fixtures including vent pipes.
4. Plug Interceptor exterior wall openings where piping enters and exits tank using Cast Aluminum Expansion Plugs or preapproved equal.
5. Fill the Interceptor with Class I Bedding Material. In Paved Areas, backfill Abandonment's and perform pavement repair per LRWU Specifications appropriate detail. In Non-paved areas, backfill Abandonment's with select native material to natural grade and establish a vegetative cover.
6. Grout fill all external abandoned piping.
7. Remove cleanouts and connected piping, as well as Sampling Manhole, and backfill the area to the natural grade and establish a vegetative cover.



SECTION

Prepared By: Evangeline Oneal
 Updated: 5/19/2006 10:13:26 AM
 Drawing Status: **DRAFT**
 Filename: LRWU EAD 2.15.dwg

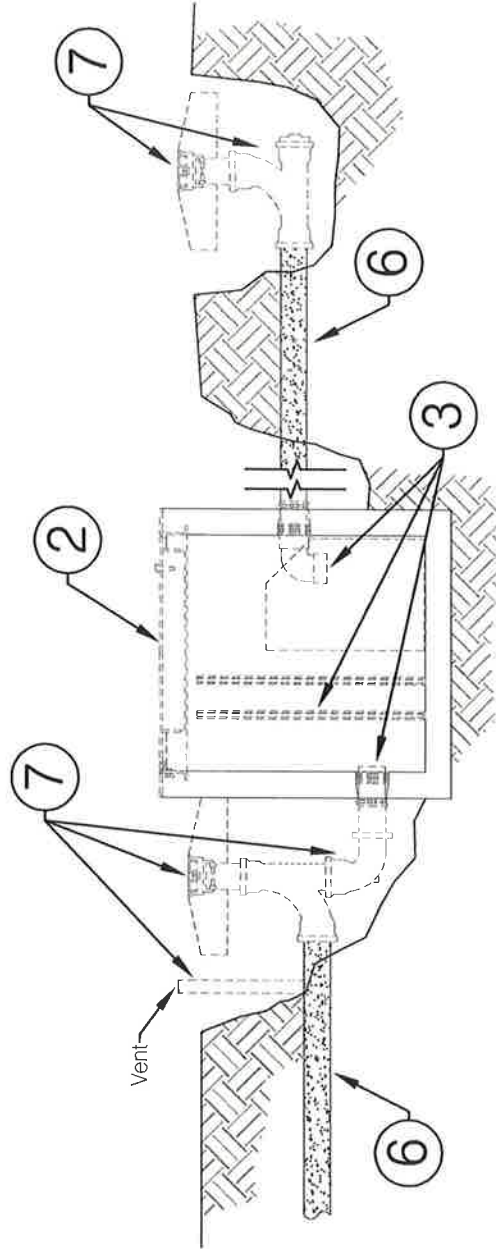
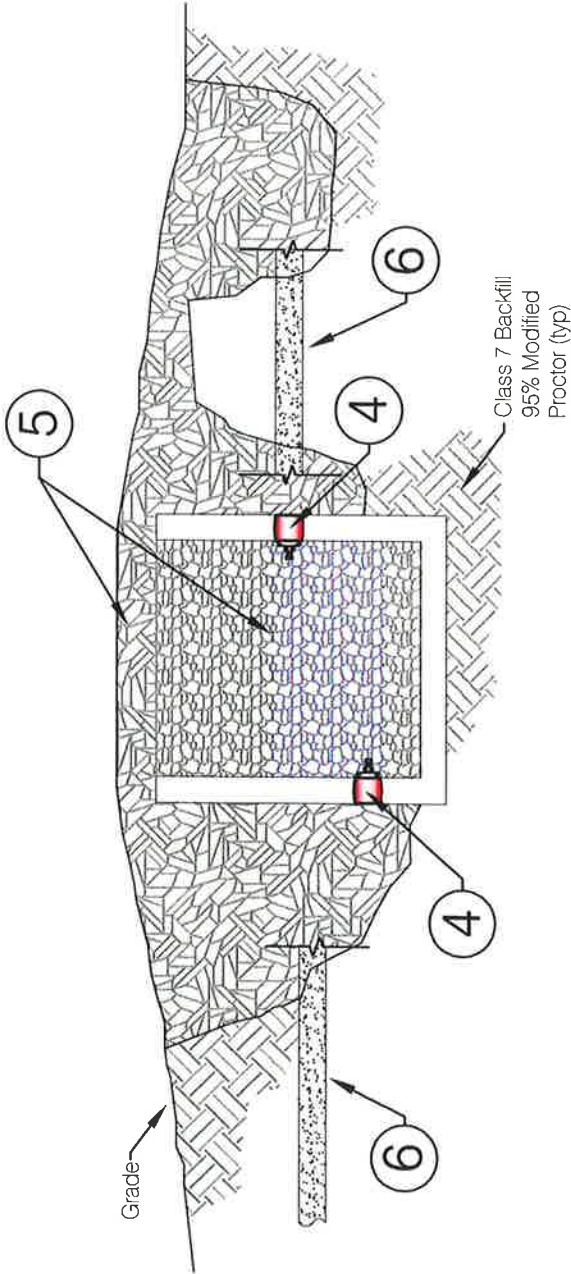
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Little Rock Wastewater Utility
 SPECIFICATIONS

**SAND/OIL INTERCEPTOR
 ABANDONMENT & SEAL
 DETAILS**

REQUIRED ABANDONMENT STEPS

1. Lint Trap must be cleaned of all lint, etc.
2. Remove and dispose of the Trap Lid properly.
3. Disconnect and remove all internal fixtures including vent pipes, filters, and lint baskets.
4. Plug Tank exterior wall openings where piping enters and exits tank using Cast Aluminum Expansion Plugs or preapproved equal.
5. Fill the tank with Class I Bedding Material. In Paved Areas, backfill Abandonment's and perform pavement repair per LRWU Specifications appropriate detail. In Non-paved areas, backfill Abandonment's with select native material to natural grade and establish a vegetative cover.
6. Grout fill all external abandoned piping.
7. Remove all Cleanouts and connected piping, and backfill the area to the natural grade and establish a vegetative cover.
8. Before final approval can be issued, the Lint Trap must be inspected by a LRWU EAD inspector.



SECTION

- Notes**
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 Drawing Status: **APPROVED**
 Filename:LRWU EAD 2.16.dwg

Little Rock Wastewater Utility
 SPECIFICATIONS



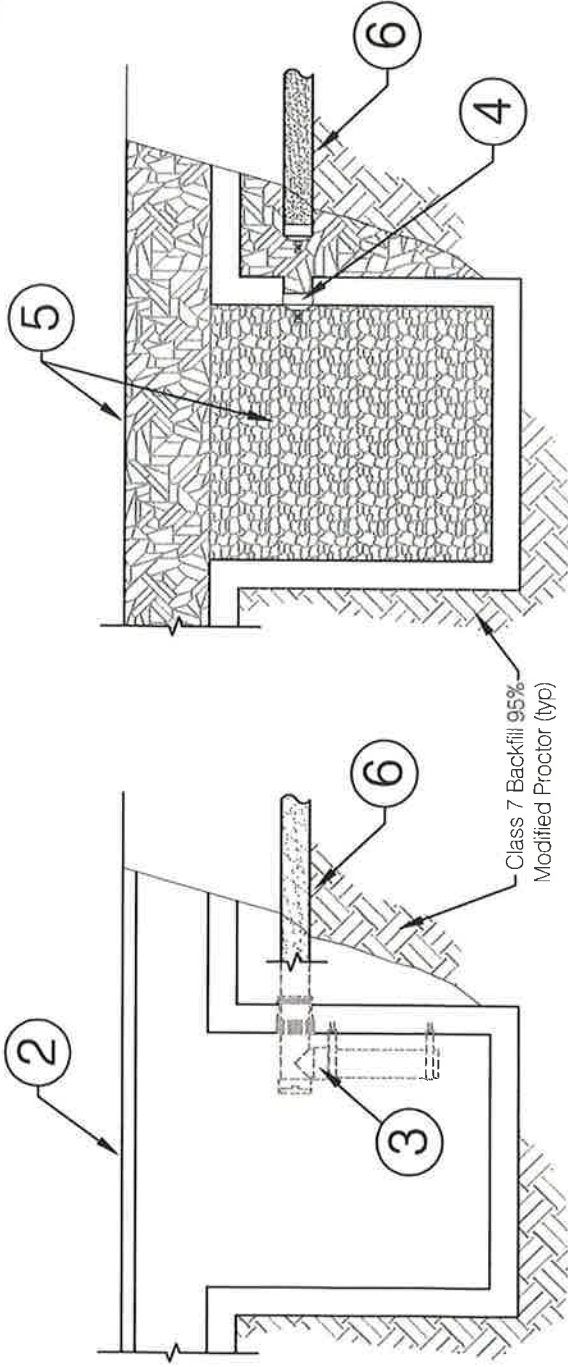
**LINT TRAP
 ABANDONMENT & SEAL
 DETAILS**

LRWU

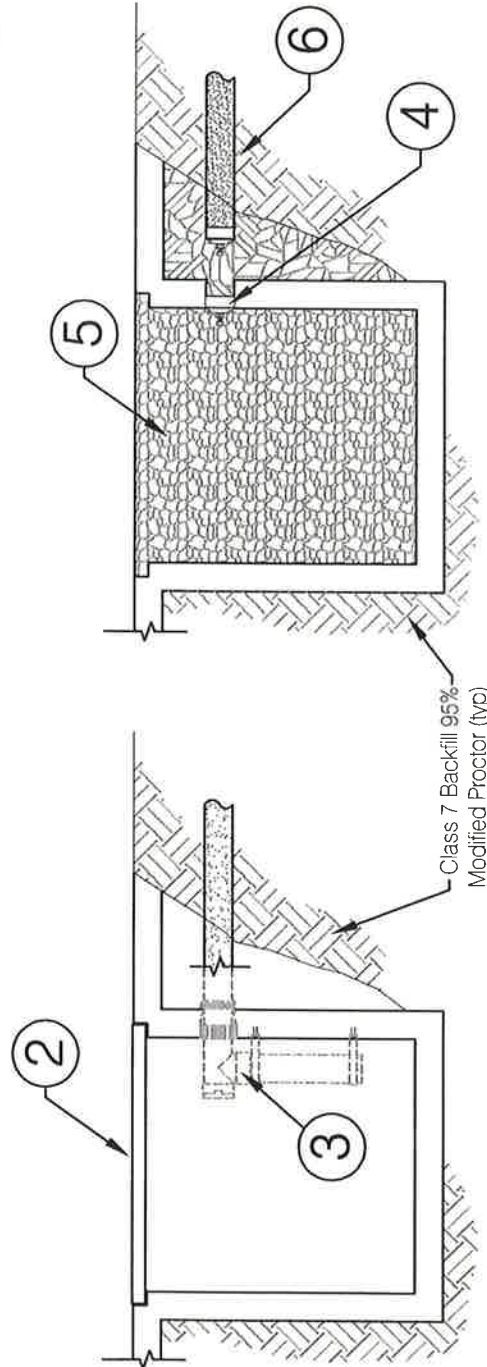
EAD
2.16

REQUIRED ABANDONMENT STEPS

1. Make sure the Catch Basin is emptied and free from debris.
2. Remove and dispose of the Catch Basin Lid/Grating properly.
3. Disconnect and remove any internal fixtures.
4. Plug Catch Basin exterior wall opening where piping exits basin using Cast Aluminum Expansion Plugs or preapproved equal.
5. Fill the Catch Basin with Class 1 Bedding Material. In Paved Areas, backfill Abandonment's and perform pavement repair per LRWU Specifications appropriate detail. In Non-paved areas, backfill Abandonments with select native material to natural grade and establish a vegetative cover.
6. Grout fill all external abandoned piping.
7. Before final approval for the abandonment can be issued, it must be inspected by a member of the LRWU EAD staff.



SECTION



SECTION

- Notes**
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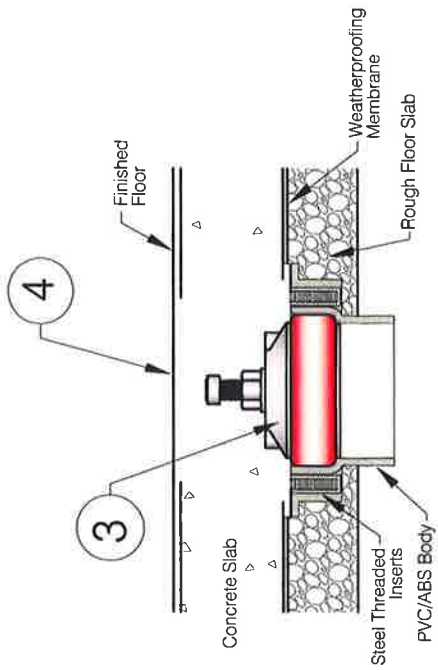
Little Rock Wastewater Utility
 SPECIFICATIONS



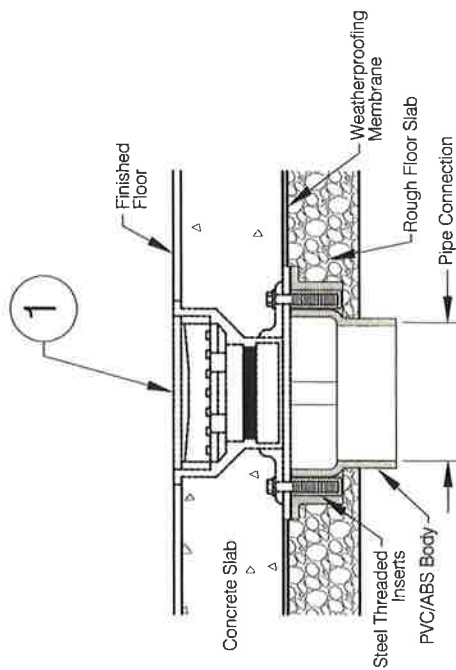
CATCH BASIN ABANDONMENT & SEAL DETAILS

LRWU

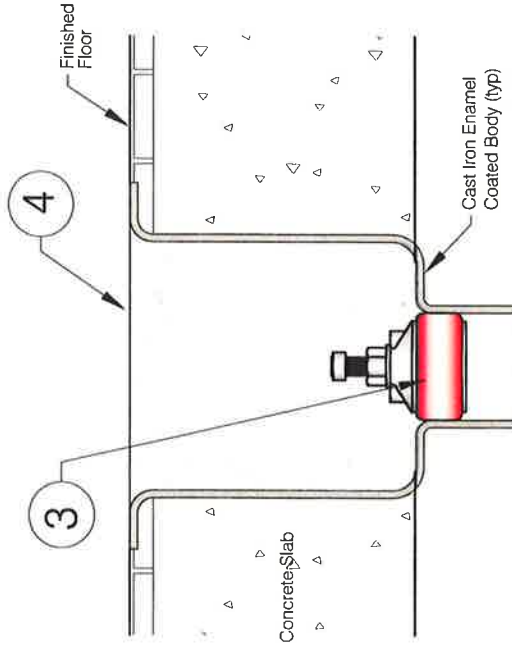
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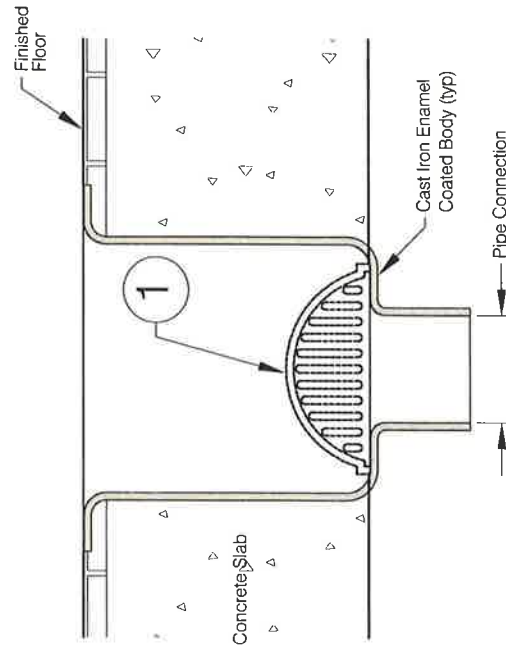
FLOOR DRAIN ABANDONMENT



FLOOR DRAIN SECTION



FLOOR SINK ABANDONMENT



FLOOR SINK SECTION

REQUIRED ABANDONMENT & SEAL STEPS

1. Remove the Grate and Basket or Dome Strainer.
2. Remove any dust, dirt, oils, grease, coatings, form release agents or any other surface contaminants.
3. Insert Expandable Plug into pipe to seal drain.
4. Fill the void above the plug to the finished floor level with cementitious concrete surfacer or preapproved equal per manufacturers application procedures and instructions.

Prepared By: Evangeline O'Neal
 Updated: 2/24/2006 11:36:10 AM
 Drawing Status: **APPROVED**
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Little Rock Wastewater Utility

SPECIFICATIONS



FLOOR DRAIN & FLOOR SINK ABANDONMENT & SEAL DETAILS

LRWU

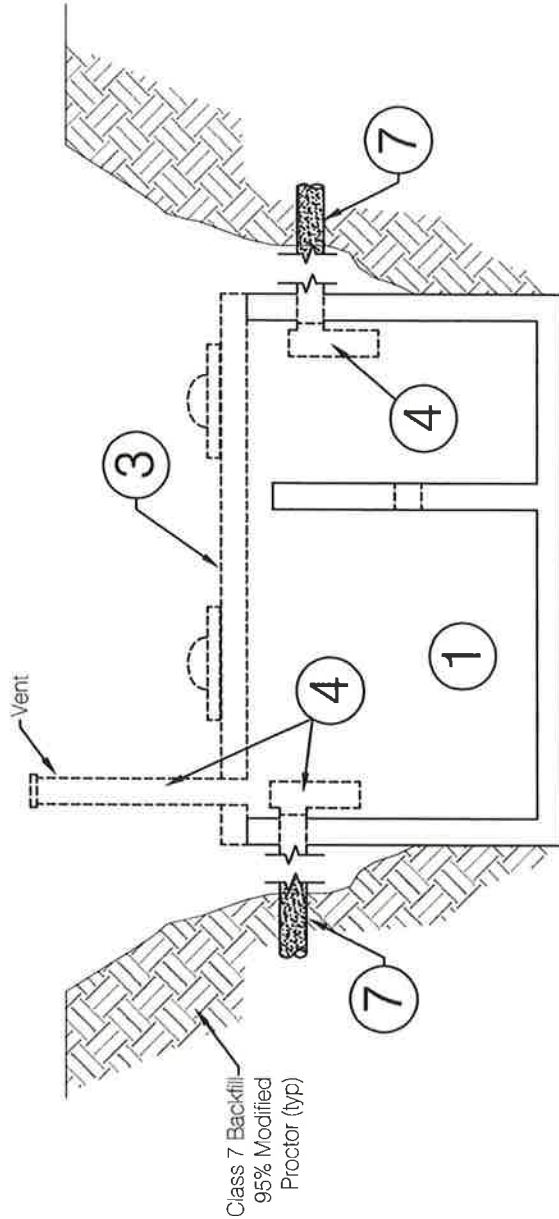
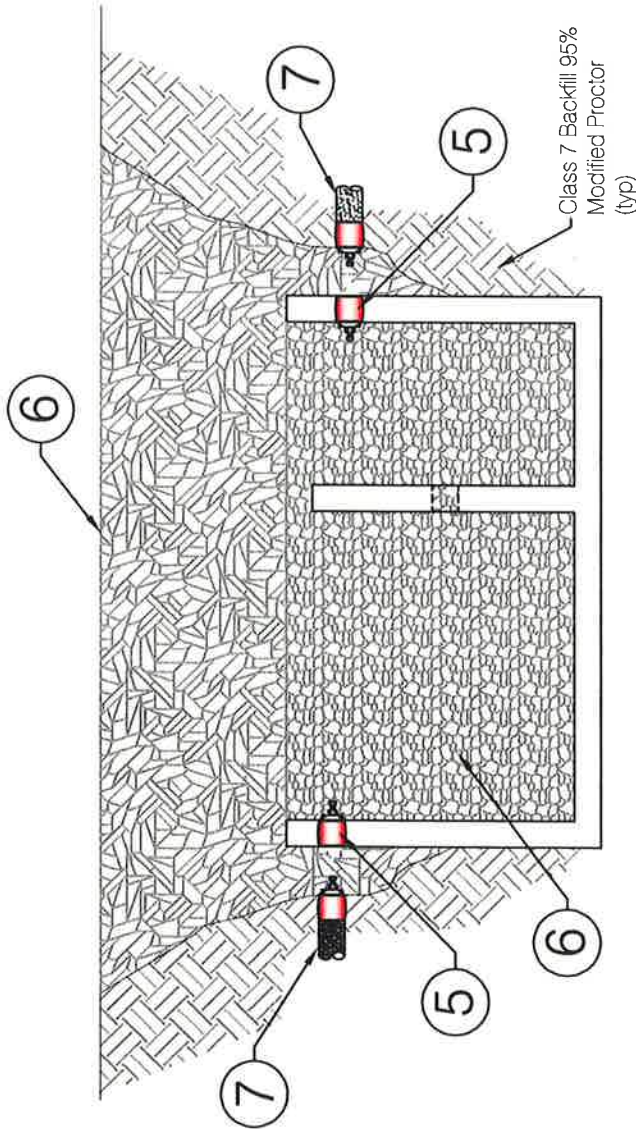
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2-18

Notes

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENVIRONMENTAL ASSESSMENT.
2. THIS DRAWING IS THE PROPERTY OF LITTLE ROCK WASTEWATER UTILITY, AND IS NOT TO BE MODIFIED IN WHOLE OR IN PART. IT IS TO BE USED FOR PROJECT(S) ASSOCIATED WITH LITTLE ROCK WASTEWATER UTILITY.

REQUIRED ABANDONMENT STEPS

1. A licensed septic tank cleaner is required to pump the liquid, sludge and scum from the tank.
2. If connected to a power source, disconnect power at the source to all electrical controls and remove all controls and panels.
3. Remove and dispose of the tank top properly.
4. Disconnect and remove any internal fixtures including vent pipes.
5. Plug Tank exterior wall openings where piping enters and exits tank using Cast Aluminum Expansion Plugs or preapproved equal.
6. Fill the tank with Class I Bedding Material. In Paved Areas, backfill Abandonment's and perform pavement repair per LRWU Specifications appropriate detail. In Non-paved areas, backfill Abandonment's with select native material to natural grade and establish a vegetative cover.
7. Grout fill all external abandoned piping, including the field lines, coat all surface areas exposed to effluent with hydrated lime and establish a vegetative cover.
8. Remove all parts of the drain field on the ground surface (such as valves, valve boxes and risers) and backfill the area to the natural grade and establish a vegetative cover.
9. Before final approval can be issued, core sample near the tank must be taken to indicate the absence or presence of prior ground discharge.
10. Wait at least 18 months before using the disposal area for gardening or construction.



SECTION

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Little Rock Wastewater Utility
 SPECIFICATIONS



**SEPTIC TANK
 ABANDONMENT & SEAL
 DETAILS**

LRWU

EAD
2-19

- Notes**
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Little Rock Wastewater Utility

Collection System Management Plan (CSMP)

Table of Contents

Letter of Transmittal

<u>Volume</u>	<u>Tab</u>	<u>Description</u>
1	A	Major Goals of CSMP
	B	Personnel Responsible for Implementing CSMP
2		Legal Authority of LRWU:
	A	Control of Private Inflow Sources
	B	Design/ Construction of Sewers & Connections
	C	Installation, Testing, & Inspection of New & Rehabilitated Sewers
	D	Address Flows from Satellite Municipal Collection Systems
	E	Implementation of Prohibitions of National Pretreatment Program
3		Lift Station Maintenance Division General Procedures
4		Collection System Maintenance Division General Procedures <i>The following are included within Volume 4:</i> <ul style="list-style-type: none">• Maintenance Procedures to Prioritize Collection System Activities• Collection System Preventive Maintenance• Identification, Prioritization, Rehabilitation of Structural Deficiencies• Equipment and Replacement Inventories• Sanitary Sewer Overflow Response Plan
5	A	Geographic Information System (GIS)
	B	Computerized Maintenance Management System
	C	Collection System Employee Training
6		Standard Specifications for Installation and Testing of New Collection System Facilities (Draft)
7		Trap Control Program
8		Typical Specifications for Rehabilitation of Collection System Facilities
9		System Evaluation and Capacity Assurance Plan <i>The following is included within Volume 9:</i> <ul style="list-style-type: none">• Current Capacity of Collection System and Treatment Facilities

Little Rock Wastewater Utility Collection System Management Plan (CSMP)

Volume 7 – Trap Control Program

1. TRAP CONTROL PROGRAM RESPONSIBILITY

Little Rock Wastewater Utility's Trap Control Program is administered by the Environmental Assessment Division (EAD). A copy of the EAD organizational chart is provided as Attachment No. 1 to Volume 7 of the Collection System Management Plan (CSMP).

A brief overview of the key EAD Staff involved in the Trap Control Program is as follows:

- 1.1. EAD Director - Responsible for the management and supervision of the Environmental Assessment Division. Plans, organizes, and directs the activities of the Laboratory, Industrial Pretreatment Program, Sampling/ Inspection, and Trap Control Sections. Monitors compliance with environmental quality standards as established by Federal, State, and Local regulations. Responsible for overseeing the development and revision of operating procedures and practices. Provides technical assistance to other utility departments and coordinates the activities with these departments. Interfaces with other agencies including regulatory entities. Develops departmental short/long range goals and prepares budgets.
- 1.2. Pretreatment Supervisor – (EAD has two Pretreatment Supervisors) Responsible for the management of either the Industrial User Relations or Commercial User Relations & Sampling Departments of the Environmental Assessment Division (EAD). Supervises and trains Industrial Inspectors and Technicians in performance of job tasks and evaluates job performance. Coordinates plans and performs activities supporting the Utility's pretreatment, trap control, and sampling programs. Reviews and revises the pretreatment, grease trap/interceptor, and sampling programs as new regulations are promulgated. Interacts with other agencies including regulatory entities. Ensures industrial/commercial facilities, and Utility meet applicable Federal, State and Local discharge regulations through control documents, inspections, or enforcement actions. Responsible for preparing reports as required.
- 1.3. Pretreatment Supervisor – Position 1 of 2 - Responsible for the review and issuance of LRWU requirements related to building construction plans submitted to LRWU, including new, remodel, and re-development of building sewer drains connected to LRWU's sewerage system. Responsible for the issuance of requirements related to installing or replacing trap control devices and assuring compliance with LRWU's Engineering Specifications.
- 1.4. Pretreatment Supervisor – Position 2 of 2 - Responsible for the on-going inspection of all trap control devices and issuance of requirements to clean or repair trap control devices.

- 1.5. Industrial Inspectors (4 Positions) - Responsible for implementing programs of the EAD including industrial/commercial compliance, inspections, information dissemination, treatment plant protection, collection system trap control protection, liquid waste hauler compliance, groundwater remediation and surcharge.

2. AUTHORITY

LRWU's authority to administer and issue requirements related to controlling commercial users of the sewerage system are as follows:

- 2.1. City of Little Rock Ordinance No. 17,966 - This ordinance is known as the "Pretreatment Ordinance," and a copy of this ordinance can be found in Volume 2 of the CSMP. The EAD uses this ordinance as its legal authority to issue requirements related to protection of the sewerage system.

Ordinance 17,966 § 7.1 (F) allows provisions for LRWU to establish rules and regulations in regard to the construction, use, and operation of sanitary sewers to be connected to, or connecting into, the public sewer of the Little Rock Wastewater Utility's sewerage system. Ordinance 17,966 § 2.1 prohibits the discharge to Publicly Owned Treatment Works any waste capable of creating stoppages, causing abnormal corrosion, abnormal deterioration, damage or hazard to structures, equipment, or workers of the POTW. Ordinance 17,966 § 3.2 requires Users to install, operate, and maintain pretreatment devices to protect the sewerage system.

- 2.2. City of Little Rock Ordinance No. 17,965 - This ordinance is known as the "General Sewer Use Ordinance," and a copy of this ordinance can be found in Volume 2 of the CSMP. The Utility uses this ordinance as its legal authority to require all users to follow a minimum set of engineering specifications as established by LRWU.
- 2.3. Pretreatment Procedures Manual - ADEQ requires LRWU to develop and maintain an approved "Industrial Pretreatment Procedures Manual." This large, 2-1/2-inch thick document is on file at ADEQ, but is not included with the CSMP. (Copies are available upon request.)
- 2.4. Consolidated Fee Schedule - The Little Rock Sanitary Sewer Committee (LRSSC) annually adopts a "Consolidated Fee Schedule" which owners and users shall pay to LRWU for services provided and when owners/users fail to comply with LRWU requirements (non-compliance). See Attachment No. 2 to Volume 7 of the CSMP, Section 3.2 of the fee schedule.

3. TRAP CONTROL PROGRAM
USE OF LRWU'S STANDARD ENGINEERING SPECIFICATIONS

LRWU develops, and when needed revises, engineering specifications to assure that all facilities connected to the collections system meet minimum standards. A copy of the minimum engineering specifications is provided in Volume 6, Section 02100 of the CSMP. Also included, in Volume 6 of the CSMP, are twenty-one (21) drawings developed by LRWU to aid users to better understand LRWU's requirements for the design, construction, installation, repair, replacement, and demolition of trap control devices.

4. TRAP CONTROL FACILITY MANAGEMENT

The EAD uses a database software package to identify and track "trap control facilities." The proprietary name of the database software company is Linko Data Systems (www.linkoweb.com). The Linko database is available to their clients in a choice of software modules. LRWU purchased several software modules. The module related to the Trap Control Program is called LinkoFOG™. Attachment No. 3 to Volume 7 of the CSMP, includes the EAD's Standard Operating Procedure (SOP) for managing the trap control facilities connected to LRWU's collection system. LinkoFOG™ provides EAD with valuable tools to manage a wide variety of trap control facilities throughout the City of Little Rock.

5. TRAP CONTROL EVENT MANAGEMENT

One of the management tools provided for in the LinkoFOG™ software is a concept called "event management." The software allows EAD to develop a wide variety of event types, and then utilized database tools to relate the event type to trap control facilities. Attachment No. 4 to Volume 7 of the CSMP includes the EAD's Standard Operating Procedure (SOP) for managing the events with the LinkoFOG™ software.

6. EAD INSPECTIONS

The purpose of EAD's trap control device inspection program is to prevent grease, sand, lint and other prohibited materials from entering the LRWU Collection System and subsequently causing SSOs. Using the LinkoFOG™ software, EAD Staff is always on the lookout for trap control facilities that fall under LRWU requirements. EAD's efforts to locate and track trap control facilities are accomplished when new construction plans are submitted, through an annual review of city business licenses and the telephone book, and as the EAD Inspectors are driving through the city. Once a trap control facility is identified, they are entered into the LinkoFOG™ software. For existing undocumented trap control facilities, an initial inspection is performed to make sure the facility has installed the necessary trap control

devices. If a trap control facility has not installed a trap control device, EAD issues a “requirement to install” letter. Once the facility is meeting LRWU requirements, then the facility is scheduled for routine inspections. If a trap control facility is identified as non-compliant, increased inspections are scheduled until the facility has returned to substantial compliance.

7. EAD REQUIREMENT LETTERS AND FORMS

Communicating LRWU requirements to trap control facilities plays a significant role in LRWU’s efforts. In Attachment No. 5 to Volume 7 of the CSMP, various form letters are included that are used routinely. Other non-routine communications are sent to trap control facilities that address special or unusual circumstances related to LRWU requirements. The routine communications letters, forms, and template used are:

- 7.1. EAD Communications Record Template
- 7.2. EAD Inspection Report Template
- 7.3. Trap - Requirement to Clean Interceptor - No Fee
- 7.4. Trap - Requirement to Clean Interceptor - \$100 Fee
- 7.5. Trap - Requirement to Install Interceptor - No Fee
- 7.6. Trap - Requirement to Install Interceptor - \$100 Fee
- 7.7. Trap - Requirement to Repair Interceptor - No Fee
- 7.8. Trap - Requirement to Repair Interceptor - \$100 Fee
- 7.9. Trap - Requirement to Replace Cleanout Caps - No Fee
- 7.10. Trap - Requirement to Replace Cleanout Caps - \$100 Fee
- 7.11. Shared Grease Interceptor Example Agreement Letter

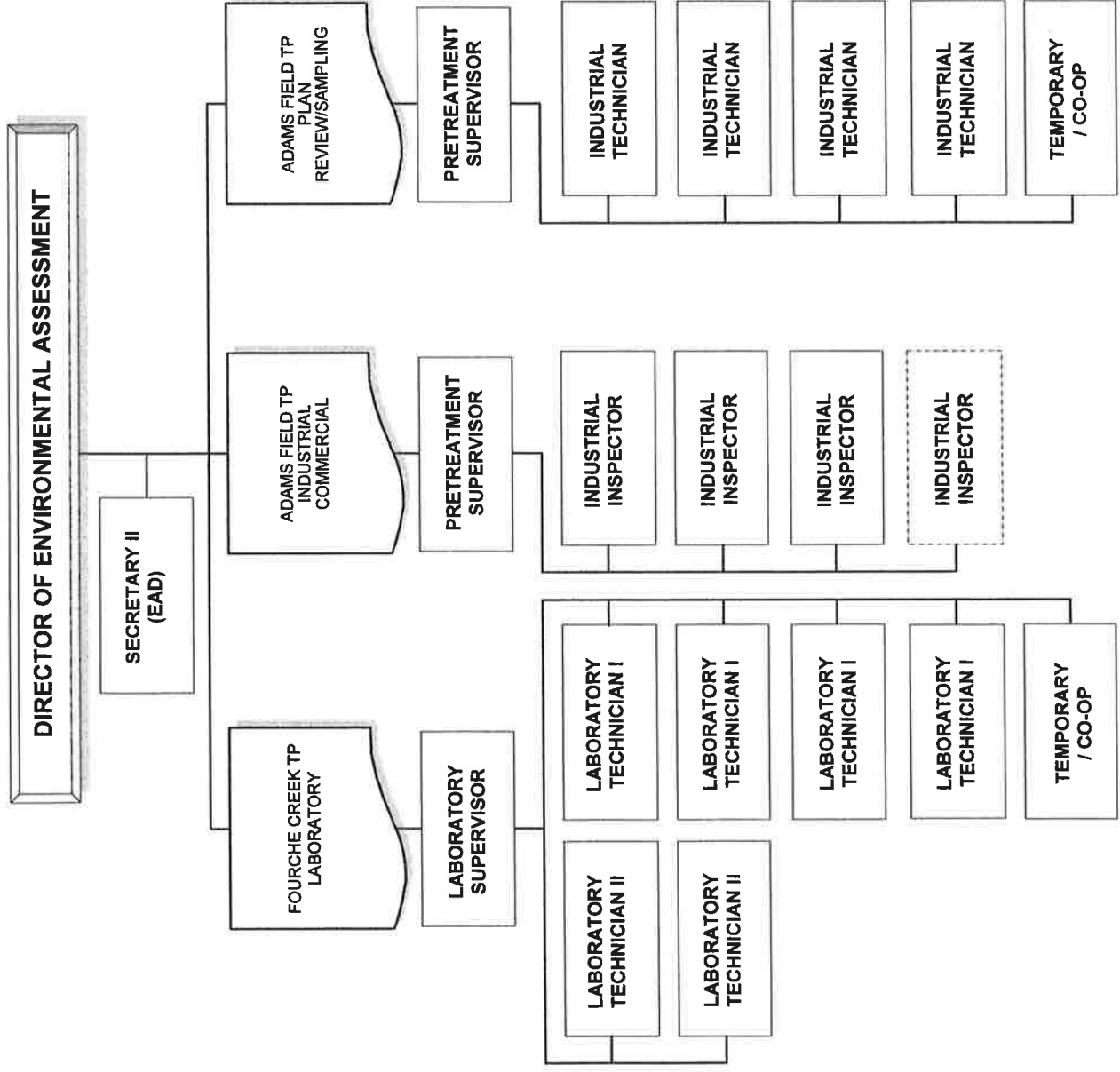
8. EAD’s Role In Responding to Grease Related SSOs

EAD is responsible for investigating SSOs where the blockage material was identified as “grease” by the Maintenance Department. SSO investigations are initiated with review of the collection system map book for all sewer line segments upstream contributing flow to the manhole which overflowed. Field investigations are conducted to confirm whether the flow contributions from each sewer line segment include commercial, industrial, or residential dischargers. Commercial facilities identified through inspection as a trap control facility are inspected to determine if trap control devices are being adequately maintained, or need to be installed/repaired/replaced. When deficiencies are found LRWU issues appropriate requirements to remedy the non-compliance found.

Volume 7 – Attachment No. 1

EAD Organizational Chart

ENVIRONMENTAL ASSESSMENT - 408 -



Volume 7 – Attachment No. 2
2006 Consolidate Fee Schedule

**LITTLE ROCK WASTEWATER UTILITY
2006 CONSOLIDATED FEE SCHEDULE**

1. FINANCE AND ADMINISTRATION DIVISION

- 1.1 Billing Fee \$5.00**
Bills sent to customers by Little Rock Wastewater Utility
- 1.2 Bad-Check Return Fee \$15.00**
Customer bad-checks returned on Little Rock Wastewater Utility bank accounts
- 1.3 Illegal Sewer Connection Fee \$150.00**
Illegal sewer connections to Little Rock Wastewater collection system
- 1.4 Late-Payment Fee 10% (Two days past due date)**
Late-payment on bills sent to customers by Little Rock Wastewater Utility

2. ENGINEERING SERVICES DIVISION

Connection of any facility to the city sewer shall be preceded by payment of all applicable fees.

- 2.1 Connection Fee See Categories Below**
The following fees are applicable to all new facilities connecting a building sewer to the Little Rock sewer system.

- 2.1.1 Single Family Residential, Commercial, Industrial, or other Non-residential:
(Based upon water meter required. Any new connections or additions to existing facilities which are currently served by the sewer system, but which will not require installation of any additional or larger water meter shall pay a connection fee equivalent to the meter required for the additional load as determined by the Utility. If a connection fee has been paid in the past for the water meter now in service, no additional connection fee is required.)

5/8" or 3/4" water meter (each)	\$100.00
1" water meter (each)	\$250.00
1 1/2" water meter (each)	\$500.00
2" water meter (each)	\$800.00
3" water meter (each)	\$1,600.00
4" water meter (each)	\$2,500.00
6" water meter (each)	\$5,000.00
8" water meter (each)	\$8,000.00
10" water meter (each)	\$11,500.00

- 2.1.2 Multi-Unit Residential Developments (each) \$100.00
(Condominiums, Apartments, Mobile Home Parks, and other mutli-family)

- 2.1.3 Hotels and Motels:
 - (a) First Unit (each)..... \$100.00
 - (b) All Additional Units (each) \$50.00

**LITTLE ROCK WASTEWATER UTILITY
2006 CONSOLIDATED FEE SCHEDULE**

2.2 Building Sewer Inspection Fee \$50.00
Building sewer inspection fees for residential, commercial, industrial, all other connections shall be \$50.00. The above mentioned fees shall pay for one field inspection. All additional field inspections as required shall cost \$25.00 each.

2.3 Building Sewer Seal Fee (each) \$150.00
Before any dwelling or other building being served by public sewer is moved or demolished, the building sewer serving must be disconnected from the public sewer at the property line to prevent the entrance of stormwater, groundwater, and debris into the public sewer.

2.4 Plan Review Fee..... \$50.00 Minimum to \$500.00 Maximum
Accompanying the final construction plans and preliminary cost estimate shall be a review fee of 1.0% of the estimated construction cost of the project with a maximum of \$500.00 and a minimum of \$50.00. Approval will not be given for construction plans submitted until the above review fee is paid.

2.5 Capacity Contribution Fee
In addition to standard connection fees, new commercial or industrial users will be assessed Capacity Contribution Fees if their estimated discharge rate exceeds a per acre allowance. These fees are calculated specifically for each project. The procedure for determining the amount of the capacity contribution generally is as follows:

- 2.5.1 For the basin, the collection system's maximum flow capacity is determined.
- 2.5.2 Given a location in the basin and the proposed area served, a design capacity (GPM/acre) is determined.
- 2.5.3 The proposed development is evaluated on the basis of its flow contribution. Capacity needed in excess of the design capacity is charged to the development based on the current cost to restore that capacity.

2.6 Street (R-O-W) Excavation Fee
LRWU has a program through which customers can have building sewers, or portions thereof, located under pavement in the right-of-way of public roadways and alleys repaired or replaced at a reasonable cost. No building sewer larger than four (4) inches in diameter is eligible for this program. Fees are as follows and must be paid in advance.

- 2.6.1 Single Family Residential Units \$350.00
(Includes owner occupied and rental dwellings)
- 2.6.2 Commercial Units \$500.00
(Includes duplexes and larger rentals)

**LITTLE ROCK WASTEWATER UTILITY
2006 CONSOLIDATED FEE SCHEDULE**

2.7 Reimbursement Fee

LRWU collects reimbursement fees to offset private and public investment in larger diameter collector lines that are required to provide capacity for future development. The fees are specific to certain areas that are typically defined by natural drainage boundaries. Fees are collected on per acre basis and vary depending on the specific area in question. Specific areas where reimbursement fees are being collected and the corresponding per acre charge are shown in Attachment A. Reimbursement fees are adjusted annually.

2.8 Capital Recovery Fee

LRWU collects Capital Recovery Fees on mains constructed with Utility funds. It is the policy of LRWU to not extend sewers to new customers through the construction of new mains. In cases where the construction of new mains has been mandated for this purpose by an outside agency, the Utility collects an acreage based recovery fee. Areas subject to Capital Recovery Fees and corresponding per acre charges are shown in Attachment B.

3. ENVIRONMENTAL ASSESSMENT DIVISION

3.1 Permitted Industrial Wastewater Discharge Fees

3.1.1	New Permit Application Fee (each facility).....	\$500.00
3.1.2	Permit Modification or Permit Transfer Fee (each action).....	\$250.00
3.1.3	Categorical Discharger (CIU) - Annual Permit Fee (each outfall)	\$1,500.00
3.1.4	Non-Significant CIU (1-100 GPD)-Annual Permit Fee*.....	\$750.00
3.1.5	Significant "CIU Zero" Discharger -Annual Permit Fee*	\$750.00
3.1.6	Non-Significant "CIU Zero" Discharger Annual Permit Fee*.....	\$500.00
3.1.7	Categorical "Zero" Discharger (Domestic Only) Permit Fee*	\$250.00
3.1.8	Significant Industrial User - Annual Permit Fee*.....	\$750.00
3.1.9	Other Regulated Industrial Users - Annual Permit Fee*	\$500.00
3.1.10	Other Regulated Industrial Users "Zero" Discharge-Annual Permit Fee*.....	\$250.00
3.1.11	Noncompliance Inspection, Sampling, and/or Testing (each occurrence)..	\$Cost
3.1.12	Late Reporting Fee (each occurrence)	\$50.00

* each outfall

3.2 Trap/Interceptor (T/I) Control Program - Landowner/Lessee/Tenant Fees

3.2.1	Review Fee - Redevelopment to Determine Adequacy of Existing T/I....	\$50.00
3.2.2	T/I Variance Request from Approved Specifications	\$200.00
3.2.3	T/I Follow-up Noncompliance Inspection (1 st occurrence)	\$100.00
3.2.4	T/I Noncompliance Past LRWU Requirement (each past 1 st occurrence).....	\$200.00
3.2.5	T/I Overflow Investigation (Active Overflow of Interceptor)	\$300.00
3.2.6	T/I Noncompliance Sampling and/or Testing (each occurrence)	\$Cost

3.3 Domestic Septage Disposal Fees (Accepted Only From Approved Sources)

3.3.1	HLW Disposal Fee <1000 Gallon Tanker Capacity (each load)	\$30.00
3.3.2	HLW Disposal Fee ≥1000 Gallon Tanker Capacity (each load)	\$60.00

**LITTLE ROCK WASTEWATER UTILITY
2006 CONSOLIDATED FEE SCHEDULE**

- 3.4 Permitted Domestic Septage Waste Hauler/Owner/Operator Fees**
- 3.4.1 New Permit Application Fee (each facility)..... \$500.00
 - 3.4.2 Permit Modification or Permit Transfer Fee (each action)..... \$250.00
 - 3.4.3 Domestic Septage Waste Haulers - Annual Permit Fee..... \$500.00
 - 3.4.4 Domestic Septage Waste Hauler Tanker Fee - (each truck or tanker)..... \$50.00
 - 3.4.5 Noncompliance Inspection, Sampling, and/or Testing (each occurrence).. \$Cost
 - 3.4.6 Late Reporting Fee (each occurrence) \$50.00
- 3.5 Permitted Landfill Owner/Operator Fees**
- 3.5.1 New Permit Application Fee (each facility)..... \$500.00
 - 3.5.2 Permit Modification or Permit Transfer Fee (each action)..... \$250.00
 - 3.5.3 Landfill Operator - Annual Permit Fee \$250.00
 - 3.5.4 Noncompliance Inspection, Sampling, and/or Testing (each occurrence).. \$Cost
 - 3.5.5 Late Reporting Fee (each occurrence) \$50.00
- 3.6 Permitted Landfill Leachate Hauler Fees**
- 3.6.1 New Permit Application Fee (each facility)..... \$500.00
 - 3.6.2 Permit Modification or Permit Transfer Fee (each action)..... \$250.00
 - 3.6.3 Landfill Leachate Hauler - Annual Permit Fee..... \$500.00
 - 3.6.4 Landfill Leachate Tanker Fee - (each truck or tanker) \$50.00
 - 3.6.5 Noncompliance Inspection, Sampling, and/or Testing (each occurrence).. \$Cost
 - 3.6.6 Late Reporting Fee (each occurrence) \$50.00
- 3.7 Permitted Mobile Pressure Wash Owner/Operator Fees**
- 3.7.1 Mobile Pressure Wash Operator New Permit Application \$150.00
 - 3.7.2 Mobile Pressure Wash Operator - Annual Permit Fee..... \$150.00
 - 3.7.3 Mobile Pressure Wash Operator Tanker Fee - (each truck or tanker) \$50.00
 - 3.7.4 Disposal Fee <1000 Gallon Tanker Capacity (each load) \$30.00
 - 3.7.5 Disposal Fee ≥1000 Gallon Tanker Capacity (each load) \$60.00
 - 3.7.6 Noncompliance Inspection, Sampling, and/or Testing (each occurrence).. \$Cost
 - 3.7.7 Late Reporting Fee (each occurrence) \$50.00
- 3.8 Diversion and Sewer Meter Inspection Fees**
- 3.8.1 New Meter Installation - Review, On-site Inspection, and Approval..... \$120.00
 - 3.8.2 Annual Inspection (each meter and meter type) \$60.00

3.9 Fees for Other Approved Wastewater Sources

When a customer requests approval to discharge a wastewater source which has not been classified above in Section 3, the Director shall have the authority to set discharge fees within the guidelines set forth below.

The Director shall assess whether the wastewater discharge request is compatible with the treatment works. Also, the Director shall assess the complexity of the discharge request and adjust the disposal fee accordingly. When the Director establishes a new wastewater source classification under this Section, the same discharge fee shall be uniformly applied to future customer requests under this fee schedule.

**LITTLE ROCK WASTEWATER UTILITY
2006 CONSOLIDATED FEE SCHEDULE**

Wastewater sources approved for discharge will be issued a "Restricted Short Term Authorization to Discharge Wastewater" or a "Special Discharge Permit." These shall apply regardless of whether the approved discharge is delivered to the Adams Field Treatment Plant for disposal or discharged directly into the sanitary sewer collection system.

3.9.1	New Restricted Short Term Authorization - Application Fee	\$250.00 (Duration of the Short Term Authorization must be less than one year.)
3.9.2	New Special Discharge Permit - Application Fee.....	\$500.00
3.9.3	New Special Discharge Permit - Annual Permit Fee (each outfall).....	\$500.00
3.9.4	Special Discharge Wastewater Disposal Fee per Gallon	\$0.05 - \$0.20
3.9.5	Compliance Inspection, Monitoring, and Testing (each).....	\$Cost
3.9.6	Noncompliance Inspection, Sampling, and/or Testing (each occurrence)..	\$Cost
3.9.7	Special Discharge Late Reporting Fee (each occurrence)	\$50.00

Volume 7 – Attachment No. 3

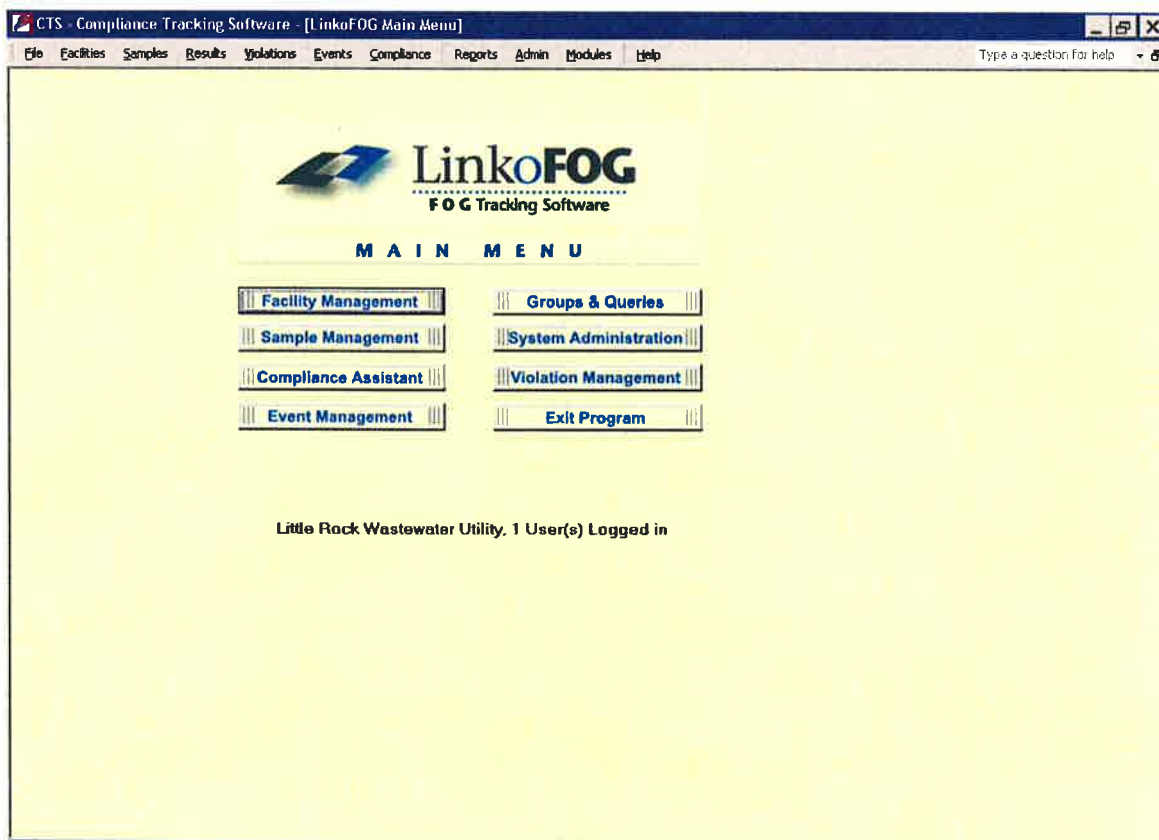
Trap Control Facility Management

EAD SOP

SECTION: 2.0
STANDARD OPERATING PROCEDURES FOR
LINKOFOG MODULE
PART 1 – FACILITY MANAGEMENT

The LinkoFOG Module is designed to give Little Rock Wastewater Utility (LRWU) the ability to track activities, violations and enforcement actions for the LRWU Trap/Interceptor (T/I) Control Program.

Any revisions of this Standard Operating Procedure (SOP) will have to be approved by the Linko Implementation Team before implementation. The Linko Implementation Team consists of the Director of Environmental Assessment, Supervisors, Secretary and Industrial Inspectors. An e-copy of the User Guides is also available in a designated subdirectory of the directory: <R:\EAD\share\read>.



LinkoFOG has fields that may be automatically or self populated or allow the entry of values from a secured list that has been defined in the System Administration. The following are definitions for each of these fields that may be used throughout the Standard Operating Procedure:

- Automatically Populated Field – Fields populated with values entered in another LinkoFOG screen. Example: The “Last Inspection” and “Next Inspection” Fields in the Industry Management Industry Dates tab are populated from values entered in the Inspection Events entry screen.
- Secured Field – Selection of values for this field must be made from the pull down list only. LinkoFOG allows no other values to be entered except those that have been set up in the System Administration. Revisions and additions to these lists must be approved by the Linko Implementation Team prior to entry into the System Administration.
- Self-Populating Field – **Caution, values entered are retained in the field pull down list permanently. Refer to appendices to determine if approved tables exist before entering values.** If no table exists follow specific SOP field entry instructions. New values not currently included in the appendix table must be approved by the Linko Implementation Team prior to use.
- Unsecured Field – **Caution, the field will not populate a pull down list of approved values. Refer to appendices to determine if approved tables exist before entering values.** If no table exists follow specific SOP field entry instructions. New values not currently included in the appendix table must be approved by the Linko Implementation Team prior to use.

Table of Contents

Table of Contents 3

Part 1 : Facility Management 5

1.1 Navigating the Facility List 5

 1.1.1 Facility No. 5

 1.1.2 Facility Name 5

Adding/Editing/Deleting Facility..... 6

 1.1.3 Adding a New Facility..... 6

 1.1.4 Editing a Facility 12

 1.1.5 Deleting a Facility 13

1.2 Documenting Facility’s Site Specific Elements 13

 1.2.1 Extract./Equip. 13

 1.2.2 Monitoring Points 18

 1.2.3 Notes 18

 1.2.4 Contacts 22

 1.2.5 Events 25

1.3 Codes..... 27

 1.3.1 Standard Industrial Classification Code (SIC) 28

 1.3.2 North American Industry Classification System (NAICS) 28

 1.3.3 Federal Categorical (CAT) Code..... 28

1.4 Reports 29

 1.4.1 System Reports 29

 1.4.2 User Reports 29

 1.4.3 Mail Merge Letters 29

Standard Operating Procedure – LinkoFOG Facility Management

Date: February 17, 2005

Revision No.: 0

Section 2.0, Part 1, Page 4 of 36

1.4.4 Contact Priority Box.....	29
1.4.5 Contact Type Box.....	30
1.4.6 Export Letter to MS Word.....	30
1.4.7 Preview Report	30
1.4.8 Form Table View.....	30
Appendices.....	31
Table A - Facility Number.....	31
Table B – Classification.....	31
Table C- Secondary Classification.....	32
Table D – Extractor Types.....	33
Table F – Permit Notes	34
Table G – Contact Types	35
References.....	36

Part 1 : Facility Management

LinkoFOG Main Menu Industry Management manages eight main screen tabs: Site Info., Account Info., Facility Dates, Monitoring Points, Notes, Contacts, Events, and Codes. The Facility No. and Facility Name scroll bars remain on all tab screens.

1.1 Navigating the Facility List

The screenshot displays the LinkoFOG Facility Management software interface. The window title is "CTS - Compliance Tracking Software [Facility Management]". The menu bar includes "File", "Facilities", "Samples", "Results", "Violations", "Events", "Compliance", "Reports", "Admin", "Modules", and "Help". The main content area shows a form for "Facility Management" with tabs for "Site Info", "Account Info", "Facility Dates", "Extract./Equip.", "Monitoring Points", "Notes", "Contacts", "Events", and "Codes". The "Site Info" tab is active, displaying fields for Facility No. (FS-0001), Facility Name (Cold Stone Creamery), Address (12800 Chenal Parkway), City (Little Rock), State (AR), Zip code (72211), and Site Coordinates (GIS ID: 4G-035). A status bar at the bottom shows "Facility: 1 of 8" and the date "Oct. 28, 2004".

To locate an existing facility, navigate through the Facility Name or Facility Number located in the upper left corner of the screen.

1.1.1 Facility No.

This list includes all existing facilities alpha-numerically. Access the list by clicking the down arrow (▼) to the right. Once the list is accessed, choose to scroll up or down or type in the facility number.

1.1.2 Facility Name

This list includes all existing facilities alphabetically. Access the list by clicking the down arrow (▼) to the right. Once the list is accessed, choose to scroll up or down or type in the facility's name.

Adding/Editing/Deleting Facility

1.1.3 Adding a New Facility

To add a new facility Click the **New** button located in the right corner of the screen. The sheet tabs for Facility Details: **Site Info.**, **Account Info.**, and **Facility Dates** will appear. (All items in red on screen view must have an entry.)

Once all of the appropriate fields in Parts 1.2.1.1 through 1.2.1.3 are completed, click the **Save** button located in the right corner of the screen. The user may click the **Cancel** button at any time to exit the Facility Details; new data entries will not be saved.

Click the **Close** button to exit the *LinkoFOG Facility Details* screen

1.1.3.1 Site Info. Tab

Facility Management Details

LinkoFOG Facility Details

Facility No:
Facility Name:

Items in red MUST be filled out

SiteInfo | Account Info | Facility Dates

Facility No:
Facility:
Industry Alias:
Site ID:

Address:
Address (cont):
City:
State: Zip code:

Site Coordinates

GIS ID:
East/West:
North/South:
Site Elevation:
Map Category:

Facility: 6 of 14 Feb. 17, 2005

- a. Facility No. – (**Caution: Unsecured Field**) The Facility No. consists of an alpha prefix followed by a four-digit sequential number beginning with 0001. To identify the next number to assign, access the Facility No. and scroll down to the last assigned number with the appropriate prefix and use the next available number. Example: If FS-0025 is the last Facility No. assigned for a Food Service Facility; the

next available number is FS-0026. Table A - Facility Number in the Appendices at the end of this SOP lists all approved Facility Number prefixes.

- b. Facility Name – This is a required field. Enter complete Facility Name.
- c. Alias – Field is currently not in use.
- d. Site ID – (**Caution: Unsecured Field**) Field is currently not in use.
- e. Address – Enter the facility’s physical address.
- f. Address (cont.) – Enter continued physical address if necessary.
- g. City – Enter the city name in this field.
- h. State – Enter the State’s two-letter abbreviation in upper case letters in this field. Example: “AR” for Arkansas.
- i. Zip Code – Enter the facility’s Zip Code in this field.
- j. GIS ID - The GIS ID is entered automatically into LinkoFOG through the ArcView® program. Open ArcView® and assign the GIS ID using the following procedures:
 - i) In the ArcView screen, click the Find Address or GeoCoding icon from the menu at the top of the screen. Type in the Facility address to find the building foot print for an existing building. Click the address icon and map page icon, so these attributes will show on the ArcView® screen
 - ii) Click the **GIS No Input** icon from the menu at the top of the screen. The “Input Industry Name” screen will open.
 - iii) Type in the Facility Name in the box below the “Input Industry Name”. As the Facility Name is being typed, several selections may appear below the entry field. Click the correct Facility. (The Facility record must be set up in LinkoFOG before the Facility Name is available for viewing in ArcView®.)
 - iv) Click the building foot print on the ArcView® screen (outside of the “Input Industry Name” screen). (If there is no building footprint, skip to Part (vi) below.) A small screen that says “AoLib_cAoEADGISNo” will appear with a number in the middle. Click the **Okay** button. The “Input Industry Name” screen is minimized. Click the toolbar at the bottom of the screen to restore the “Input Industry Name” box. (The toolbar has a small white and blue flag with no words.)

Standard Operating Procedure – LinkoFOG Facility Management

Date: February 17, 2005

Revision No.: 0

Section 2.0, Part 1, Page 8 of 36

- v) The “Input Industry Name” screen will reappear with the ArcView® BO_UNIQ number entered in the box below “GISNO FOR THIS INDUSTRY”. Click the **Store** button on this screen. This will store the ArcView® BO_UNIQ number as the LinkoFOG GIS ID.
- vi) If there is no building foot print in ArcView®, click **Generate/Store** button. This will generate a temporary GIS No that is preceded with a \$ sign. Periodically, a list will need to be printed to include those Industries that have a temporary GIS No. Once Pagis completes the updates to include a building foot print in ArcView® with a BO_UNIQ, the user must reassign the GIS No as described in Part (i) through (v).
- k. East/West – Field is currently not in use.
- l. North/South - Field is currently not in use.
- m. Site Elevation – Field is currently not in use.
- n. Map Category – (**Caution: Self Populating Field**) Enter the subbasin number into this field. This data may be determined in ArcView®.

1.1.3.2 Account Info.

- a. Active Facility – (Secured Field) Select Yes or No as appropriate.
- b. Permitted Facility – (Secured Field) Select Yes or No as appropriate.
- c. Billing Rate – (Caution: Self Populating Field) Field currently not in use.
- d. Annual Fee – (Caution: Self Populating Field) Field currently not in use.
- e. Classification – (Secured Field) Select one of the approved Classifications included in the Classification Table. Table B – Classification in the Appendices at the end of this SOP lists the approved Classifications.
- f. Secondary Class – (Caution: Self Populating Field) A Secondary Classification must be selected from the approved Secondary Class table. Table C- Secondary Classification in the Appendices at the end

of this SOP lists the approved Secondary Classifications. There should be only one entry per facility

If a facility has a combination of business activities, such as a hotel with food and laundry services, the Secondary Class “Multi (SeeNotes)” should be used. (The Notes will then include a listing of each secondary classification in the Notes section. Refer to Part 1.3.3.1 for note entries.)

- g. Worldstone – (**Secured Field**) LRWU does not use Worldstone. Linko automatically selects No if the field is not populated.
- h. Daily Flow – Field currently not in use.
- i. Meter Number – Field currently not in use.
- j. Sewer Account – Field currently not in use.
- k. Account Number – Enter Central Arkansas Water (CAW) account number.
- l. Hours – Enter the days and hours of operation. (Example: Sun-Sat - 11:00 a.m. - 10:00 p.m.)
- m. Square Feet – Enter facility square feet.
- n. Number of Employees – Enter number of facility employees.
- o. Seating Capacity – Enter facility’s seating capacity.
- p. # of Meals Served – Enter average number of meals served daily.
- q. Monthly Fee – Field currently not in use.
- r. POTW Personnel – (**Secured Field**) Enter EAD personnel assigned to track facility.
- s. Trunk Line – (**Caution: Self Populating Field**) Enter the first downstream manhole number in this field. Example: “17I-012”. This data may be determined in ArcView®.
- t. Receiving Plant – (**Caution: Self Populating Field**) Enter LRWU treatment plant facility to which the facility discharges. The Fourche Creek Treatment Plant should be entered FCTP. The Adams Field Treatment Plant should be entered AFTP.
- u. Pumper – (**Secured Field**) Select one of the approved Grease Interceptor Cleaning companies in the pull down list if information is available.

1.1.3.3 Facility Dates

Facility Management Details

LinkoFOG Facility Details

Facility No:

Facility Name:

New Close

Edit Cancel

Save

Items in red MUST be filled out

SiteInfo Account Info **Facility Dates**

Effective Date:

Application Date:

In Business Since:

Close Date:

Authority Sampling Freq:

Facility Reporting Freq:

Inspection Freq:

Pumping Frequency:

Permit Event Dates

Expiration Date:

Invoice Date:

Last Renewal:

Next Renewal:

Last Inspection:

Next Inspection:

Facility: 1 of 8 Oct. 28, 2004

- a. Effective Date – Field currently not in use.
- b. Application Date – Field currently not in use.
- c. In Business Since – Field currently not in use.
- d. Close Date – Field currently not in use.
- e. Expiration Date – This field may not be populated from this screen. Field currently not in use.
- f. Invoice Date – This field may not be populated from this screen. Field currently not in use.
- g. Last Renewal – This field may not be populated from this screen. Field currently not in use.
- h. Next Renewal – This field may not be populated from this screen. Field currently not in use.

Standard Operating Procedure – LinkoFOG Facility Management

Date: February 17, 2005

Revision No.: 0

Section 2.0, Part 1, Page 12 of 36

- i. Last Inspection – Field is populated automatically from the Events Tab. When an inspection is completed, the completion date will become the Last Inspection date.
- j. Next Inspection – Field is populated automatically when next inspection is scheduled in Events tab or Events Management module.
- k. Authority Sampling Freq. – **(Secured Field)** Field currently not in use.
- l. Facility Reporting Freq. – **(Secured Field)** Field currently not in use.
- m. Inspection Freq. – **(Secured Field)** Enter appropriate frequency from the drop down list.
- n. Pumping Frequency – **(Secured Field)** Enter appropriate frequency from the drop down list.

1.1.4 Editing a Facility

Facility Management Details

LinkoFOG Facility Details

Facility No: FS-0005
Facility Name: Tony Roma's

New Close
Edit Cancel
Save

Items in red MUST be filled out

SiteInfo Account Info Facility Dates

Facility No: FS-0005
Facility: Tony Roma's
Industry Alias:
Site ID:
Choose a Site

Address: 11 Shackleford Drive
Address (cont):
City: Little Rock
State: AR Zip code: 72211

Site Coordinates
GIS ID:
East/West:
North/South:
Site Elevation:
Map Category: 31201

Facility: 5 of 14 Feb. 17, 2005

To edit an existing facility, scroll through the Facility List or Facility Name at the top right portion of the screen to access the appropriate facility.

Click the **Edit** button. Make the changes necessary to the *LinkoFOG Facility Details: Site Info., Account Info., and Facility Dates* screens as described in Parts 1.2.1.1 through 1.2.1.3.

Click the **Save** button to save data entries or **Cancel** to exit the Edit mode without saving data entries.

Click the **Close** button to exit the *LinkoFOG Facility Details* screen

1.1.5 Deleting a Facility

To delete an existing facility, scroll through the Facility No. or Facility Name lists at the top left portion of the screen to access the appropriate facility.

Click the **Delete** button. The level of user's security an individual is assigned may not allow deletion of a facility.

1.2 Documenting Facility's Site Specific Elements

1.2.1 Extract./Equip.

CTS - Compliance Tracking Software - [Facility Management]

File Facilities Samples Results Violations Events Compliance Reports Admin Modules Help

Type a question for help

Facility Management

Facility No: FS-0005
 Facility Name: Tony Roma's

New Close
 Edit Delete

Site Info Account Info Facility Dates **Extract./Equip.** Monitoring Points Notes Contacts Events Codes

Grease Extractor/Trap/Interceptor

Add New	Extractor Name	Trap Size	Cleaning Frequency
Details	Grease Interceptor	1500 Gallon	

Food Equipment

Add New	Equipment Type	Quantity	Fog Factor

Facility: 5 of 14 Feb. 17, 2005

The *Extract./Equip.* screen view displays all information entered concerning traps, interceptors, kitchen equipment and sizing criteria. Click **Add New** or **Detail** button in either the Grease Extractor/Trap/Interceptor or the Food Equipment options.

1.2.1.1 Add New Extractor/Trap/Interceptor

Click **Add New** under the Grease Extractor/Trap Interceptor option of the screen. The *LinkoFOG Extractor Details* screen will appear with no entries. Items (a) through (f) described below must be completed if applicable. (All items in red on screen view must have an entry.)

Once all of the following items have been added, click the **Save** button to save data entries or **Cancel** to exit the Edit mode without saving data entries.

Click the **Close** button to exit the *LinkoFOG Extractor Details* screen.

- a. Extractor Name – (**Secured Field**) Select extractor name from the approved pull down list. Table D – Extractor Types in the Appendices at the end of this SOP lists all approved extractor types.
- b. Manufacturer – Enter Manufacturer’s name if known.
- c. Trap Size – Enter Interceptor/Trap size if known.
- d. Install Date – Enter the installation date if known.
- e. Cleaning Frequency – Select cleaning frequency from pull down list.

- f. Additives – If additives are used by the facility specifically for fats, oil, and grease treatment, include the name of the additive otherwise enter none.
- g. Comments – Enter any necessary comments. (Use correct grammar, punctuation, and spelling; click F7 to spell check the Note/Documentation.)

1.2.1.2 Edit Existing Extractor/Trap/Interceptor

To edit an existing extractor/trap/interceptor, click **Details** button to the left of the existing unit. Edit items (a) through (f) in Part 1.3.1.1 if needed.

LinkoFOG Extractor Details

Facility No: **FS-0001**
 Facility Name: **Cold Stone Creamery**

Extractor Name: Grease Trap
 Manufacturer: Zurn
 Trap Size: 70 pound
 Install Date:
 Cleaning Frequency:
 Additives: None
 Comments:

Extract 1 of 1 Oct. 29, 2004

Once all of the items have been added, click the **Save** button to save data entries or **Cancel** to exit the Edit mode without saving data entries.

Click the **Close** button to exit the *Extractor Details* screen.

1.2.1.3 Delete Existing Extractor/Trap/Interceptor

To delete an existing extractor/trap/interceptor, click the **Detail** button to the left of the *Extract./Equip.* screen. Click the **Delete** button in the upper right corner of the *Extractor Details* screen.

Before the Extractor/Trap/Interceptor is deleted, a message asking “Are you sure you want to delete this Extractor? You will not be able to undo this

Standard Operating Procedure – LinkoFOG Facility Management

Date: February 17, 2005

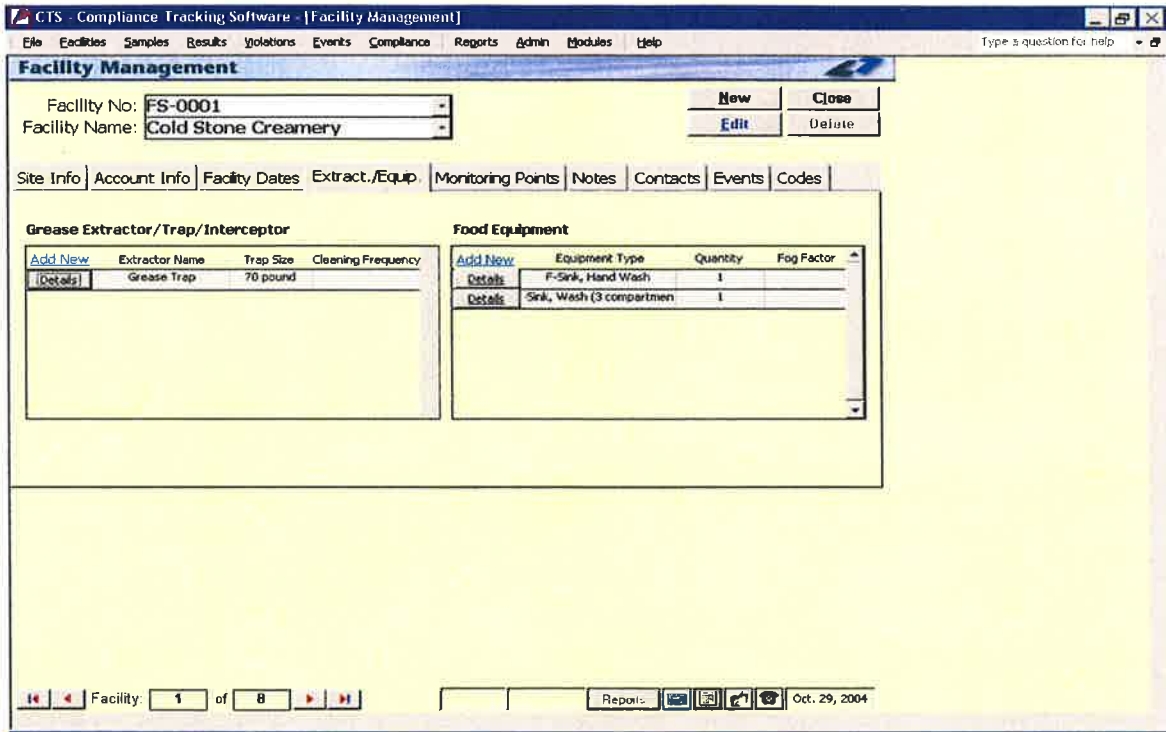
Revision No.: 0

Section 2.0, Part 1, Page 16 of 36

deletion.” will appear. If the deletion is necessary, click **Yes**; otherwise click **No**.

Click the **Close** button to exit the *LinkoFOG Extractor Details* screen.

1.2.1.4 Add New Food Equipment



Click **Add New** under the Food Equipment option of the screen. The *LinkoFOG Equipment Details* screen will appear with no entries. Items (a) through (d) described below must be completed if applicable. (All items in red on screen view must have an entry.)

LinkoFOG Equipment Details	
LinkoFOG Equipment Details	
Facility No: <input type="text" value="FS-0001"/>	<input type="button" value="New"/> <input type="button" value="Close"/>
Facility Name: <input type="text" value="Cold Stone Creamery"/>	<input type="button" value="Edit"/> <input type="button" value="Cancel"/>
	<input type="button" value="Save"/> <input type="button" value="Delete"/>
Items in red MUST be filled out	
Equipment Type: <input type="text"/>	
Equipment Quantity: <input type="text" value="1"/>	
Fog Factor: <input type="text"/>	
Comments: <input type="text"/>	
<input type="button" value="Home"/> <input type="button" value="Back"/> Equip: <input type="text" value="1"/> of <input type="text" value="2"/> <input type="button" value="Next"/> <input type="button" value="Forward"/> <input type="button" value="Print"/> <input type="button" value="Help"/> <input type="button" value="Refresh"/> <input type="button" value="Close"/> Oct. 29, 2004	

Once all of the following items have been added, click the **Save** button to save data entries or **Cancel** to exit the Edit mode without saving data entries.

- a. Equipment Type – (**Secured Field**) Select Equipment Type from the approved list in the pull down menu. Table E - Equipment Type in Appendix (X) at the end of this SOP lists all approved equipment types.
- b. Equipment Quantity – Enter quantity of equipment type. (Ranges are counted by the number of individual burners).
- c. Fog Factor – Field currently not in use.
- d. Comments – Enter all necessary comments. (Use correct grammar, punctuation, and spelling; click F7 to spell check the Note/Documentation.)

Click the **Close** button to exit the *LinkoFOG Equipment Details* screen.

1.2.1.5 Edit Existing Food Equipment

To edit existing Food Equipment, click **Details** button to the left of the existing unit. Edit items (a) through (d) in Part 1.3.1.4 if needed.

LinkoFOG Equipment Details

LinkoFOG Equipment Details

Facility No: **FS-0001**

Facility Name: **Cold Stone Creamery**

Equipment Type: F-Sink, Hand Wash

Equipment Quantity: 1

Fog Factor:

Comments:

Equip: 1 of 2 Oct. 29, 2004

Once all of the following items have been added, click the **Save** button to save data entries or **Cancel** to exit the Edit mode without saving data entries.

Click the **Close** button to exit the *LinkoFOG Equipment Details* screen.

1.2.1.6 Delete Existing Food Equipment

To delete an existing Food Equipment, click the **Detail** button to the left of the existing unit. Click the **Delete** button in the upper right corner of the *LinkoFOG Equipment Details* screen.

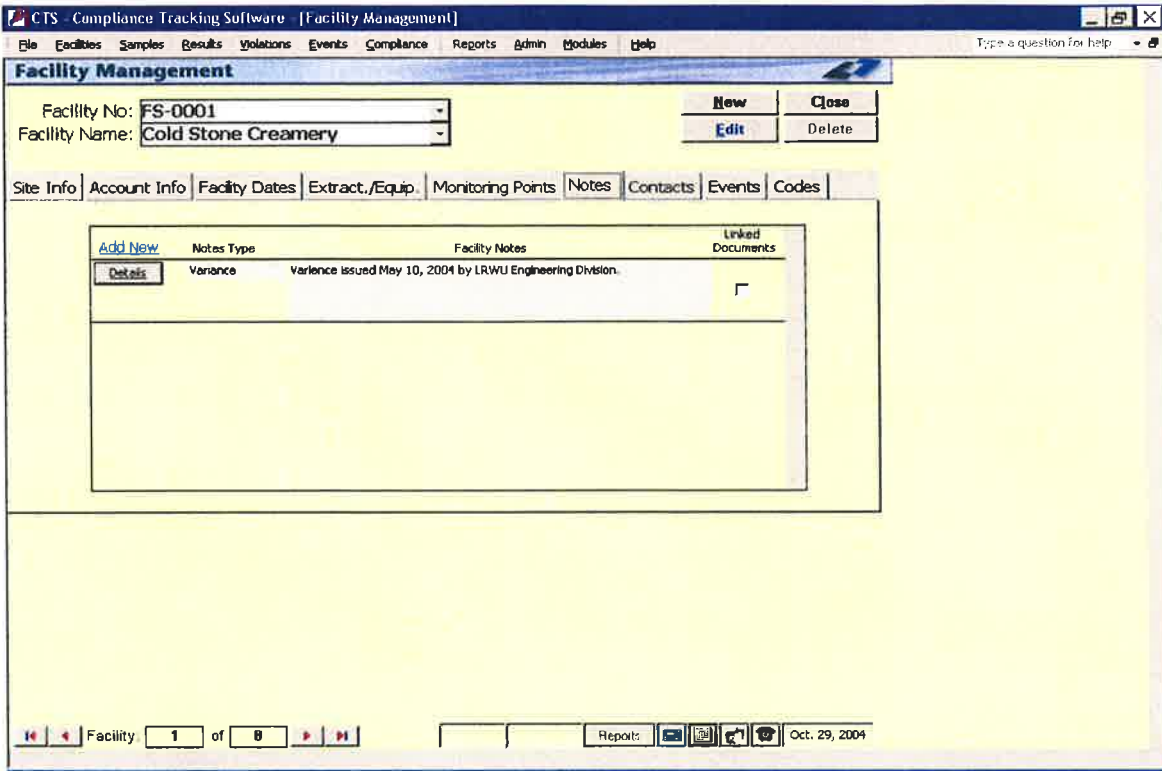
Before the Food Equipment is deleted, a message asking “*Are you sure you want to delete this Equipment? You will not be able to undo this deletion.*” will appear. If the deletion is necessary, click **Yes**; otherwise click **No**.

Click the **Close** button to exit the *LinkoFOG Equipment Details* screen.

1.2.2 Monitoring Points

The Monitoring Point tab is currently not in use.

1.2.3 Notes



Notes screen view displays all notes associated with a facility that concern variances, waivers, and tracking hard copy file locations.

1.2.3.1 Add New Notes

Click **Add New** in the Notes Screen. The *LinkoFOG Industry Notes Details* screen will appear for a new entry. Items (a) through (d) described below must be completed if applicable. (All items in red on screen view must have an entry.)

LinkoFOG Industry Notes

LinkoFOG Industry Notes

Facility No:


Facility Name:

Items in red MUST be filled out

Note Type: Document Link: Browse..

Desc. of Note Type:

Notes/Documentation

◀ ◁ Note 1 of 1 ▶ ▷  Oct. 29, 2004

Once all of the following items have been added, click the **Save** button to save data entries or **Cancel** to exit the Edit mode without saving data entries.

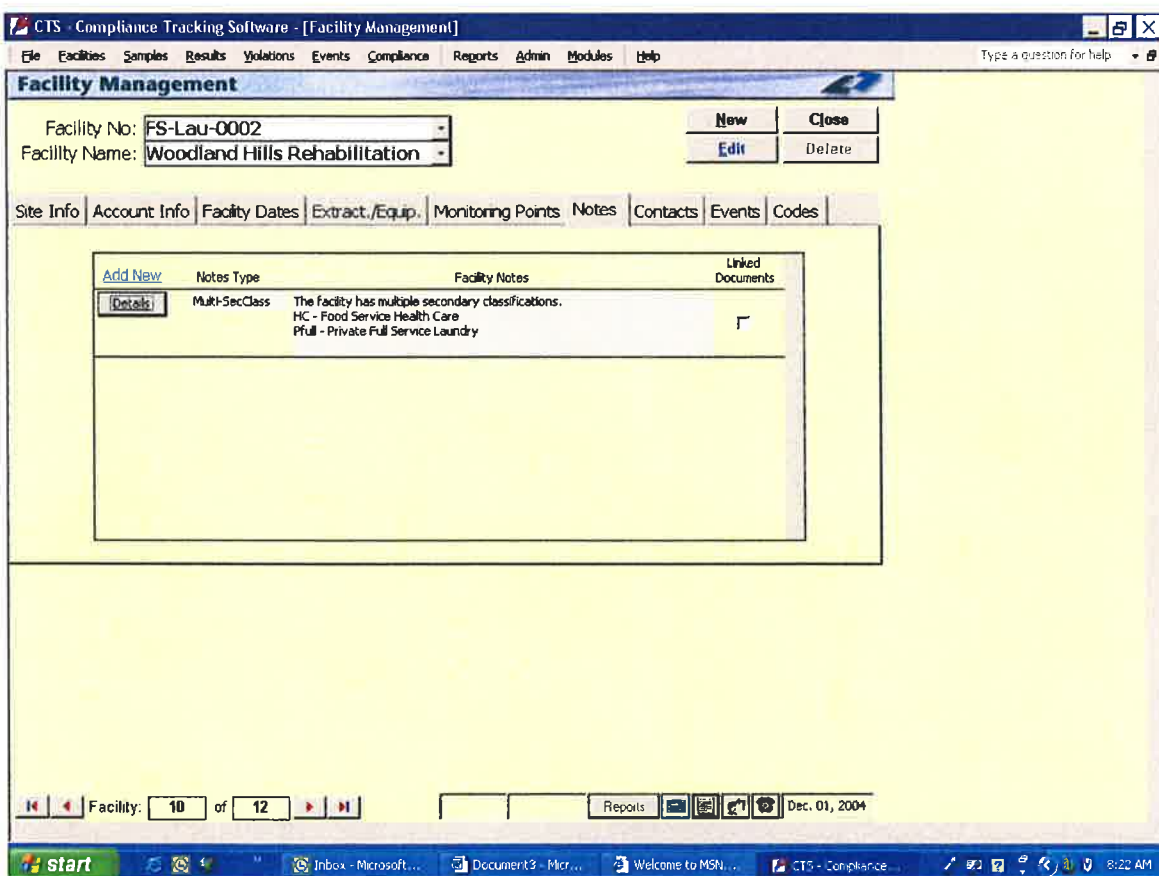
- a. Note Type – (**Caution: Unsecured**) Select a note type from the approved note types in the pull down list. Table F – Permit Notes in the Appendices at the end of this SOP lists all approved note types.
- b. Description of Note Type – This field is populated automatically when Note Type is selected. **Do not make changes to this field without approval by the Linko Implementation Team.**
- c. Document Link – Associated Word files may be linked.
 - i) Click the **Browse** button. An “Open File” window will appear.
 - ii) Locate and open the desired document. (If the document to be linked is an Excel spreadsheet, make sure that the “Files of Type” pull down list in the Open window is set on “All Files.”)
 - iii) Close the desired document and the file location will display in the Document Link field. To close the document, click File from the menu, then click exit. The *LinkoFOG Industry Notes* screen will return.
 - iv) To open the document in LinkoFOG, click the **Browse** button and the document will open automatically.

- d. Note/Documentation – Enter necessary notes. (Use correct grammar, punctuation, and spelling; click F7 to spell check the Note/Documentation.)

Click the **Close** button to exit the *LinkoFOG Equipment Details* screen.

1.2.3.2 Edit Existing Notes

To edit an existing note, click the **Details** button to the left of the existing unit. Click **Edit** in the *LinkoFOG Industry Notes* screen. Items (a) through (d) in Part 1.3.3.1 may be edited if needed.



Once all of the following items have been edited and added, click the **Save** button to save data entries or **Cancel** to exit the Edit mode without saving data entries.

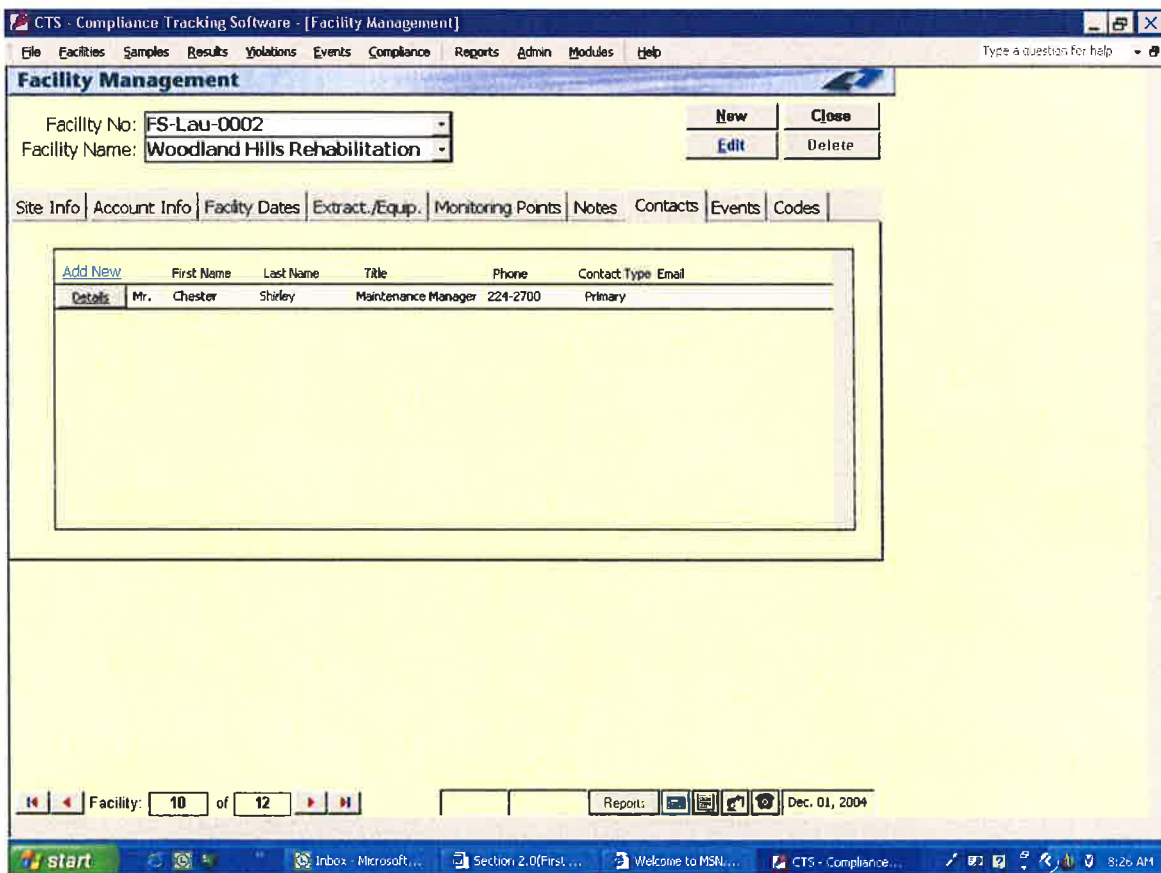
Click the **Close** button to exit the *LinkoFOG Industry Notes* screen.

1.2.3.3 Delete Existing Notes

To delete an existing note, the **Details** button to the left of the existing unit must be clicked. Click the **Delete** button in the upper right corner of the *LinkoFOG Industry Notes* screen.

Before the note is deleted, a message asking “Are you sure you want to delete this Note? You will not be able to undo this deletion” will appear. If the deletion is necessary, click **Yes**; otherwise click **No**.

1.2.4 Contacts



The screen view for Contacts displays all contacts for a facility

1.2.4.1 Add New Contacts

Click **Add New**. The *LinkoFOG Industry Contacts* screen will appear. Items (a) through (t) described below must be completed if applicable. (All items in red on screen view must have an entry.)

LinkoFOG Industry Contacts	
<p>LinkoFOG Industry Contacts</p> <p>Facility No: <input type="text" value="FS-Lau-0002"/></p> <p>Facility Name: <input type="text" value="Woodland Hills Rehabilitation"/></p>	
<p>Items in red MUST be filled out</p>	
<p><input type="button" value="Choose Contact"/></p>	
<p>Salutation: <input type="text"/></p> <p>First Name: <input type="text"/></p> <p>Last Name: <input type="text"/></p> <p>Contact Type: <input type="text"/></p> <p>Title: <input type="text"/></p> <p>Phone: <input type="text"/></p> <p>Fax: <input type="text"/></p> <p>E-Mail: <input type="text"/></p> <p>Notes: <input type="text"/></p>	<p>Mailing Priority: <input type="text"/></p> <p>Company Name: <input type="text" value="Woodland Hills Rehabilitation"/></p> <p>Address: <input type="text" value="8701 Riley Drive"/></p> <p>Address (Cont): <input type="text"/></p> <p>City: <input type="text" value="Little Rock"/></p> <p>State: <input type="text" value="AR"/> Zip Code: <input type="text" value="72205"/></p> <p>Cell Phone: <input type="text"/></p> <p>Pager: <input type="text"/></p> <p>Emergency Phone: <input type="text"/></p>
<p>14 < Contact 1 of 1 > >> Jan. 10, 2005</p>	

Once all of the following items have been added, click the **Save** button to save data entries or **Cancel** to exit the Edit mode without saving data entries.

- a. Choose Contact – Click button to bring up *LinkoFOG Contacts Pick Box*. This option picks an existing contact and enters the information for multiple facilities.
- b. Salutation – (**Caution: Self Populating Field**) Select the appropriate salutation from the pull down list.
- c. Mailing Priority – This is a required field. Select a mailing priority from the pull down list. If more than one contact is entered, the contact to whom requirement letters are sent should be a priority one.
- d. First Name – This is a required field. Enter contact’s first name.
- e. Last Name – This is a required field. Enter contact’s last name.
- f. Contact Type – (**Caution: Self-Populating Field**) This is a required field. Select Contact Type from the pull down list. Table G – Contact Types in the Appendices at the end of this SOP lists all approved contact types.

- g. Title – (**Caution: Self-Populating Field**) Select contact’s job title from pull down list. If the contact’s job title is not listed, enter the correct title manually. (**Do not abbreviate; use correct grammar, punctuation, and spelling; and click F7 to spell check.**)
- h. Phone – Enter contact’s business phone number using the format 000-000-0000. Example: 805-384-0932.
- i. Fax – Enter contact’s fax number using the format 000-000-0000.
- j. E-Mail – Enter contact’s E-Mail address.
- k. Company Name – This is a required field. Enter contact’s Company Name.
- l. Address – Facility physical address is automatically populated from the Site Info address. If the mailing address is different from the physical address for the Contact, revise to include the mailing address.
- m. Address (Cont) – Second Address field is available if necessary for Contact’s mailing address.
- n. City – Enter city name.
- o. State – Enter the State’s two-letter abbreviation in upper case letters. Example Arkansas – AR.
- p. Zip Code – Enter contact’s zip code.
- q. Cell Phone – Enter contact’s cell phone number using the format 000-000-0000.
- r. Pager – Enter contact’s pager number using the format 000-000-0000.
- s. Emergency Phone – Enter contact’s emergency phone number using the format 000-000-0000.
- t. Notes – Enter all necessary contact notes. (Use correct grammar, punctuation, and spelling; click F7 to spell check the Note/Documentation.)

Click the **Close** button to exit the *LinkoFOG Industry Contact* screen.

1.2.4.2 Edit Existing Contacts

Click the **Details** button to the left of the contact. Click **Edit** in the *LinkoFOG Industry Contact* screen. Information listed in Part 1.3.4.1 may be edited.

LinkoFOG Industry Contacts	
<p>Facility No: FS-0005</p> <p>Facility Name: Tony Roma's</p>	
<p>New Close</p> <p>Edit Cancel</p> <p>Save Delete</p>	
<p>Choose Contact</p>	
<p>Salutation: Mr. Mailing Priority: 1</p> <p>First Name: Michael</p> <p>Last Name: Young</p> <p>Contact Type: Primary</p> <p>Title: General Manager</p> <p>Phone: 219-1420</p> <p>Fax:</p> <p>E-Mail:</p>	<p>Company Name: Tony Roma's</p> <p>Address: 11 Shackleford Drive</p> <p>Address (Cont):</p> <p>City: Little Rock</p> <p>State: AR Zip Code: 72211</p> <p>Cell Phone:</p> <p>Pager:</p> <p>Emergency Phone:</p>
<p>Notes:</p>	
<p>◀ Contact 1 of 1 ▶</p>	
<p>Feb. 17, 2005</p>	

Once all of the following items have been edited or added, click the **Save** button to save data entries or **Cancel** to exit the Edit mode without saving data entries.

Click the **Close** button to exit the *LinkoFOG Industry Contact* screen.

1.2.4.3 Delete Existing Contacts

Click the **Details** button to the left of the contact. Click **Delete** in the *LinkoFOG Industry Contact* screen.

Click the **Delete** button in the upper right corner of the *LinkoFOG Industry Contact* screen.

Before the Contact is deleted, a message asking “*Are you sure you want to delete this Contact? You will not be able to undo this deletion.*” will appear. If the deletion is necessary, click **Yes**; otherwise click **No**.

1.2.5 Events

The Events screen view displays all events related to a facility including violation events. This screen allows adding, editing, or deleting events except for new violation events. Existing violation events may be edited from this screen, however

to add a new violation or edit an existing violation, see Part 6 of this SOP for Violation Management.

To narrow the list by event type, click the down arrow (▼) to the right of the Event Category query located directly above all events. Select the Event Category. For example if Inspection is selected, only the inspection events will be shown on the screen.

To sort the events located within the table by the Facility Name, Event Type, Due Date, or Completed Date, the appropriate column header must be clicked at the top of the column view.

1.2.5.1 Add New Event

To add a new event click **Add New**. The *LinkoFOG New Event Pick Box* screen will appear. Select the facility number or facility name from the pull down list for which a new Event will be added. Select an Event Category, click the down arrow (▼). (The Event Category list includes four types of events: Generic, Inspection, Permit, and Sample.) Select the Event Type, click the down arrow (▼). Click the **Apply** button.

LinkoFOG New Event Pick Box

Please choose the Facility and Event Type for which you want to create a New Event.

Apply Cancel/Close

Pick a Facility No: FS-0006

Pick a Facility: Chi's

Pick an Event Category:

Pick an Event Type:

The *LinkoFOG Event* screen for the specific event category will appear with the information selected from the *LinkoFOG New Event Pick Box* screen (previous screen) automatically populating the Event Category and Event Type fields. For instruction on completing specific event screens for new events refer to Section 2.0 Part 6.0 LinkoFOG Event Management.

Once a new event has been added, click **Save** in the *LinkoFOG Event* screen to save entry or **Cancel** to exit the Edit mode without saving data entries. (All items in red on screen view must have an entry.)

If the inspection event results in a violation, click the **Create Violation** button to enter information regarding the violation. **In order to show a relationship of a violation to a specific event, the Violation in the event page must be initiated; otherwise, the relationship between the violation and the event will not be recognized by LinkoFOG.** Refer to Section 2.0 Part 6.0 Violation Management of this SOP for entry procedures.

Click the **Close** button to exit the *LinkoFOG Event* screen.

1.2.5.2 Edit Existing Events

Click the **Details** button to the left of the event. The *LinkoFOG Event* screen will appear. Click **Edit** to make changes to the information contained on the screen. For instruction on completing specific event screens for new events refer to Section 2.0 Part 6.0 LinkoFOG Event Management.

Once all of the following items have been edited or added, click the **Save** button to save data entries or **Cancel** to exit the Edit mode without saving data entries.

Click the **Close** button to exit the *LinkoFOG Event* screen.

1.2.5.3 Delete Existing Events

Click the **Details** button to the left of the event to be deleted. Click the **Delete** button in the upper right corner of the *LinkoFOG Event* screen.

Before the event is deleted, A message asking “*Are you sure you want to delete this Event? You will not be able to undo this deletion.*” will appear. If the deletion is necessary, click **Yes**; otherwise click **No**.

The level of user’s security will determine whether the existing event may be deleted.

1.3 Codes

The Codes Tab allows LRWU to assign SIC, NAICS and CAT codes to facilities.

Standard Operating Procedure – LinkoFOG Facility Management

Date: February 17, 2005

Revision No.: 0

Section 2.0, Part 1, Page 28 of 36

CTS - Compliance Tracking Software - [Facility Management]

File Facilities Samples Results Violations Events Compliance Reports Admin Modules Help

Type a question for help

Facility Management

Facility No: FS-Lau-0002

Facility Name: Woodland Hills Rehabilitation

New Close

Edit Create a new record

Site Info Account Info Facility Dates Extract./Equip. Monitoring Points Notes Contacts Events Codes

Associated SIC codes Edit

Associated CAT codes Edit

Associated NAICS codes Edit

Facility: 10 of 12

Reports

Dec. 01, 2004

start

Inbox - Microsoft ...

Section 2.0\First E...

Welcome to MSN.c...

CTS - Compliance ...

8:50 AM

1.3.1 Standard Industrial Classification Code (SIC)

LRWU does not currently assign SIC codes to Trap/Interceptor Program facilities

1.3.2 North American Industry Classification System (NAICS)

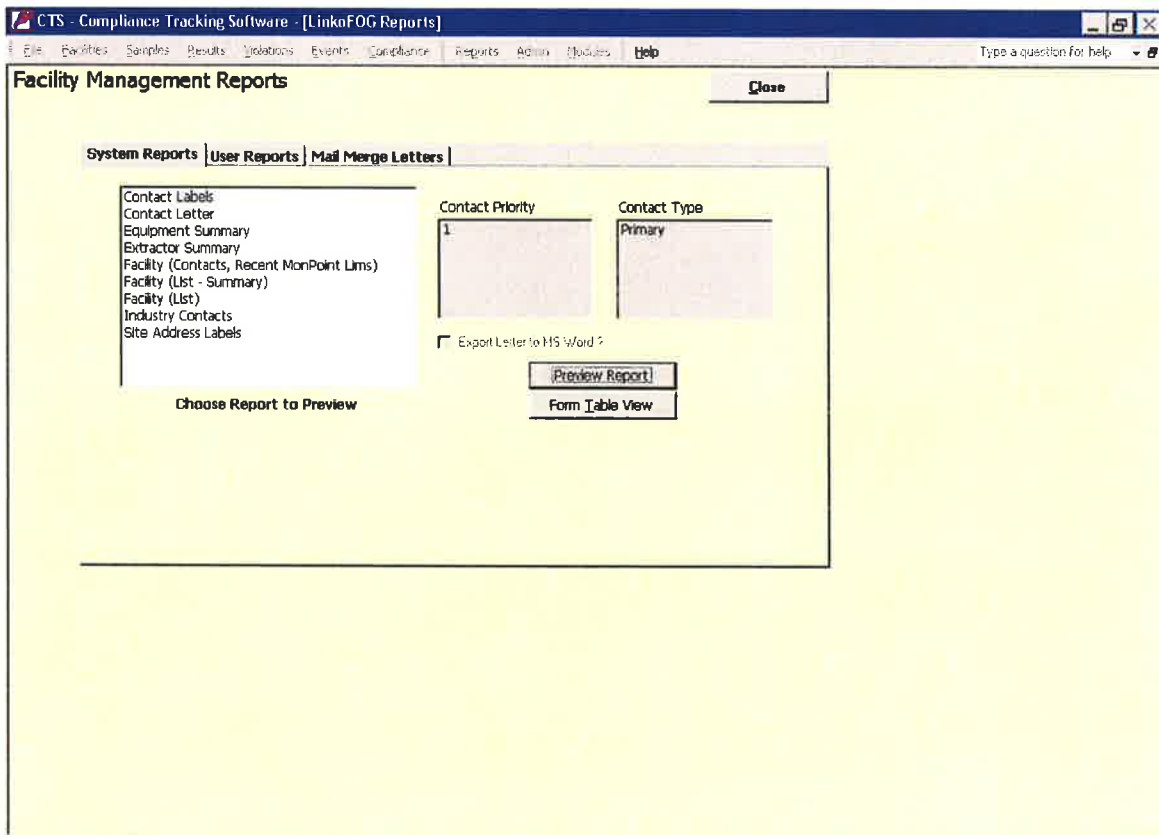
LRWU does not currently assign NAICS codes to Trap/Interceptor Program facilities

1.3.3 Federal Categorical (CAT) Code

Facilities that have a federal categorical pretreatment standard will be permitted by LRWU under the Pretreatment Program. Permitted facilities will be entered under LinkoCTS+™.

1.4 Reports

The **Reports** button (located at the bottom of the screen) opens the *Facility Management Reports* screen. This window consists of the System Reports, User Reports and the Mail Merge Letter Tabs, the Contact Priority and Contact Type boxes, the “Export Letter to MS Word” check box, the **Preview Report** and **Form Table View** buttons.



1.4.1 System Reports

The System Reports tab offers reports designed by Linko.

1.4.2 User Reports

The User Reports tab offers custom reports designed by EAD.

1.4.3 Mail Merge Letters

The Mail Merge Letters offers documents that can be automatically addressed to entered contacts.

1.4.4 Contact Priority Box

The Contact Priority box allows the selection of contact priority on contact lists and letters as entered in the facility information.

1.4.5 Contact Type Box

The Contact Type box allows the selection of contact type on contact lists and letters as entered in the facility information.

1.4.6 Export Letter to MS Word

The Export Letter to MS Word check box sends the chosen document to MS Word for printing.

1.4.7 Preview Report

The Preview Report button displays the chosen document before printing.

1.4.8 Form Table View

The Form Table View displays form data in table format.

Appendices

**Table A - Facility Number
(Caution: Unsecured Field)**

CTL + Click following link to go to the corresponding paragraph in this SOP: a

Facility Number	Description	Available in this Module
FS-0001	All Commercial Food Service	LinkoFOG
Veh-0001	All Vehicle Repair, Detail, Wash Etc.	LinkoFOG
Lau-0001	All Commercial Laundry Facilities (Coin, Full Service etc.)	LinkoFOG
FS-Lau-0001	Food Service and Laundry	LinkoFOG
FS-Veh-0001	Food Service and Vehicle	LinkoFOG
Lau-Veh-0001	Laundry and Vehicle	LinkoFOG
FS-Lau-Veh-0001	Food Service, Laundry, and Vehicle	LinkoFOG
WGI-0001	Waiver Grease Interceptor	LinkoFOG
WSI-0001	Waiver Sand Interceptor	LinkoFOG
WLT-0001	Waiver Lint Trap	LinkoFOG

**Table B – Classification
(Secured Field)**

CTL + Click following link to go to the corresponding paragraph in this SOP: e

Classification	Class Description	Available in this Module
FS	Food Service	LinkoFOG
Lau	Laundry	LinkoFOG
Veh	Vehicle	LinkoFOG
FS-Lau	Food Service and Laundry	LinkoFOG
FS-Veh	Food Service and Vehicle	LinkoFOG
Lau-Veh	Laundry and Vehicle	LinkoFOG
FS-Lau-Veh	Food Service, Laundry, and Vehicle	LinkoFOG
Ele	Elevator	LinkoFOG

Standard Operating Procedure – LinkoFOG Facility Management

Date: February 17, 2005

Revision No.: 0

Section 2.0, Part 1, Page 32 of 36

Table C- Secondary Classification

(Caution: Self Populating Field)

CTL + Click following link to go to the corresponding paragraph in this SOP: f

Secondary Classification (Self Populating)	Classification Description	Available in this Module
HE	Building Services – Hydraulic Elevator	LinkoFOG
Bake	Food Service - Bakery	LinkoFOG
Cater	Food Service - Caterer	LinkoFOG
Conv	Food Service - Convenience Store	LinkoFOG
DC	Food Service - Day Care	LinkoFOG
Groc	Food Service - Grocery Store with deli and/or meat market	LinkoFOG
HC	Food Service - Health Care (Hospital, Nursing Home)	LinkoFOG
MM	Food Service - Meat Market	LinkoFOG
RestA	Food Service - Restaurant American	LinkoFOG
RestAs	Food Service – Restaurant Asian	LinkoFOG
RestB	Food Service - Restaurant Barbecue/Steak	LinkoFOG
RestCa	Food Service – Restaurant Cafeteria	LinkoFOG
RestCh	Food Service – Restaurant Chinese	LinkoFOG
RestC	Food Service - Restaurant Continental	LinkoFOG
RestFF	Food Service - Restaurant Fast Food	LinkoFOG
RestJ	Food Service – Restaurant Japanese	LinkoFOG
RestMP	Food Service - Restaurant Mediterranean/Pizza	LinkoFOG
RestM	Food Service – Restaurant Mexican	LinkoFOG
RestS	Food Service - Restaurant Seafood	LinkoFOG
RestSA	Food Service – Restaurant South American	LinkoFOG
Sch	Food Service - School	LinkoFOG
WC	Food Service - Worship Center	LinkoFOG
PFull	Laundry - Private Full Service (Hotels, Hospitals, Nursing Homes)	LinkoFOG
RFull	Laundry - Retail Full Service (Commercial)	LinkoFOG
LSS	Laundry - Self Service	LinkoFOG
Multi (See Notes)	Multiple Secondary Class Codes Apply - See Notes For Details	LinkoFOG
DCT	Vehicle - Dealership, Car & Trucks	LinkoFOG
DHE	Vehicle - Dealership, Heavy Equipment	LinkoFOG
QLube	Vehicle - Quick Lubes	LinkoFOG
RenDT	Vehicle - Rental, Diesel Truck (18-Wheeler)	LinkoFOG
RenHE	Vehicle - Rental, Heavy Equipment	LinkoFOG
RenCT	Vehicle - Rental, Light Duty Cars/Trucks	LinkoFOG
RBS	Vehicle - Repair, Body Shop	LinkoFOG
RRad	Vehicle - Repair, Radiator Shop	LinkoFOG
RSDT	Vehicle - Repair/Service Diesel Trucks (18-Wheelers)	LinkoFOG
RSCT	Vehicle - Repair/Service, Car & Truck	LinkoFOG

RSHE	Vehicle - Repair/Service, Heavy Equipment	LinkoFOG
SSORV	Vehicle – Sales/Service Off Road Vehicles (ATV, Motorcycles, Boats Etc.)	LinkoFOG
WSS	Vehicle - Wash, Car Self Service	LinkoFOG
WD	Vehicle - Wash, Dealership	LinkoFOG
WF	Vehicle - Wash, Fleet	LinkoFOG
WHE	Vehicle - Wash, Heavy Equipment	LinkoFOG
WMob	Vehicle - Wash, Mobile On Lot, No Discharge	LinkoFOG
WFS	Vehicle - WashFull Service	LinkoFOG

Table D – Extractor Types
(Secured Field)

CTL + Click following link to go to the corresponding paragraph in this SOP: a

Extractor Type
Catch Basin
Grease Interceptor Standard
Grease Interceptor Substandard
Grease Interceptor Multi-Series
Grease Trap
Lint Trap
Sampling/Inspection Manhole
Sand Interceptor Standard
Sand Interceptor Substandard
Sand Interceptor Multi-Series
No Extraction Device

Table E - Equipment Type
(Secured Field)

CTL + Click following link to go to the corresponding paragraph in this SOP: a

Equipment Type
F-Can Wash
F-Dishwashers
F-Floor Drain (</= 2")
F-Floor Drain (2" - 4")
F-Garbage Disposal
F-Grinder
F-Hub Drain
F-Sink, Bar (1 compartment)

Standard Operating Procedure – LinkoFOG Facility Management

Date: February 17, 2005

Revision No.: 0

Section 2.0, Part 1, Page 34 of 36

Equipment Type
F-Sink, Bar (2 compartment)
F-Sink, Floor
F-Sink, Hand Wash
F-Sink, Mop
F-Sink, Wash (3 compartment)
F-Sink, Wash (4 compartment)
K-Broiler
K-Commercial Ice Cream Freezer
K-Commercial Mixer
K-Commercial Oven
K-Commercial Range
K-Deep Fryer
K-Griddle
K-Grill
K-Meat Grinder
K-Meat Smoker
K-Microwave
K-Rotisserie
K-Self Service Salad Table
K-Steam Table
K-Wok

Table F – Permit Notes

(Unsecured)

CTL + Click following link to go to the corresponding paragraph in this SOP: a

Note Type	Note Description	Available in this Module
Variance	Variance requested and issued by LRWU	LinkoFOG
Waiver	Waiver requested and issued by LRWU	LinkoFOG
Multi-SecClass	Facilities With Multiple Secondary Classifications	LinkoFOG
File-Loc	Physical location of hard copy file	LinkoFOG

Table G – Contact Types

(Unsecured)

CTL + Click following link to go to the corresponding paragraph in this SOP: f

Contact Type	Contact Description	Available in this Module
CCO	Chief Corporate Officer; Highest Ranking Corporate Officer	Both
Emergency	Contact name and number for after hours emergency.	Both
Mailing	Person to put in data base to correspond via mail.	Both
Primary	Person delegated to correspond with LRWU for events	Both
Secondary	Person(s) to contact if primary not available or to which event tasks and correspondence may be delegated	Both
Signatory	Person meeting definition of 403 in management position or authorized to sign documents.	Both

References

1. Module: LinkoFOG Facility Management
2. Team Leader: Paul Foster, Industrial Inspector
3. Team Members: Stanley Suel, Susan Samples Ledbetter, Sylvie Berry

Table B – Generic Events

(Secured Field)

CTL + Click following links to go to the corresponding paragraph in this SOP: 4.1.4.2

Event Type	Event Type Description	Days Late Allowed NC	Days Late Allowed SNC	Auto Scheduler Freq.	Available in This Module
Req-Extension	Requirement – Extension (Time extension granted on requirement issued to user.)				Both
ComRec-CU	Communication Record – Initiated by Commercial User				Both
ComRec-EAD	Communication Record – Initiated by EAD				Both
ComRec-IU	Communication Record – Initiated by IU				LinkoCTS
CP-Review	Construction Plan – Review of plans submitted to EAD for approval				LinkoCTS
EMR	E-mail Received				Both
EMS	E-mail Sent				Both
FaxRec'd	Fax – Received				Both
FaxSent	Fax - Sent				Both
FeeAnPer	Fee - Annual Permit – send notice to F&A for billing			1/yr	Both
FeeDispose	Fee – Disposal (Restricted Short Term Authorization/Other)				Both
FeeLRpt	Fee – Late Report				Both
FeeNPerApp	Fee – New Permit/Other Control Documents Application				Both
FeeNC	Fee - Noncompliance – send notice to F&A for billing				Both
FeePastNC	Fee – Past Non-compliance requirement				Both
FeePerMod	Fee – Permit Modification – send notice to F&A for billing				LinkoCTS
FeePerTrf	Fee – Permit Transfer – send notice to F&A for billing				LinkoCTS
LtrRecd	Letter – Received				Both
LtrSent	Letter – Sent				Both
SrvyRec'd,	Survey - Received				LinkoCTS
SrvySent,	Survey – Sent				LinkoCTS
Sch-PRCC	Scheduled – Periodic Report on Continuing Compliance (Reminder to Prompt IU of PRCC Sampling if Needed with Communication Record)				LinkoCTS

Standard Operating Procedure -- LinkoFOG Event Management

Date: February 17, 2005

Revision No.: 0

Section 2.4, Page 26 of 26

References

1. Module: LinkoFOG Event Management
2. Team Leader: Susan Samples Ledbetter, Pretreatment Supervisor
3. Team Members: Stanley Suel, Allen Gatlin, Jeff Davis, Paul Foster

Volume 7 – Attachment No. 4

Trap Control Event Management

EAD SOP

SECTION: 2.0
STANDARD OPERATING PROCEDURES FOR
LINKOFOG MODULE
PART 4 – EVENT MANAGEMENT

The LinkoFOG Module is designed to give Little Rock Wastewater Utility (LRWU) the ability to track activities, violations, and enforcement actions for the LRWU Trap/Interceptor (T/I) Control Program.

Any revisions of this Standard Operating Procedure (SOP) will have to be approved by the Linko Implementation Team before implementation. The Linko Implementation Team consists of the Director of Environmental Assessment, Supervisors, Secretary, and Industrial Inspectors. An e-copy of the User Guides is also available in a designated subdirectory of the directory: <R:\EAD\share\read\>.



LinkoFOG has fields that may be automatically or self populated or allow the entry of values from a secured list that has been defined in the System Administration. The following are definitions for each of these fields that may be used to describe various objects throughout the Standard Operating Procedure:

- Automatically Populated Field – Fields populated with values entered in another LinkoFOG screen. Example: The “Last Inspection” and “Next Inspection” Fields in the Facility Management Facility Dates tab are populated from values entered in the Inspection Events entry screen.
- Secured Field – Selection of values for this field must be made from the pull down list only. LinkoFOG allows no other values to be entered except those that have been set up in the System Administration. Revisions and additions to these lists must be approved by the Linko Implementation Team prior to entry into the System Administration.
- Self-Populating Field – **Caution, values entered are retained in the field pull down list permanently. Refer to appendices to determine if approved tables exist before entering values.** If no table exists follow specific SOP field entry instructions. New values not currently included in the appendix table must be approved by the Linko Implementation Team prior to use.
- Unsecured Field – **Caution, the field will not populate a pull down list of approved values. Refer to appendices to determine if approved tables exist before entering values.** If no table exists follow specific SOP field entry instructions. New values not currently included in the appendix table must be approved by the Linko Implementation Team prior to use.

Table of Contents

Table of Contents 3

Part 4 : Event Management..... 5

4.1 Events..... 5

 4.1.1 Add New Event 6

 4.1.2 Edit Existing Events 7

 4.1.3 Delete Existing Events..... 9

 4.1.3.1 First Method 9

 4.1.3.2 Second Method..... 10

 4.1.4 Event Categories..... 11

 4.1.4.1 Inspection Event..... 11

 4.1.4.2 Generic Event..... 15

 4.1.4.3 Permit Events 17

 4.1.4.4 Sample Events 17

4.2 Calendar 17

4.3 Auto Scheduler..... 18

 4.3.1 Facility/Events 18

 4.3.2 Date(s) 19

 4.3.3 Create it 19

 4.3.4 Confirm..... 20

 4.3.5 Delete..... 20

4.4 Reports 21

 4.4.1 System Reports 21

 4.4.2 User Reports 22

 4.4.3 Mail Merge Letters 22

 4.4.4 Contact Priority Box..... 23

Standard Operating Procedure – LinkoFOG Event Management

Date: February 17, 2005

Revision No.: 0

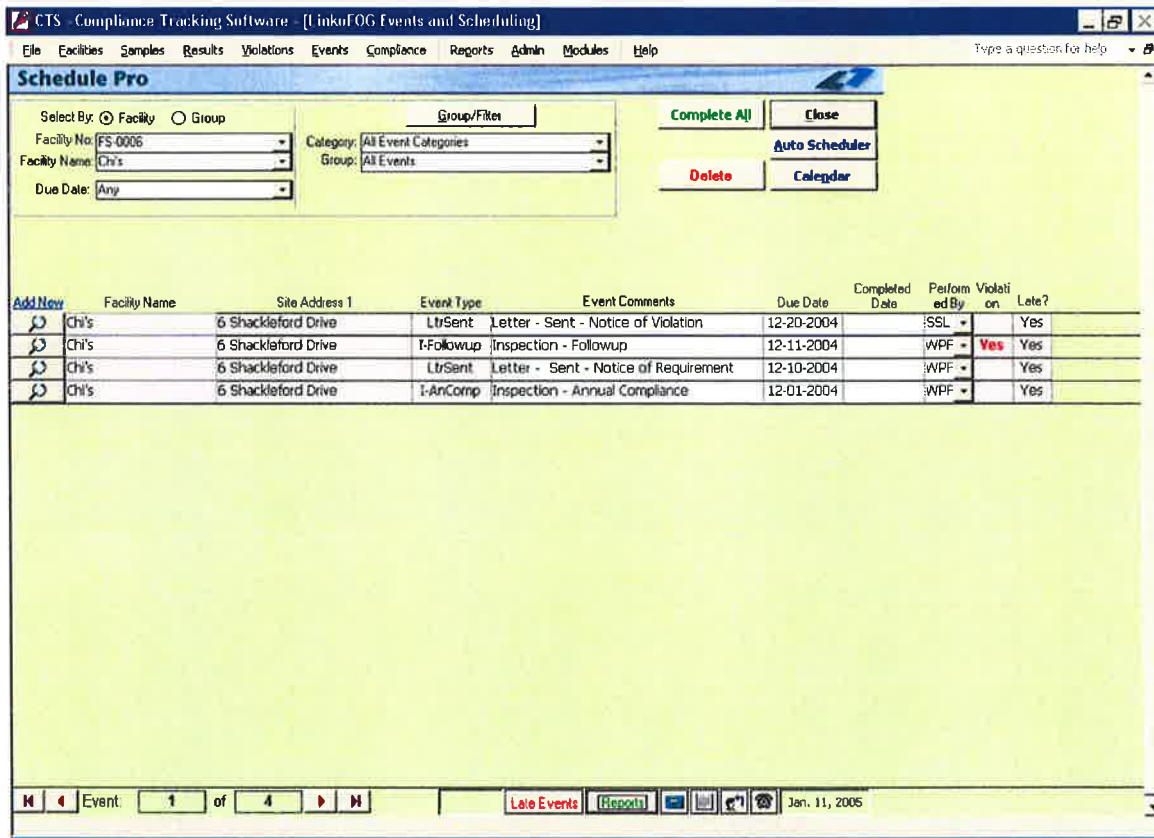
Section 2.4, Page 4 of 26

4.4.5 Contact Type Box.....	23
4.4.6 Export Letter to MS Word.....	23
4.4.7 Preview Report	23
4.4.8 Form Table View.....	23
Appendices.....	24
Table A – Inspection Events.....	24
Table B – Generic Events	25
References.....	26

Part 4 : Event Management

4.1 Events

The Events Management *Schedule Pro* screen displays all events related to a facility or a group of facilities and allows adding, editing, or deleting events.



To narrow the list by event type, click the down arrow (▼) to the right of the Event Category group/filter located directly above all events. Click the Event Category desired. For example if Inspection is selected, only the inspection events will be shown on the screen.

To further narrow the list, click the down arrow (▼) to the right of Group group/filter (located just below the Event Category query). This allows a filter to exclude all events that are not completed.

To sort the events located within the table by the Facility Name, Event Type, Due Date, or Completed Date, the appropriate column header must be clicked at the top of the column view.

4.1.1 Add New Event


To add a new event click **Add New**. The *LinkoFOG New Event Pick Box* screen will appear. Select the facility number or facility name from the pull down list for which a new Event will be added. Click the down arrow (▼) to select an Event Category. (The Event Category list includes four types of events: Generic, Inspection, Permit, and Sample.) Click the down arrow (▼) to select an Event Type. Each event category as specific event types that are identified in the tables located in the Appendices.

Click the **Apply** button.

The screenshot shows a dialog box titled "LinkoFOG New Event Pick Box" with a yellow background. At the top, it says "Please choose the Facility and Event Type for which you want to create a New Event." There are two buttons: "Apply" and "Cancel/Close". Below the text, there are four dropdown menus: "Pick a Facility No:" with the value "FS-0006", "Pick a Facility:" with the value "Chi's", "Pick an Event Category:" (empty), and "Pick an Event Type:" (empty).

The *LinkoFOG Event* screen for the specific event category will appear. The event screen will appear with the information selected from the *LinkoFOG New Event Pick Box* screen (previous screen) automatically populating the Event Category and Event Type fields. Specific Event Categories are discussed in parts 4.1.4.1 through 4.1.4.4

Once a new event has been added, click **Save** in the event screen to save entries or **Cancel** to exit the Edit mode without saving data entries. (All items in red must be completed before a record will be saved.)

LinkoFOG Inspection Events									
<h3>LinkoFOG Inspection Event</h3>									
Facility No: <input type="text" value="FS-0006"/> Facility Name: <input type="text" value="Chi's"/>	<table border="1"> <tr> <td>New</td> <td>Close</td> </tr> <tr> <td>Edit</td> <td>Cancel</td> </tr> <tr> <td>Create Violation</td> <td>Delete</td> </tr> <tr> <td>Save</td> <td></td> </tr> </table>	New	Close	Edit	Cancel	Create Violation	Delete	Save	
New	Close								
Edit	Cancel								
Create Violation	Delete								
Save									
Items in red MUST be filled out									
Event Category: <input type="text" value="INSPECTION"/> Event Type: <input type="text" value="I-AnComp"/>	Event Doc: <input type="text"/> Browse..								
Created By: <input type="text"/> Assigned To: <input type="text"/> Performed By: <input type="text"/> Fac. Person Present: <input type="text"/>	Due Date: <input type="text"/> Complete Date: <input type="text"/> Pre Notify? <input type="checkbox"/> Days Before = <input type="text"/> Post Notify? <input type="checkbox"/> Days After = <input type="text"/>								
Inspection Reason: <input type="text"/>	Late Event: <input checked="" type="checkbox"/> Has Viol: <input checked="" type="checkbox"/>								
Inspection Comments: <input type="text" value="Inspection - Annual Compliance"/>									
Internal Comments: <input type="text"/>									
 Jan. 11, 2005									

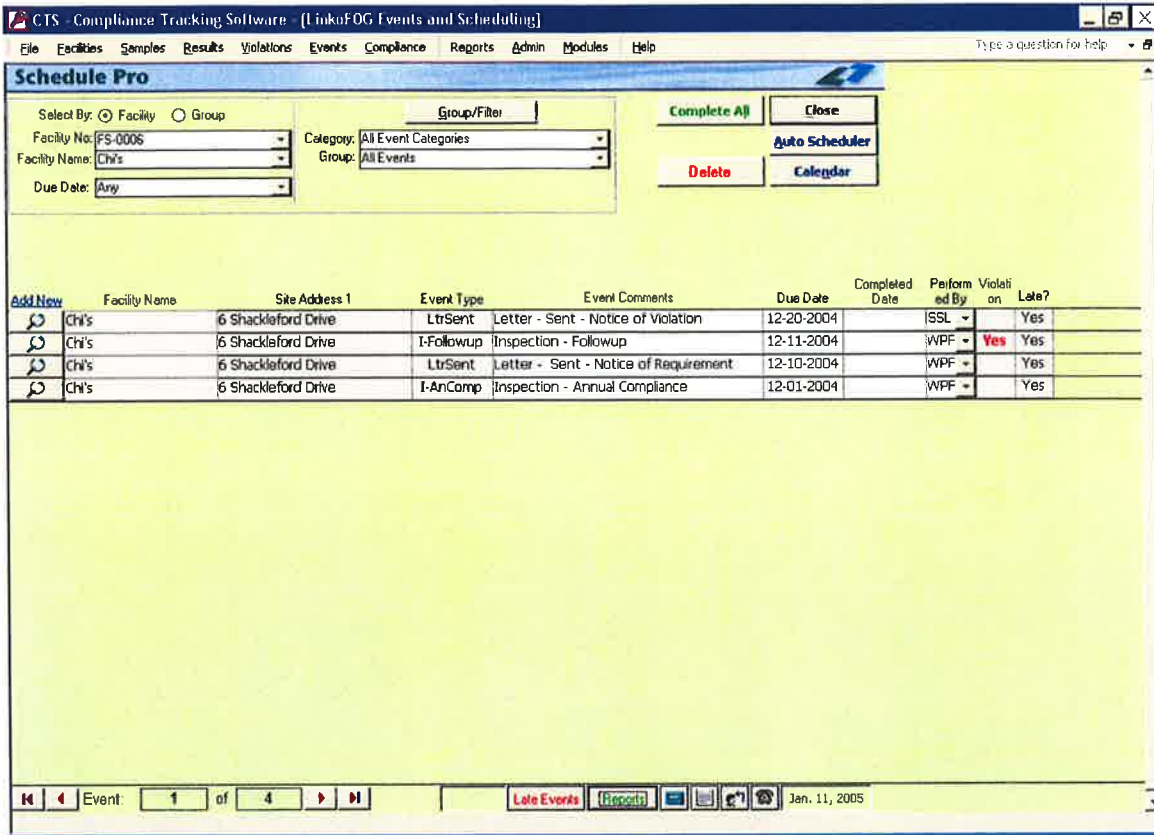
4.1.2 Edit Existing Events


Standard Operating Procedure – LinkoFOG Event Management

Date: February 17, 2005

Revision No.: 0

Section 2.4, Page 8 of 26



Click the  button to the left of the event on the *Schedule Pro* screen. The event screen will appear. Click **Edit** on the event screen to make changes to the information contained on the screen.

Once all of the items, discussed in Parts 4.1.4.1 through 4.1.4.4, have been edited or added, click the **Save** button to save data entries or **Cancel** to exit the Edit mode without saving data entries.

LinkoFOG General Events	
LinkoFOG General Event	
Facility No: <input type="text" value="FS-0006"/>	<input type="button" value="New"/> <input type="button" value="Close"/>
Facility Name: <input type="text" value="Chi's"/>	<input type="button" value="Edit"/> <input type="button" value="Cancel"/>
<input type="button" value="Create Violation"/>	<input type="button" value="Save"/> <input type="button" value="Delete"/>
Event Category: <input type="text" value="GENERIC"/>	Event Doc: <input type="text"/> <input type="button" value="Browse..."/>
Event Type: <input type="text" value="LtrSent"/>	Due Date: <input type="text" value="12/20/2004"/> Late Event: <input checked="" type="checkbox"/>
Created By: <input type="text" value="SSL"/>	Complete Date: <input type="text"/>
Assigned To: <input type="text" value="SSL"/>	Has Viol: <input type="checkbox"/>
Performed By: <input type="text" value="SSL"/>	Pre Notify? <input type="checkbox"/> <input type="text"/> Days Before = <input type="text"/>
Contact: <input type="text" value="Biao Chi"/>	Post Notify? <input type="checkbox"/> <input type="text"/> Days After = <input type="text"/>
Start Time: <input type="text"/>	
End Time: <input type="text"/>	
Event Comments:	<input type="text" value="Letter - Sent - Notice of Violation"/> <input type="text" value="A Notice of Violation (NOV) was mailed 12/10/04."/>
Internal Comments:	<input type="text"/>
<input type="button" value="Home"/> <input type="button" value="Back"/> <input type="button" value="Forward"/> <input type="button" value="Print"/> <input type="button" value="Help"/> <input type="button" value="Refresh"/> Jan. 11, 2005	

4.1.3 Delete Existing Events

On the *Schedule Pro* screen there are two methods to delete an event:

4.1.3.1 First Method

Highlight the Facility Name of the event to be deleted, and then click the **Delete** button.

Standard Operating Procedure – LinkoFOG Event Management

Date: February 17, 2005

Revision No.: 0

Section 2.4, Page 10 of 26

CTS - Compliance Tracking Software - [LinkoFOG Events and Scheduling]

File Facilities Samples Results Violations Events Compliance Reports Admin Modules Help Type a question for help

Schedule Pro

Select By: Facility Group

Facility No: FS-0006 Category: All Event Categories

Facility Name: Chi's Group: All Events

Due Date: Last Year

Complete All Close

Delete Auto Scheduler


Calendar

Add/View	Facility Name	Site Address 1	Event Type	Event Comments	Due Date	Completed Date	Perform ed By	Violati on	Late?
	Chi's	6 Shackelford Drive	LtrSent	Letter - Sent - Notice of Violation	12-20-2004		SSL		Yes
	Chi's	6 Shackelford Drive	I-Followup	Inspection - Followup	12-11-2004		WPF	Yes	Yes
	Chi's	6 Shackelford Drive	LtrSent	Letter - Sent - Notice of Requirement	12-10-2004		WPF		Yes
	Chi's	6 Shackelford Drive	I-AnComp	Inspection - Annual Compliance	12-01-2004		WPF		Yes

Event 1 of 4

Late Events Reports Feb. 17, 2005

4.1.3.2 Second Method

Click the  button to the left of the event to be deleted. In the event screen, click the **Delete** button in the upper right corner of the screen.

LinkoFOG Inspection Events	
LinkoFOG Inspection Event	
Facility No: <input type="text" value="FS-0006"/>	<input type="button" value="New"/> <input type="button" value="Close"/>
Facility Name: <input type="text" value="Chi's"/>	<input type="button" value="Edit"/> <input type="button" value="Cancel"/>
<input type="button" value="Create Violation"/>	<input type="button" value="Save"/> <input type="button" value="Delete"/>
Event Category: <input type="text" value="INSPECTION"/>	Event Doc: <input type="text"/> <input type="button" value="Browse..."/>
Event Type: <input type="text" value="I-AnComp"/>	Due Date: <input type="text" value="12/1/2004"/> Late Event: <input checked="" type="checkbox"/>
Created By: <input type="text" value="WPF"/>	Complete Date: <input type="text"/> Has Viol: <input type="checkbox"/>
Assigned To: <input type="text" value="WPF"/>	Pre Notify? <input type="checkbox"/> Days Before = <input type="text"/>
Performed By: <input type="text" value="WPF"/>	Post Notify? <input type="checkbox"/> Days After = <input type="text"/>
Fac. Person Present: <input type="text" value="Biao Chi"/>	
Inspection Reason: <input type="text" value="Inspection - Annual Compliance"/>	
Inspection Comments: <input type="text" value="Inspection - Annual Compliance"/>	
Internal Comments: <input type="text" value="Comment No. 1: -No Comment"/>	
<input type="text" value="EAD Staff Member: Susan Samples Ledbetter"/>	
<input type="text" value="Date: December 1, 2004"/>	
<input type="button" value="Home"/> <input type="button" value="Print"/> <input type="button" value="Refresh"/> <input type="button" value="Help"/> Feb. 17, 2005	

Before the event is deleted, the following message will appear “Are you sure you want to delete this Event? You will not be able to undo this deletion.” If the deletion is necessary, click **Yes**; otherwise click **No**.

The level of user’s security will determine whether the existing event may be deleted.

4.1.4 Event Categories

There are four event categories. Each category is discussed in parts 4.1.4.1 though 4.1.4.4.

4.1.4.1 Inspection Event


The inspection events when completed will automatically populate information on the *Facility Management’s Facility Dates* screen in Section 2.0 Part 1.0 of the LinkoFOG SOP. The connections will be explained in the specific sections discussed below for Due Date and Completed Date fields. The available inspection event types are located at the end of this document in Table A – Inspection Events. Use correct grammar, punctuation, and spelling; click F7 to spell check the Inspection Comments and Internal Comments fields. (All items in red must be completed before a record will be saved.)

Standard Operating Procedure – LinkoFOG Event Management

Date: February 17, 2005

Revision No.: 0

Section 2.4, Page 12 of 26

LinkoFOG Inspection Events	
LinkoFOG Inspection Event	
Facility No: <input type="text" value="FS-0006"/>	<input type="button" value="New"/> <input type="button" value="Close"/>
Facility Name: <input type="text" value="Chi's"/>	<input type="button" value="Edit"/> <input type="button" value="Cancel"/>
<input type="button" value="Create Violation"/>	<input type="button" value="Save"/> <input type="button" value="Delete"/>
Items in red MUST be filled out	
Event Category: <input type="text" value="INSPECTION"/>	Event Doc: <input type="text"/> <input type="button" value="Browse.."/>
Event Type: <input type="text" value="I-AnComp"/>	Due Date: <input type="text"/>
Created By: <input type="text"/>	Late Event: <input type="checkbox"/>
Assigned To: <input type="text"/>	Has Viol: <input type="checkbox"/>
Performed By: <input type="text"/>	Pre Notify? <input type="checkbox"/> <input type="text"/> Days Before = <input type="text"/>
Fac. Person Present: <input type="text"/>	Post Notify? <input type="checkbox"/> <input type="text"/> Days After = <input type="text"/>
Inspection Reason: <input type="text"/>	
Inspection Comments: <input type="text" value="Inspection - Annual Compliance"/>	
Internal Comments: <input type="text"/>	
 Jan. 11, 2005	

- a. Event Category – This field is automatically populated by choices made from pull down lists on the *LinkoFOG New Event Pick Box* screen. This field cannot be changed in this screen.
- b. Event Type – **(Secured Field)** This field is automatically populated by choices made from pull down lists on the *LinkoFOG New Event Pick Box* screen. This field may be changed to another inspection event type using the pull down list if the wrong inspection event was entered initially from the *LinkoFOG New Event Pick Box* screen. See event types in Table A – Inspection Events.
- c. Created By – **(Secured Field)** Enter EAD personnel creating the event. A pull down list is available for entering EAD personnel. A selection must be made.
- d. Assigned To – **(Secured Field)** Enter EAD personnel the event is assigned. A pull down list is available for entering EAD personnel. A selection must be made.

- e. Performed By – (**Secured Field**) Enter EAD personnel who performed event. A pull down list is available for entering EAD personnel. A selection must be made.
- f. Fac. Person Present – Enter Facility Representative present when inspection event is performed. The user may choose from the pull down list of contacts that were entered into the Facility Management Contacts. If the Facility Representative is not included in the pull down list, LinkoFOG will allow the user to enter that person’s name without adding it to the Industry’s contact list. This field may also be left blank if the Facility Representative was not present for the inspection.
- g. Event Doc. – An associated Word Document may be linked. Click the **Browse** button to the right of the Event Doc. Field.
 - i) Click on the **Browse** button. An “Open File” window will appear. Locate and open the desired document. If the document to be linked is an Excel spreadsheet, make sure that the “Files of Type” pull down list in the Open window is set on “All Files.”
 - ii) Close the desired document and the file location will display in the Event Doc. field. To close the document, click **File** from the menu, and then click **Exit**.
 - iii) To open the document in LinkoFOG, click on the **Browse** button and the document will open automatically.
 - iv) To delete a linked document, highlight the link and delete.
- h. Due Date – Enter date the inspection event is due. This date will automatically populate the Next Inspection Due field located on the *Facility Management’s Facility Dates* screen in Section 2.0 Part 1.0 of the LinkoFOG SOP. If all inspections are completed and a new inspection has not been set up in Event Management, the Next Inspection Due field located on the *Facility Management’s Facility Date* screen will remain blank.
- i. Complete Date – Enter date the event is completed. The complete date will automatically populate the Last Inspection Due field located on the *Facility Management’s Facility Dates* screen in Section 2.0 Part 1.0 of the LinkoFOG SOP.

If an inspection event initiates a set of events including correspondence letters and follow-up inspections, **the Complete Date for the initial event and all subsequent related events will be the date the initial issue has been resolved.** Example: During the compliance inspection, it was observed that a grease interceptor was in need of cleaning. A letter was sent with a due date of 10 days from the date of the letter. A

follow-up inspection is scheduled and completed. During the follow-up inspection, the inspector observed the interceptor had been cleaned. This date completes the actions for three events: initial compliance inspection (inspection event), letter sent (generic event), and follow-up inspection (inspection event).

- j. Late Event – Check box is automatically if the completed date field is blank after the due date has past. This will be checked until the last event in a set of activities has been completed. Then all events regarding one issue that initiated a set of events will have the same completed date.
- k. Has Viol. – Check box is automatically populated if an associated violation is created by clicking on the **Create Violation** button located at the top of the screen.

If the inspection event results in a violation, click the **Create Violation** button to enter information regarding the violation. **In order to show a relationship of a violation to a specific event, the Violation must be initiated on the *LinkoFOG Inspection Event* screen; otherwise, the relationship between the violation and the event will not be recognized by LinkoFOG.** Refer to Section 2.0 Part 6.0 Violation Management of this SOP for entry procedures.

- l. Pre Notify – This field is currently not in use.
- m. Post Notify – This field is currently not in use.
- n. Inspection Reason – Copy the description of the event from Item (o) Inspection Comments field below.
- o. Inspection Comments – The description of the inspection event (as described in System Administration) will automatically be entered into the inspection comments. Insert a line, copy and paste the body of the inspection report from MS Word document below the automatic event description.

If LinkoFOG does not allow the user to copy and paste from the Word document, the user will need to link the Word document as discussed in Item (g) Event Doc. above and open the link. Copy and paste the body of the inspection report from the linked document into the Inspection Comments field and click **Save**.

- p. Internal Comments – Copy and paste the Routing Comments from the MS Word document into the Internal Comments field.

If LinkoFOG does not allow the user to copy and paste from the Word document, the user will need to link the Word document as discussed in Item (g) Event Doc. above and open the link. Copy and paste the

Routing Comments of the inspection report from the linked document into the Internal Comments field and click **Save**.

Once the Inspection Comments and Internal Comments fields have been copied from the linked document, return to the Event Doc. field and delete the link to the Word document.

4.1.4.2 Generic Event

Table B – Generic Events located at the end of this SOP lists all approved generic event types. (All items in red must be completed before a record will be saved.) Use correct grammar, punctuation, and spelling; click F7 to spell check the Event Comments and Internal Comments fields.

LinkoFOG General Events			
LinkoFOG General Event		<input type="button" value="New"/>	<input type="button" value="Close"/>
Facility No:	<input type="text" value="FS-0006"/>	<input type="button" value="Edit"/>	<input type="button" value="Cancel"/>
Facility Name:	<input type="text" value="Chi's"/>	<input type="button" value="Create Violation"/>	<input type="button" value="Save"/>
			<input type="button" value="Delete"/>
Items in red MUST be filled out			
Event Category:	<input type="text" value="GENERIC"/>	Event Doc:	<input type="text"/> <input type="button" value="Browse..."/>
Event Type:	<input type="text" value="ComRec-EAD"/>	Due Date:	<input type="text"/> <input "="" type="checkbox" value="Late Event: <input checked="/>
Created By:	<input type="text"/>	Complete Date:	<input type="text"/> <input "="" type="checkbox" value="Has Viol: <input checked="/>
Assigned To:	<input type="text"/>	Pre Notify? <input type="checkbox"/>	<input type="text"/> Days Before = <input type="text"/>
Performed By:	<input type="text"/>	Post Notify? <input type="checkbox"/>	<input type="text"/> Days After = <input type="text"/>
Contact:	<input type="text"/>		
Start Time:	<input type="text"/>		
End Time:	<input type="text"/>		
Event Comments:	<input type="text" value="Communication Record - Initiated by EAD"/>		
Internal Comments:	<input type="text"/>		
<input type="button" value="Home"/> <input type="button" value="Print"/> <input type="button" value="Back"/> <input type="button" value="Refresh"/> <input type="button" value="Help"/> Jan. 11, 2005			

- a. Event Category – Field is automatically populated by choices made from pull down lists on the *LinkoFOG New Event Pick Box* screen. This field cannot be changed in this screen.
- b. Event Type – (**Secured Field**) Field is automatically populated by choices made from pull down lists on the *LinkoFOG New Event Pick*

Box screen. This field may be changed to another generic event type using the pull down list if the wrong generic event was entered initially from the *LinkoFOG New Event Pick Box* screen. See event types in Table B – Generic Events.

- c. Created By – (**Secured Field**) Enter EAD personnel creating the event. A pull down list is available for entering EAD personnel. A selection must be made.
- d. Assigned To – (**Secured Field**) Enter EAD personnel the event is assigned. A pull down list is available for entering EAD personnel. A selection must be made.
- e. Performed By – (**Secured Field**) Enter EAD personnel who performed event. A pull down list is available for entering EAD personnel. A selection must be made.
- f. Start Time – Enter the Start date and time for the generic event
- g. End Time - Enter the End date and time for the generic event.
- h. Event Doc. – An associated Word Document may be linked. Click the **Browse** button to the right of the Event Doc. Field.
 - i) Click on the **Browse** button. An “Open File” window will appear. Locate and open the desired document. If the document to be linked is an Excel spreadsheet, make sure that the “Files of Type” pull down list in the Open window is set on “All Files.”
 - ii) Close the desired document and the file location will display in the Event Doc. field. To close the document, click **File** from the menu, and then click **Exit**.
 - iii) To open the document in LinkoFOG, click on the **Browse** button and the document will open automatically.
 - iv) To delete a linked document, shade the link and delete.
- i. Event Comments – Skip one line below the automatic event description. Copy and paste the body of the Word or Email document into the Events Comments field below the automatic event description

If LinkoFOG does not allow the user to copy and paste from the Word or Email document, the user will need to link the Word or Email document as discussed in Item (h) Event Doc. above and open the link. Copy and paste the body of the Word or Email document from the linked document into the Events Comments field and click **Save**.
- j. Internal Comments – Copy and paste the Routing Comments from the MS Word or Email document into the Internal Comments field.

If LinkoFOG does not allow the user to copy and paste from the Word or Email document, the user will need to link the Word or Email document as discussed in Item (h) Event Doc. above and open the link. Copy and paste the Routing Comments of the Word or Email document from the linked document into the Internal Comments field and click **Save**.

Once the Inspection Comments and Internal Comments fields have been copied from the linked document, return to the Event Doc. fields and delete the link to the Word document.

4.1.4.3 Permit Events

The Permit Events are not currently used in LinkoFOG.

4.1.4.4 Sample Events

The Permit Events are not currently used in LinkoFOG.

4.2 Calendar

A *Calendar* screen is available in Event Management. To access, click the **Calendar** button shown in the top right of the screen. The *Calendar* screen will show scheduled events per industry or the group. To observe the scheduled events for a particular day, double click on the day in question. Default mode is for all events to be shown per industry. The data user may query for sample events only per industry or for the entire group of industrial facilities.

Standard Operating Procedure – LinkoFOG Event Management

Date: February 17, 2005

Revision No.: 0

Section 2.4, Page 18 of 26

CTS - Compliance Tracking Software - [Events Calendar - Friday, December 17, 2004]

File Facilities Samples Results Violations Events Compliance Reports Admin Modules Help

Type a question for help

LinkoFOG Events - Calendar View

Select By: Facility Group

Facility No: FS-0005 Category: All Event Categories

Facility Name: Chi's Group: All Events

Select View: Normal

Jan Jul Close

Feb Aug Auto Scheduler

Mar Sep Reports

Apr Oct

May Nov Today Year: 2004

Jun Dec

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 I-AnComp (1)	2	3	4
5	6	7	8	9	10 LtrSent (1)	11 I-Followup (1)
12	13	14	15	16	17	18
19	20 LtrSent (1)	21	22	23	24	25
26	27	28	29	30	31	

4.3 Auto Scheduler

A scheduling feature is available in Event Management. This function of LinkoFOG is not extensively used. To access, click the **Auto Scheduler** button shown in the top right of the screen. The data user may schedule routine events using the Auto Scheduler.

4.3.1 Facility/Events

Select a facility by number or name. Select an event category type using the pop down menu. Select a specific event type from the pop down menu. Select the appropriate frequency. Click on the **2) Dates** tab.

The screenshot shows the 'LinkoFOG Auto Scheduler' window. At the top, there is a menu bar with 'File', 'Facilities', 'Samples', 'Results', 'Violations', 'Events', 'Compliance', 'Reports', 'Admin', 'Modules', and 'Help'. Below the menu bar, the title bar reads 'LinkoFOG Auto Scheduler' and there is a 'Close' button. The main area contains the instruction 'Choose Facilities and Events to Auto Schedule:'. Below this, there are five tabs: '1) Facility/Events', '2) Dates', '3) Create It', '4) Confirm', and '5) Delete'. The '1) Facility/Events' tab is active. Under 'Select By:', there are radio buttons for 'Facility' (selected) and 'Group'. Below are text boxes for 'Facility No:' containing 'FS-0006' and 'Facility Name:' containing 'Chi's'. Under 'Select Events:', there are dropdown menus for 'Event Category:' (INSPECTION), 'Event Type:' (I-AnComp), and 'Frequency:' (Both - 1/Year). A text box for 'Description:' contains 'Inspection - Annual Compliance'. At the bottom, there is a checkbox for 'Create Pre and Post Events too?' which is unchecked.

4.3.2 Date(s)

Enter the start date and the end date. Check or uncheck the box to spread out the events evenly or randomly. Click on the **3) Create** it tab.

The screenshot shows the 'LinkoFOG Auto Scheduler' window with the '2) Dates' tab selected. The 'Facilities Selected:' section shows 'Facility or Group:' as 'FS-0006' and 'Facility Name:' as 'Chi's'. The 'Events Selected:' section shows 'Event Category:' as 'INSPECTION', 'Event Type:' as 'I-AnComp', 'Frequency:' as 'Both - 1/Year', and 'Description:' as 'Inspection - Annual Compliance'. The 'Create Events Within Date Range:' section has 'Start Date:' as '12-31-2004' and 'End Date:' as '12-31-2009'. A checkbox for 'Spread events out evenly over the date range?' is checked. At the bottom, there is a checkbox for 'Create Pre and Post:' which is unchecked.

4.3.3 Create it

This view will show you how many events were scheduled based on the information that was used on sheets 1 and 2. Click the **Create Events** button to create the events. Click on the **4) Confirm** tab.

Standard Operating Procedure – LinkoFOG Event Management

Date: February 17, 2005

Revision No.: 0

Section 2.4, Page 20 of 26

The screenshot shows the 'LinkoFOG Auto Scheduler' window with the '3) Create It' step selected. The interface includes a menu bar (File, Facilities, Samples, Results, Violations, Events, Compliance, Reports, Admin, Modules, Help) and a 'Close' button. Below the title bar, it says 'Choose Facilities and Events to Auto Schedule:'. The steps are: 1) Facility/Events, 2) Dates, 3) Create It, 4) Confirm, 5) Delete. The 'Facility or Group' is 'FS-0006', 'Event Category' is 'INSPECTION', and 'Event Type' is 'I-AnComp'. 'Start Date' is '12-31-2004' and 'End Date' is '12-31-2009'. 'Frequency' is 'Both - 1/Year'. There is a checkbox for 'Create Pre and Post:'. A box titled 'Events to Create' shows 'Auto-Schedule Name: FS-0006 | I-AnComp | 12-31-09' and 'Event Count to Schedule: 5'. A 'Create Events' button is at the bottom.

4.3.4 Confirm

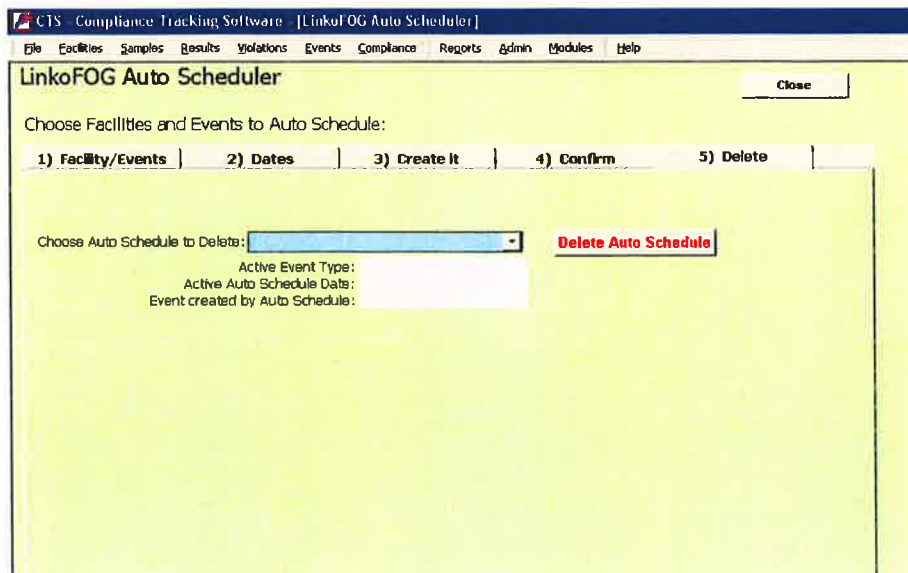
Each of the events created will be listed in the *Confirm* screen. Select or deselect the appropriate events by clicking on the event or by clicking the **Select All** or **Deselect All**. Click the **Confirm Events** button.

The screenshot shows the 'LinkoFOG Auto Scheduler' window with the '4) Confirm' step selected. The interface includes a menu bar (File, Facilities, Samples, Results, Violations, Events, Compliance, Reports, Admin, Modules, Help) and a 'Close' button. Below the title bar, it says 'Choose Facilities and Events to Auto Schedule:'. The steps are: 1) Facility/Events, 2) Dates, 3) Create It, 4) Confirm, 5) Delete. The 'Select Events to Confirm Scheduling for' section has buttons for 'Select All', 'Deselect All', and 'Confirm Events'. A table lists the events to be confirmed:

	Facility	Facility No.	Event Type	Due Date	Event Description	Create Event
Details	Ch's	FS-0006	I-AnComp	12/31/2004	AutoScheduled by: FS-0006 I-AnComp 12/31/2004	<input type="checkbox"/>
Details	Ch's	FS-0006	I-AnComp	12/30/2005	AutoScheduled by: FS-0006 I-AnComp 12/31/2005	<input type="checkbox"/>
Details	Ch's	FS-0006	I-AnComp	12/29/2006	AutoScheduled by: FS-0006 I-AnComp 12/31/2006	<input type="checkbox"/>
Details	Ch's	FS-0006	I-AnComp	12/31/2007	AutoScheduled by: FS-0006 I-AnComp 12/31/2007	<input type="checkbox"/>
Details	Ch's	FS-0006	I-AnComp	12/30/2008	AutoScheduled by: FS-0006 I-AnComp 12/31/2008	<input type="checkbox"/>

4.3.5 Delete

Click the down arrow on the *Choose Auto Schedule to Delete* screen. Select the event to delete and click the **Delete Auto Schedule** button. This will delete all events that were autoscheduled.



4.4 Reports

The **Reports** button (located at the bottom of the screen) opens the *LinkoFOG Events and Scheduling Reports* screen. This screen consists of the System Reports, User Reports and the Mail Merge Letter Tabs, the Contact Priority and Contact Type boxes, the “Export Letter to MS Word” check box, the **Preview Report** and **Form Table View** buttons.

4.4.1 System Reports

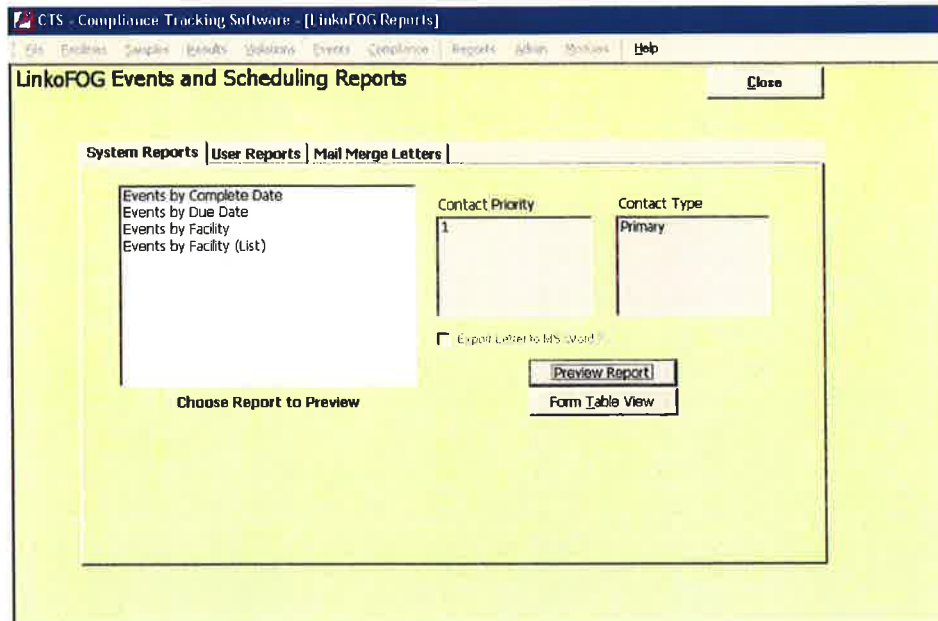
The System Reports tab offers reports designed by LinkoFOG.

Standard Operating Procedure – LinkoFOG Event Management

Date: February 17, 2005

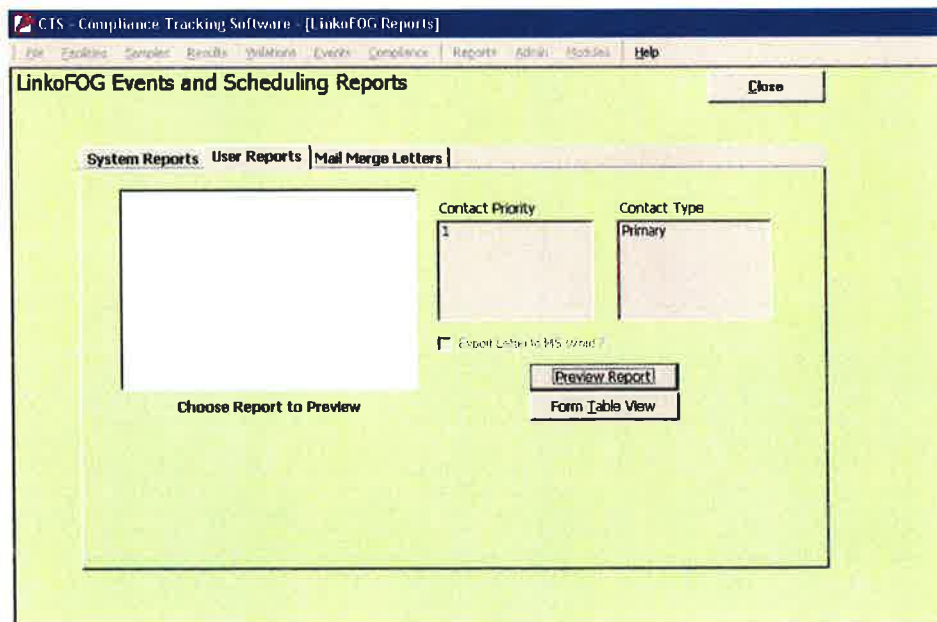
Revision No.: 0

Section 2.4, Page 22 of 26



4.4.2 User Reports

The User Reports tab offers custom reports designed by EAD.



4.4.3 Mail Merge Letters

The Mail Merge Letters offers documents that can be automatically addressed to entered contacts.

4.4.4 Contact Priority Box

The Contact Priority box allows the selection of contact priority on contact lists and letters as entered in the facility information.

4.4.5 Contact Type Box

The Contact Type box allows the selection of contact type on contact lists and letters as entered in the facility information.

4.4.6 Export Letter to MS Word

The Export Letter to MS Word check box sends the chosen document to MS Word for printing.

4.4.7 Preview Report

The Preview Report button displays the chosen document before printing.

4.4.8 Form Table View

The Form Table View displays form data in table format

Appendices

**Table A – Inspection Events
(Secured Field)**

CTL + Click following links to go to the corresponding paragraphs in this SOP: 4.1.4.1, c

Event Type	Event Type Description	Days Late Allowed NC	Days Late Allowed SNC	Auto Scheduler Freq.	Available in This Module
I-AnComp	Inspection - Annual Compliance				Both
I-Comp	Inspection - Compliance				Both
I-Demand	Inspection – Demand				Both
I-Followup	Inspection – Followup				Both
I-MD	Inspection – Meter Diversion (Diversion Meter)				LinkoCTS
I-MS	Inspection – Meter Sewer (Sewer Meter)				LinkoCTS
I-NonComp	Inspection - Non-compliance				Both
I-PRenewal	Inspection – Permit Renewal				LinkoCTS
I-P2	Inspection – Pollution Prevention				LinkoCTS
I-ProDis	Inspection – Prohibited Discharge				Both
I-SSPrA	Inspection – Sanitary Sewer Property Assessment				LinkoCTS
I-SSO	Inspection – SSO Contributory or Non-Contributory (Site Specific)				Both
I-Survey	Inspection – Survey				LinkoCTS
Inv-SSO	Investigation – SSO (Initial Contributory Search)				Both
Inv-CS-LEL	Investigation – Collection System – Report of LEL				Both
Inv-CS-FOG	Investigation – Collection System – Report of FOG				Both
Inv-CS-Sand	Investigation – Collection System – Report of Sand				Both
Inv-CS-Misc	Investigation – Collection System – Report of Misc. Pollutant				Both

Volume 7 – Attachment No. 5

EAD Requirements Letters and Forms

**LITTLE ROCK WASTEWATER UTILITY
ENVIRONMENTAL ASSESSMENT DIVISION
Communications Record**

Business Name:
Business Address:
Contact Person:
Phone No.:
Date of Communication:
Subject:

Communication:

Follow Up Action Required:

Type Originator's Name: _____ **Date Document Initiated:** _____

Originator's Signature: _____ **Signature Date:** _____

Select Routing Slip Sequence: One after another (Enter Order Below) or All at once ✓ Recipient's Name

Routing Sequence		Routing Recipient	Originator Requests Recipient to Comment, Sign, and/or Approve			Date Signed
#	Check		Comments Requested	Indicate Whether Signature(s) Are Required (The original will be I-O mailed for signature)		
		Stanley Suel				
		Susan Ledbetter				
		Jeff Davis				
		Zina Rhodes				
		Sylvie Berry				
		Paul Foster				
		Allen Gatlin				
		Louise Hogan				

Comment No. 1: -No Comment
EAD Staff Member: Susan Samples Ledbetter/Jeff Davis
Date:

Comment No. 2: - Not Routed For Comment / No Comment
EAD Staff Member: Jeff Davis/Susan Samples Ledbetter
Date:

Comment No. 3: - Not Routed For Comment / No Comment
EAD Staff Member: Stanley Suel
Date:

LITTLE ROCK WASTEWATER UTILITY ENVIRONMENTAL ASSESSMENT DIVISION INSPECTION REPORT

Facility Name:
Facility Address:
Contact Person, Title:
Phone No.:
Date:
Subject:

Inspection Report

Summary

Observations

Follow-Up

Type Originator's Name: _____ **Date Document Initiated:** _____

Originator's Signature: _____ **Signature Date:** _____

Select Routing Slip Sequence: One after another (Enter Order Below) or All at once ✓ Recipient's Name

Routing Sequence		Routing Recipient	Originator Requests Recipient to Comment, Sign, and/or Approve		Date Signed
#	Check		Comments Requested	Indicate Whether Signature(s) Are Required (The original will be I-O mailed for signature)	
		Stanley Suel			
		Susan Ledbetter			
		Jeff Davis			
		Zina Rhodes			
		Sylvie Berry			
		Paul Foster			
		Allen Gatlin			
		Louise Hogan			

Comment No. 1: -No Comment
EAD Staff Member: Susan Samples Ledbetter/Jeff Davis
Date:

Comment No. 2: - Not Routed For Comment / No Comment
EAD Staff Member: Jeff Davis/Susan Samples Ledbetter
Date:

Comment No. 3: - Not Routed For Comment / No Comment
EAD Staff Member: Stanley Suel
Date:

File Original:

cc.: EAD Compiler File
Readers File

<<Date>>

CERTIFIED MAIL, RETURN RECEIPT REQUESTED
Article No.: <<0000-0000-0000-0000-0000>>

<<Mr./Ms. Name of Contact>>

<<Title>>

<<Facility Name>>

<<Mailing Address>>

<<City, State Zip>>

**Re: Results of Compliance Inspection
Requirement to Clean Grease Interceptor**

Dear <<Mr./Ms. Name of Contact>>,

Little Rock Wastewater Utility (LRWU) conducted an inspection of <<Facility Name>> located at <<Facility Address>> on <<Inspection Date>>. This inspection was performed in accordance with the LRWU Trap/Interceptor Control Program. This inspection revealed the following condition(s): <<Select from one of the following and delete this statement. If second bullet item does not apply remove bullet format and move the statement to start here. >>

- <<Facility Name>>'s grease <<interceptor/trap>> is not being properly maintained. Thick layers of grease <<and trash>> were observed in each chamber of the grease <<interceptor/trap>>. <<If Description is different, change to match adequate description.>>. Discharge of excessive grease from commercial facilities causes stoppages in the LRWU Collection System resulting in reduced wastewater carrying capacity. In accordance with the City of Little Rock Ordinance No. 17,966 Section 2.1(B)(3), hereinafter Pretreatment Ordinance, excessive grease discharges to the sanitary sewer are prohibited. Any additional sewer or sewerage maintenance expenses caused by such a discharge, or any other expenses attributable thereto may be charged to <<Facility Name>> by the Utility.
- Further, <<observations by LRWU Collection System Crews of the sewer main in the area <<Facility Name>> is located, strongly indicates a problem with the accumulation of fats, oils, and grease in the sewer main.>> or <<a sanitary sewer overflow has occurred in this area which was attributed to grease stoppages in the sewer main, and <<Facility Name>> has been found to be in non-compliance with the Pretreatment Ordinance Section 3.2(D).

By copy of this letter and the authority of the Pretreatment Ordinance Section 3.2(D), LRWU is requiring <<Facility Name>> to clean the grease <<interceptor/trap>> no later

than <<10 Days from date of letter>>. The cleaning records must be retained on site and made available for LRWU inspection in accordance with the Pretreatment Ordinance Sections 6.8 and 6.14.

The Pretreatment Ordinance makes provisions for LRWU to establish rules and regulations, recover direct costs for environmental cleanup, and assess fees attributed to user non-compliance. (See Sections 2.1(B)(3), 7.1(F), and 15.1.) Should a facility not maintain compliance with the Pretreatment Ordinance requirements, LRWU activities increase to include follow-up inspections and enforcement activities necessary to return the facility to compliance. The additional costs associated with follow-up inspection and enforcement activities form the basis of the non-compliance fees as described in the "Consolidated Fee Schedule" (Fee Schedule) which was approved by the Little Rock Sanitary Sewer Committee during the <<2005>> Budget Process. An excerpt from the Fee Schedule regarding the Trap/Interceptor Control Program is included below.

3.2 Trap/Interceptor (T/I) Control Program - Landowner/Lessee/Tenant Fees	
3.2.1 Review Fee - Redevelopment to Determine Adequacy of Existing T/I	\$50.00
3.2.2 Variance Request from Approved Specifications.....	\$200.00
3.2.3 Follow-up Non-compliance Inspection (1st occurrence).....	\$100.00
3.2.4 Non-compliance Past LRWU Requirement (each past 1st occurrence) ...	\$200.00
3.2.5 Non-compliance Sampling and/or Testing (each occurrence)	\$Cost

Currently, LRWU performs compliance inspections at no cost to commercial users. When a commercial user is first found to be in non-compliance, LRWU sends a letter to the commercial user reminding them of LRWU's requirements. This letter is being sent with no fee attached. Please be advised that should <<Facility Name>> not comply with the requirements of LRWU, the non-compliance fees as described above, shall be charged to <<Facility Name>> by LRWU. To avoid future non-compliance costs, <<Facility Name>> should maintain the grease <<interceptor/trap>> in proper working order and keep records regarding all cleaning/repairs conducted.

If you have any questions please feel free to call me at (501) 688-1527.

Sincerely
LITTLE ROCK WASTEWATER UTILITY

Paul Foster, Industrial Inspector
Environmental Assessment Division

cc: <<Facility Name>> Correspondence File
EAD Compiler File
Readers File

<<Date of Letter>>

CERTIFIED MAIL, RETURN RECEIPT REQUESTED
Article No.: <<0000-0000-0000-0000-0000>>

<<Mr./Ms. Name of Contact>>

<<Title>>

<<Facility Name>>

<<Mailing Address>>

<<City, State Zip>>

**Re: Results of Non-Compliance Inspection – First Occurrence Notification
Failure to Clean Grease Interceptor as Required
\$100.00 Fee Assessed**

Dear <<Mr./Ms. Name of Contact>>,

Little Rock Wastewater Utility (LRWU) conducted an inspection of <<Facility Name>> located at <<Facility Address>> on <<Inspection Date>>. **Choose Item 1 or 2** <<1 This inspection was performed in accordance with the LRWU Trap/Interceptor Control Program.>> <<2 This inspection was performed to verify completion of the requirement to clean the grease interceptor by <<Due Date of Original Letter>>. This inspection revealed the following condition(s): <<Select from one of the following and delete this statement. If second bullet item does not apply remove bullet format and move the statement to start here. >>

- <<Facility Name>>'s grease <<interceptor/trap>> is not being properly maintained. Thick layers of grease <<and debris>> were observed in each chambers of the grease <<interceptor/trap>>. <<If Description is different, change to match adequate description.>>. Discharge of excessive grease from commercial facilities causes stoppages in the LRWU Collection System resulting in reduced wastewater carrying capacity. In accordance with the City of Little Rock Ordinance No. 17,966 Section 2.1(B)(3), hereinafter Pretreatment Ordinance, excessive grease discharges to the sanitary sewer are prohibited. Any additional sewer or sewerage maintenance expenses caused by such a discharge, or any other expenses attributable thereto may be charged to <<Facility Name>> by the Utility.
- Further, **Choose Item 1 or 2** <<1 observations by LRWU Collection System Crews of the sewer main in the area <<Facility Name>> is located, strongly indicates a problem with the accumulation of fats, oils, and grease in the sewer main.>> <<2 a sanitary sewer overflow has occurred in this area which was attributed to grease stoppages in the sewer main,>> and <<Facility Name>> has

been found to be in non-compliance with the Pretreatment Ordinance Section 3.2(D).

- The grease interceptor has not been pumped and cleaned nor has a cleaning receipt been provided to LRWU as required on letter dated <<Original Letter of Requirement>>. Therefore, LRWU finds <<Facility Name>> located at <<Facility Address>> in violation of the City of Little Rock's Pretreatment Ordinance No. 17,966, hereinafter Pretreatment Ordinance, Sections 2.1(B) and 3.2(D) for not providing proper maintenance to the grease interceptor and allowing the discharge of a prohibited substance to the sanitary sewer.

<<Facility Name>> was advised <<Date of First Requirement Letter>> of non-compliance fees which were adopted by the Little Rock Sanitary Sewer Committee. LRWU records show this is the second inspection whereby observations show the facility's grease interceptor is not being adequately maintained in accordance with the Pretreatment Ordinance 3.2(D). Enclosed with this letter is an invoice in the amount of \$100.00 for not complying with Pretreatment Ordinance 3.2(D) requirements. The check should be made payable to Little Rock Wastewater Utility and remitted to the following address:

Little Rock Wastewater Utility
Attn.: Accounts Receivable
PO Box 45090
Little Rock, Arkansas 72214

Should <<Facility Name>> not comply with the following requirements of this First Occurrence Notification within the timeframe allowed, additional non-compliance inspection fees may be charged by LRWU. Further, violations of the Pretreatment Ordinance are subject to enforcement actions under the provisions listed in the Pretreatment Ordinance Sections 10, 11, and 12. These enforcement actions may include, but are not limited to, fines and penalties of up to \$1000 per day per violation.

By copy of this letter and the authority of the Pretreatment Ordinance, Sections 3.2(D), LRWU continues to require <<Facility Name>> to clean the grease interceptor by Choose 1 or 2 <<1 10 days from the date of the letter>> <<2 7 days from the date of the letter>> and to mail or fax a copy of the cleaning receipt to LRWU at the following address:

Little Rock Wastewater Utility
Attn.: Paul Foster, Industrial Inspector
1001 Temple Street
Little Rock, Arkansas 72202
Fax Number: (501) 688-1540

Your prompt attention to resolving this matter is encouraged by LRWU. Should you have any questions, please call me at (501) 688-1532.

Sincerely
LITTLE ROCK WASTEWATER UTILITY

Susan Samples Ledbetter, Pretreatment Supervisor
Environmental Assessment Division

cc: <<Facility Name>> Correspondence File
Stanley Suel, Director of Environmental Assessment
Debbie Williams, Accounting Supervisor
EAD Compiler File
Readers File

<<Date of Letter>>

CERTIFIED MAIL - RETURN RECEIPT REQUESTED
Article No.: <<0000-0000-0000-0000-0000>>

<<Mr./Ms. Contact Name>>

<<Title>>

<<Facility Name>>

<<Mailing Address>>

<<City, State Zip>>

**RE: Results of Compliance Inspection
Requirement to <<Install/Replace>> Grease Interceptor**

Dear <<Mr./Ms. Contact Name>>:

Little Rock Wastewater Utility (LRWU) conducted an inspection of <<Facility Name>> located at <<Facility Address>> on <<Inspection Date>>. This inspection was performed in accordance with the LRWU Trap/Interceptor Control Program. This inspection revealed deficiencies which require corrective actions. <<Select from one of the following in first bullet item and delete this statement. If second bullet item does not apply remove bullet format and move the statement to start here. >>

- 1. The existing grease <<interceptor/trap>> is <<undersized and does not have adequate grease retention capabilities>> <<the manhole lid is not sealed and allows storm water inflow into the interceptor>>. Discharge of excessive grease from commercial facilities causes stoppages in the LRWU Collection System resulting in reduced wastewater carrying capacity In accordance with the City of Little Rock Ordinance No. 17,966 Section 2.1(B)(3), hereinafter Pretreatment Ordinance, excessive grease discharges to the sanitary sewer are prohibited. or 2. This facility prepares food commercially and is operating without a grease interceptor. Discharge of excessive grease from commercial facilities causes stoppages in the LRWU Collection System resulting in reduced wastewater carrying capacity In accordance with the City of Little Rock Ordinance No. 17,966 Section 3.2(D), hereinafter Pretreatment Ordinance, requires the installation of a grease interceptor.
- Further, <<observations by LRWU Collection System Crews of the sewer main in the area <<Facility Name>> is located, strongly indicates a problem with the accumulation of fats, oils, and grease in the sewer main.>> or <<a sanitary sewer overflow has occurred in this area which was attributed to grease stoppages in the sewer main, and <<Facility Name>> has been found to be in non-compliance with the Pretreatment Ordinance Section 3.2(D).>>

By copy of this letter and the authority of the Pretreatment Ordinance, Section 3.2(D), LRWU is requiring <<Facility Name>>, at <<Facility Address>> to perform the following:

1. Retain the services of an Arkansas Certified Licensed Plumber and submit construction plans to include a site plan to include all plumbing fixtures and piping layout, complete plumbing riser, new grease interceptor, and new sampling/inspection manhole for LRWU's approval. Attached are the following LRWU details to assist you in this requirement: *Typical Site Plan, Sampling/Inspection Manhole, and LRWU One Tank - Two Compartment Grease Interceptor*. Submit the construction plans to the following address:

Little Rock Wastewater Utility
Attn.: Susan Samples Ledbetter
1001 Temple Street
Little Rock, Arkansas 72202

2. Once the construction plans have been approved, LRWU will issue an approved *Grease Interceptor Sizing Form* to inform of the minimum size grease interceptor required.
3. Should <<Facility Name>> propose to make any changes to the building sanitary drainage piping after the approved *Grease Interceptor Sizing Form* has been issued, those changes must be approved by LRWU before constructing the changes. Adding additional grease waste drainage fixtures may increase the minimum size grease interceptor required by LRWU. When seeking a change, contact Susan Samples Ledbetter at 501-688-1532 for additional requirements and to obtain approval.
4. Prior to grease interceptor installation, a Building Sewer Permit must be obtained from the LRWU Engineering Permits Desk located at 11 Clearwater Drive, Little Rock Arkansas 72204.
5. The approved grease interceptor must be installed by no later than << 90 Days from the Date of the Letter>>. The installation plumber must contact LRWU's Engineering Permits Desk (telephone (501) 688-1420) to arrange to have an on-site inspection performed to verify proper installation and the grease interceptor matches the approved specifications. LRWU's on-site inspection must be performed prior to the installation plumber backfilling the area excavated to install the interceptor. This includes the associated piping needed to plumb the interceptor.

Once the grease interceptor has been installed, <<Facility Name>> is required to properly maintain the grease interceptor, associated piping, and cleaning records in accordance with the Pretreatment Ordinance Section 3.2(D). LRWU performs compliance inspections at all grease interceptors within the LRWU service area at no cost to the commercial user. When a commercial user is first found to be in non-compliance, LRWU sends a letter to the commercial user reminding them of LRWU's requirements to

maintain the grease interceptor system. Should a facility not maintain compliance with the Pretreatment Ordinance requirements, LRWU activities will increase to include follow-up inspections, enforcement actions and assess non-compliance fees.

Your cooperation in this matter is greatly appreciated. If you have any questions, please call me at (501) 688-1527

Sincerely
LITTLE ROCK WATEWATER UTILITY

Paul Foster, Industrial Technician
Environmental Assessment Division

cc: Stanley Suel, Director of Environmental Assessment
Jim Boyd, P.E., Engineering Supervisor
Engineering Permits Desk
Engineering Plumbing Inspector
<<Facility Name>> Correspondence File
EAD Compiler File
Readers File

<<Date of Letter>>

CERTIFIED MAIL - RETURN RECEIPT REQUESTED
Article No.: <<0000-0000-0000-0000-0000>>

<<Mr./Ms. Contact Name>>

<<Title>>

<<Facility Name>>

<<Mailing Address>>

<<City, State Zip>>

**RE: Results of Non-Compliance Inspection – First Occurrence Notification
Failure to <<Install>> <<Replace Existing>> Grease Interceptor as Required
\$100.00 Fee Assessed**

Dear <<Mr./Ms. Contact Name>>:

Little Rock Wastewater Utility (LRWU) conducted an inspection of <<Facility Name>> located at <<Facility Address>> on <<Inspection Date>>. This inspection was performed to verify completion of the requirement, to **Choose Item 1 or 2** << 1 install a grease interceptor>> <<2 replace existing grease interceptor>> by <<Due Date of Original Letter>>. This inspection revealed that **Choose Item 1 or 2**<< 1 a grease interceptor was not installed as required>> <<2 the existing grease interceptor/trap was not replaced as required>>. Therefore, LRWU finds <<Facility Name>> located at <<Facility Address>> in violation of the City of Little Rock's Pretreatment Ordinance No. 17,966, hereinafter Pretreatment Ordinance, Section 3.2(D) for not **Choose Item 1 or 2** <<1 installing a grease interceptor>> <<2 replacing existing grease <<interceptor/trap>> as required by letter dated <<Original Letter of Requirement>>. Discharge of excessive grease from commercial facilities causes stoppages in the LRWU Collection System resulting in reduced wastewater carrying capacity. In accordance with the Pretreatment Ordinance Section 2.1(B)(3) excessive grease discharges to the sanitary sewer are prohibited.

<<Facility Name>> was advised <<Date of First Requirement Letter>> that non-compliance fees would be assessed if <<Facility Name>> did not comply with the requirement to **Choose Item 1 or 2**<<1 install a>> <<2 replace the existing>> grease interceptor. Enclosed with this letter is an invoice in the amount of \$100.00 for not complying with Pretreatment Ordinance 3.2(D) requirements. The check should be made payable to Little Rock Wastewater Utility and remitted to the following address:

Little Rock Wastewater Utility
Attn.: Accounts Receivable
PO Box 45090
Little Rock, Arkansas 72214

Should <<Facility Name>> not comply with the requirements of this notification letter within the timeframe allowed, additional non-compliance inspection fees will be charged by LRWU. Further, violations of the Pretreatment Ordinance are subject to enforcement actions under the provisions listed in the Pretreatment Ordinance Sections 10, 11, and 12. These enforcement actions may include, but are not limited to, fines and penalties of up to \$1000 per day per violation.

By copy of the letter dated <<Date of Original Letter>> and the authority of the Pretreatment Ordinance, Section 3.2(D), LRWU continues to require <<Facility Name>>, at <<Facility Address>> to perform the following:

1. Retain the services of an Arkansas Certified Licensed Plumber and submit construction plans to include a site plan to include all plumbing fixtures and piping layout, complete plumbing riser, new grease interceptor, and new sampling/inspection manhole for LRWU's approval. Attached are the following LRWU details to assist you in this requirement: ***Typical Site Plan, Sampling/Inspection Manhole, and LRWU One Tank - Two Compartment Grease Interceptor***. Submit the construction plans to the following address:

Little Rock Wastewater Utility
Attn.: Susan Samples Ledbetter
1001 Temple Street
Little Rock, Arkansas 72202

2. Once the construction plans have been approved, LRWU will issue an approved ***Grease Interceptor Sizing Form*** to inform of the minimum size grease interceptor required.
3. Should <<Facility Name>> propose to make any changes to the building sanitary drainage piping after the approved ***Grease Interceptor Sizing Form*** has been issued, those changes must be approved by LRWU before constructing the changes. Adding additional grease waste drainage fixtures may increase the minimum size grease interceptor required by LRWU. When seeking a change, contact Susan Samples Ledbetter at 501-688-1532 for additional requirements and to obtain approval.
4. Prior to grease interceptor installation, a Building Sewer Permit must be obtained from the LRWU Engineering Permits Desk located at 11 Clearwater Drive, Little Rock Arkansas 72204.
5. The approved grease interceptor must be installed by no later than << 60 Days from the Date of the Letter>>. The installation plumber must contact LRWU's Engineering Permits Desk (telephone (501) 688-1420) to arrange to have an on-site inspection performed to verify proper installation and the grease interceptor matches the approved specifications. LRWU's on-site inspection must be performed prior to the

installation plumber backfilling the area excavated to install the interceptor. This includes the associated piping needed to plumb the interceptor.

Once the grease interceptor has been installed, <<Facility Name>> is required to properly maintain the grease interceptor, associated piping, and cleaning records in accordance with the Pretreatment Ordinance Section 3.2(D). LRWU performs compliance inspections at all grease interceptors within the LRWU service area at no cost to the commercial user. When a commercial user is first found to be in non-compliance, LRWU sends a letter to the commercial user reminding them of LRWU's requirements to maintain the grease interceptor system. Should a facility not maintain compliance with the Pretreatment Ordinance requirements, LRWU activities will increase to include follow-up inspections, enforcement actions and assess non-compliance fees.

Your cooperation in this matter is greatly appreciated. If you have any questions, please call me at (501) 688-1532.

Sincerely
LITTLE ROCK WATEWATER UTILITY

Susan Samples Ledbetter, Pretreatment Supervisor
Environmental Assessment Division

cc: Stanley Suel, Director of Environmental Assessment
Jim Boyd, P.E., Engineering Supervisor
Debbie Williams, Accounting Supervisor
Engineering Permits Desk
Engineering Plumbing Inspector
<<Facility Name>> Correspondence File
EAD Compiler File
Readers File

<<Date of Letter>>

CERTIFIED MAIL - RETURN RECEIPT REQUESTED
Article No.: <<0000-0000-0000-0000-0000>>

<<Mr./Ms. Name of Contact>>

<<Title>>

<<Facility Name>>

<<Mailing Address>>

<<City, State Zip>>

**RE: Results of Compliance Inspection
Requirement to Repair Grease Interceptor**

Dear <<Mr./Ms. Name of Contact>>,

Little Rock Wastewater Utility (LRWU) conducted an inspection of <<Facility Name>> located at <<Facility Address>> on <<Inspection date>>. This inspection was performed in accordance with the LRWU Trap/Interceptor Control Program. This inspection revealed the following condition(s): <<Note: Describe the state of the interceptor that requires repair. Select from one of the following and delete this note: 1. The current grease interceptor's internal piping is missing. 2. The current grease interceptor internal piping was not properly installed. 3. The current grease interceptor internal piping is damaged and no longer controlling the internal wastewater flow to achieve grease retention. Discharge of excessive grease from commercial facilities causes stoppages in the LRWU Collection System resulting in reduced wastewater carrying capacity. Excessive grease discharges are prohibited by the City Of Little Rock Pretreatment Ordinance No. 17,966 Section 2.1(B)(3), hereinafter Pretreatment Ordinance.

By copy of this letter and the authority of the Pretreatment Ordinance Section 3.2(D), Little Rock Wastewater Utility is requiring <<Facility Name>>, <<Street Address>> to retain the services of an Arkansas Licensed Plumber to 1. <<replace/repair>> the internal piping in accordance attached *LRWU One Tank - Two Compartment Grease Interceptor Detail* approved by LRWU << Note: The requirement should match the problem observed in the first paragraph – Delete this Note>> by <<30 days from the date of the letter>>.

The Pretreatment Ordinance makes provisions for LRWU to establish rules and regulations, recover direct costs for environmental cleanup, and assess fees attributed to user non-compliance. (See Sections 2.1(B)(3), 7.1(F), and 15.1.) Should a facility not maintain compliance with the Pretreatment Ordinance requirements, LRWU activities increase to include follow-up inspections and enforcement activities necessary to return

the facility to compliance. The additional costs associated with follow-up inspection and enforcement activities form the basis of the non-compliance fees as described in the "Consolidated Fee Schedule" (Fee Schedule) which was approved by the Little Rock Sanitary Sewer Committee during the <<2005>> Budget Process. An excerpt from the Fee Schedule regarding the Trap/Interceptor Control Program is included below.

3.2 Trap/Interceptor (T/I) Control Program - Landowner/Lessee/Tenant Fees

- 3.2.1 Review Fee - Redevelopment to Determine Adequacy of Existing T/I\$50.00
- 3.2.2 Variance Request from Approved Specifications.....\$200.00
- 3.2.3 Follow-up Non-compliance Inspection (1st occurrence).....\$100.00
- 3.2.4 Non-compliance Past LRWU Requirement (each past 1st occurrence) ...\$200.00
- 3.2.5 Non-compliance Sampling and/or Testing (each occurrence) \$Cost

Currently, LRWU performs compliance inspections at no cost to commercial users. When a commercial user is first found to be in non-compliance LRWU sends a letter to the commercial user reminding them of LRWU's requirements. This letter is being sent with no fee attached. Please be advised that should <<Facility Name>> not comply with the requirements of LRWU, the non-compliance fees as described above, shall be charged to <<Facility Name>> by LRWU. To avoid future non-compliance costs, <<Facility Name>> should maintain the grease <<interceptor/trap>> in proper working order and keep records regarding all cleaning/repairs conducted

If you have any questions please feel free to call me at (501) 688-1527.

Sincerely
LITTLE ROCK WATEWATER UTILITY

Paul Foster, Industrial Inspector
Environmental Assessment Division

cc: <<Facility Name>> Correspondence File
EAD Compiler File
Readers File

<<Date of Letter>>

CERTIFIED MAIL - RETURN RECEIPT REQUESTED
Article No.: <<0000 0000 0000 0000 0000>>

<<Mr./Ms. Name of Contact>>

<<Title>>

<<Facility Name>>

<<Mailing Address>>

<<City, State Zip>>

**RE: Results of Non-Compliance Inspection – First Occurrence Notification
Failure to Repair Grease Interceptor as Required
\$100.00 Fee Assessed**

Dear <<Mr./Ms. Name of Contact>>,

Little Rock Wastewater Utility (LRWU) conducted an inspection of <<Facility Name>> located at <<Facility Address>> on <<Inspection Date>>. **Choose Item 1 or 2** <<(1) This inspection was performed in accordance with the LRWU Trap/Interceptor Control Program.>> <<(2) This inspection was performed to verify completion of the requirement, to repair the grease interceptor by <<Due Date of Original Letter>>. This inspection revealed the following condition(s): <<Select from one of the two following items and delete this statement. Move the statement to start here. >>

(1) <<Describe the state of the interceptor that requires repair. Select from one of the following: << 1. The existing grease interceptor's internal piping is missing. 2. The existing grease interceptor internal piping was not properly installed. 3. The existing grease interceptor internal piping is damaged and no longer controlling the internal wastewater flow to achieve grease retention.>> Discharge of excessive grease from commercial facilities causes stoppages in the LRWU Collection System resulting in reduced wastewater carrying capacity. Excessive grease discharges are prohibited by the City Of Little Rock Pretreatment Ordinance No. 17,966 Section 2.1(B)(3), hereinafter Pretreatment Ordinance.

(2) The grease interceptor has not been repaired as required in a letter dated <<Original Letter of Requirement>>. Therefore, LRWU finds <<Facility Name>> located at <<Facility Address>> in violation of the City of Little Rock's Pretreatment Ordinance No. 17,966, hereinafter Pretreatment Ordinance, Sections 2.1(B) and 3.2(D) for not providing proper maintenance to the grease interceptor and allowing the discharge of a prohibited substance to the sanitary sewer.

<<Facility Name>> was advised <<Date of First Requirement Letter>> of non-compliance fees which were adopted by the Little Rock Sanitary Sewer Committee. LRWU records show this is the second inspection whereby observations show the facility's grease interceptor is not being adequately maintained in accordance with the Pretreatment Ordinance 3.2(D). Enclosed with this letter is an invoice in the amount of \$100.00 for not complying with Pretreatment Ordinance 3.2(D) requirements. The check should be made payable to Little Rock Wastewater Utility and remitted to the following address:

Little Rock Wastewater Utility
Attn.: Accounts Receivable
PO Box 45090
Little Rock, Arkansas 72214

Should <<Facility Name>> not comply with the requirements of this notification letter within the timeframe allowed, additional non-compliance inspection fees may be charged by LRWU. Further, violations of the Pretreatment Ordinance are subject to enforcement actions under the provisions listed in the Pretreatment Ordinance Sections 10, 11, and 12. These enforcement actions may include, but are not limited to, fines and penalties of up to \$1000 per day per violation.

By copy of this letter and the authority of the Pretreatment Ordinance Section 3.2(D), LRWU continues to require <<Facility Name>> to retain the services of an Arkansas Licensed Plumber to repair <<note be specific here as to what the plumber is to repair...example: to repair grease trap inlet piping>> at your facility by **Choose 1 or 2** <<1 <<30 days from the date of the letter>> <<2 <<20 days from the date of the letter>>.

Your prompt attention to resolving this matter is encouraged by LRWU. Should you have any questions, please call me at (501) 688-1532.

Sincerely
LITTLE ROCK WASTEWATER UTILITY

Susan Samples Ledbetter, Pretreatment Supervisor
Environmental Assessment Division

cc: Stanley Suel, Director of Environmental Assessment
Debbie Williams, Accounting Supervisor
<<Facility Name>> Correspondence File
EAD Compiler File
Readers File

<<Date of Letter>>

CERTIFIED MAIL, RETURN RECEIPT REQUESTED
Article No.: <<0000-0000-0000-0000-0000>>

<<Mr./Ms. Name of Contact>>

<<Title>>

<<Facility Name>>

<<Mailing Address>>

<<City, State Zip>>

**Re: Results of Compliance Inspection
Requirement to Replace Cleanout Caps**

Dear <<Mr./Ms. Name of Contact>>,

Little Rock Wastewater Utility (LRWU) conducted an inspection of <<Facility Name>> located at <<Facility Address>> on <<Inspection Date>>. This inspection was performed in accordance with the LRWU Trap/Interceptor Control Program. This inspection revealed the following condition(s): <<Number>> of the grease interceptor's cleanout cap(s) <<are/is missing/broken>>. The <<broken/missing>> cap(s) allow inflow of rain and storm water to the LRWU collection system. Storm water is a prohibited discharge in accordance with the City of Little Rock Pretreatment Ordinance 17,966 Section 2.0, hereinafter Pretreatment Ordinance.

By copy of this letter and the authority of the Pretreatment Ordinance Section 3.2(D), LRWU is requiring <<Facility Name>> to <<replace/repair>> the <<missing/broken>> cap(s) by <<20 Days from date of letter>> in accordance with the approved **LRWU Cleanout Cap Details** attached. Upon completion of requirement, please notify Mr. Paul Foster, Industrial Inspector at (501)688-1527.

The Pretreatment Ordinance makes provisions for LRWU to establish rules and regulations, recover direct costs for environmental cleanup, and assess fees attributed to user non-compliance. (See Sections 2.1(B)(3), 7.1(F), and 15.1.) Should a facility not maintain compliance with the Pretreatment Ordinance requirements, LRWU activities increase to include follow-up inspections and enforcement activities necessary to return the facility to compliance. The additional costs associated with follow-up inspection and enforcement activities form the basis of the non-compliance fees as described in the "Consolidated Fee Schedule" (Fee Schedule) which was approved by the Little Rock Sanitary Sewer Committee during the <<2005>> Budget Process. An excerpt from the Fee Schedule regarding the Trap/Interceptor Control Program is included below:

3.2 Trap/Interceptor (T/I) Control Program - Landowner/Lessee/Tenant Fees

3.2.1 Review Fee - Redevelopment to Determine Adequacy of Existing T/I	\$50.00
3.2.2 Variance Request from Approved Specifications.....	\$200.00
3.2.3 Follow-up Non-compliance Inspection (1st occurrence).....	\$100.00
3.2.4 Non-compliance Past LRWU Requirement (each past 1st occurrence) ...	\$200.00
3.2.5 Non-compliance Sampling and/or Testing (each occurrence)	\$Cost

Currently, LRWU performs compliance inspections at no cost to commercial users. When a commercial user is first found to be in non-compliance LRWU sends a letter to the commercial user reminding them of LRWU's requirements. This letter is being sent with no fee attached. Please be advised that should <<Facility Name>> not comply with the requirements of LRWU, the non-compliance fees as described above, shall be charged to <<Facility Name>> by LRWU. To avoid future non-compliance costs, <<Facility Name>> should maintain the grease <<interceptor/trap>> in proper working order and keep records regarding all cleaning/repairs conducted

If you have any questions please feel free to call me at (501)688-1527.

Sincerely
LITTLE ROCK WASTEWATER UTILITY

Paul Foster, Industrial Inspector
Environmental Assessment Division

cc: <<Facility Name>> Correspondence File
EAD Compiler File
Readers File

<<Date of Letter>>

CERTIFIED MAIL - RETURN RECEIPT REQUESTED
Article No.: <<0000 0000 0000 0000 0000>>

<<Mr./Ms. Name of Contact>>

<<Title>>

<<Facility Name>>

<<Mailing Address>>

<<City, State Zip>>

**RE: Results of Non-Compliance Inspection – First Occurrence Notification
Failure to <<Replace Grease Interceptor Cleanout Caps / Repair Grease
Interceptor Cleanout>> as Required
\$100.00 Fee Assessed**

Dear <<Mr./Ms. Name of Contact>>,

Little Rock Wastewater Utility (LRWU) conducted an inspection of <<Facility Name>> located at <<Facility Address>> on <<Inspection Date>>. **Choose Item 1 or 2** <<1 This inspection was performed in accordance with the LRWU Trap/Interceptor Control Program.>> <<2 This inspection was performed to verify completion of the requirement to repair the grease interceptor by <<Due Date of Original Letter>> This inspection revealed the following condition(s): <<Select from one of the two following items and delete this statement. Move the statement to start here. >>

(1) <<Number>> of the grease interceptor's cleanout cap(s) <<are/is missing/broken>>. The <<broken/missing>> cap(s) allow inflow of rain and storm water to the LRWU collection system. Storm water is a prohibited discharge in accordance with the City of Little Rock Pretreatment Ordinance 17,966 Section 2.0, hereinafter Pretreatment Ordinance.

(2) The grease interceptor cleanout(s) cap(s) had not been <<replace/repaired>> as required. Therefore, LRWU finds <<Facility Name>> located at <<Facility Address>> in violation of the City of Little Rock's Pretreatment Ordinance No. 17,966, hereinafter Pretreatment Ordinance, Sections 2.1(B) and 3.2(D) for not providing proper maintenance to the grease interceptor and allowing the discharge of storm water runoff which is a prohibited substance to the sanitary sewer.

<<Facility Name>> was advised <<Date of First Requirement Letter>> of non-compliance fees which were adopted by the Little Rock Sanitary Sewer Committee. LRWU records show this is the second inspection whereby observations show the

facility's grease interceptor is not being adequately maintained in accordance with the Pretreatment Ordinance 3.2(D). Enclosed with this letter is an invoice in the amount of \$100.00 for not complying with Pretreatment Ordinance 3.2(D) requirements. The check should be made payable to Little Rock Wastewater Utility and remitted to the following address:

Little Rock Wastewater Utility
Attn.: Accounts Receivable
PO Box 45090
Little Rock, Arkansas 72214

Should <<Facility Name>> not comply with the requirements of this notification letter within the timeframe allowed, additional non-compliance inspection fees will be charged by LRWU. Further, violations of the Pretreatment Ordinance are subject to enforcement actions under the provisions listed in the Pretreatment Ordinance Sections 10, 11, and 12. These enforcement actions may include, but are not limited to, fines and penalties of up to \$1000 per day per violation.

By copy of this letter, and the authority of the Pretreatment Ordinance Section 3.2(D), LRWU continues to require <<Facility Name>> to retain the services of an Arkansas Licensed Plumber to <<replace the grease interceptor cleanout caps / repair grease interceptor cleanout(s) at your facility in accordance with the approved *LRWU Cleanout Cap Details* attached by **Choose Item 1 or 2** <<(1) <<20 days from the date of the letter>> <<(2) <<15 days from the date of the letter>>.

Your prompt attention to resolving this matter is encouraged by LRWU. Should you or the contract plumber have any questions, please call me at (501) 688-1532.

Sincerely
LITTLE ROCK WASTEWATER UTILITY

Susan Samples Ledbetter, Pretreatment Supervisor
Environmental Assessment Division

cc: Stanley Suel, Director of Environmental Assessment
Debbie Williams, Accounting Supervisor
<<Facility Name>> Correspondence File
EAD Compiler File
Readers File

May 24, 2006

Stanley Suel, Director
Environmental Assessment Division
Little Rock Wastewater Utility
11 Clearwater Drive
Little Rock, AR 72204-8009

**Re: Variance Request - Proposed Shared Grease Interceptor
Installation, Maintenance, Repair, and Replacement Agreement**

Dear Mr. Suel:

The purpose of this letter is to request authorization to install a shared grease interceptor to be followed by a sampling/inspection manhole at <<Building Address(es)>>. The interceptor and sampling/inspection manhole shall meet all Little Rock Wastewater Utility (LRWU) requirements and specifications and shall be sized and approved by LRWU prior to installation. The shared grease interceptor will only serve <<Food Service Facility Name No.1>> located at <<Address No.1>> and <<Food Service Facility Name No.2 >> located at <<Address No.2>>. <<Building Owner's Name>> agrees that no other Food Service Facility, now or in the future, shall be connected to the shared grease interceptor without express written approval from LRWU.

<<Building Owner's Name>> agrees that construction plans shall be submitted to LRWU for approval. <<Building Owner's Name>> agrees that LRWU will issue an approved Grease Interceptor Sizing Form, and shall follow all LRWU requirements listed on said Form. Should <<Building Owner's Name>> propose to make any changes to the building sanitary drainage piping after the approved Grease Interceptor Sizing Form has been issued, <<Building Owner's Name>> understands those changes must be approved by LRWU before constructing the changes. <<Building Owner's Name>> understands adding additional grease waste drainage fixtures, now or in the future, may increase the minimum size grease interceptor required by LRWU. Prior to the grease interceptor installation, <<Building Owner's Name>> agrees the installation plumber must obtain a Building Sewer Permit from the LRWU Engineering Permits Desk located at 11 Clearwater Drive, Little Rock Arkansas 72204.

<<Building Owner's Name>> hereby accepts responsibility and agrees to the installation, maintenance and upkeep of the shared grease interceptor. These responsibilities shall include but are not limited to:

1. Payment of a Variance Fee of \$200.00 to be made payable to Little Rock Wastewater Utility.
2. Ongoing maintenance of the interceptor to keep it in good working order, making all necessary repairs and replacement.

Mr. Stanley Suel
Little Rock Wastewater Utility
Re: Variance Request - Proposed Shared Grease Interceptor
Installation, Maintenance, Repair, and Replacement Agreement

May 24, 2006
Page 2 of 2

3. Cleaning the interceptor on a regular basis to prevent grease and solids being discharged into the LRWU collection system.
4. Paying all Non-Compliance and other fees assessed by LRWU.
5. Performing all corrective action and other requirements as required by LRWU.

All inquires related to this Proposed Agreement should be directed to <<Name>>, <<Company Name>>, <<Address>>, <<City>>, <<State>>, <<Zip>>, <<Business Phone Number>>, <<Business Fax Number>>, and <<E-mail Address>>. If you have any questions please feel free to contact me at <<Business Phone Number>>.

<<Building Owner's Name>> understands should any questions arise we will contact either Susan Samples Ledbetter at 501-688-1532 or Stanley Suel at 501-688-1408 of Little Rock Wastewater Utility.

Two originals of this proposed agreement are enclosed. Should Little Rock Wastewater Utility approve and accept this proposed agreement, please sign and date, and return one of the executed agreements to <<Building Owner's Name>> or <<Authorized Agent>>.

Sincerely

<<Building Owner's Name>> or <<Authorized Agent>>
<<Name of Company>>

AGREEMENT ACCEPTED BY:

LITTLE ROCK WASTEWATER UTILITY

Suel, Director
Environmental Assessment Division

Date Accepted

Little Rock Wastewater Utility

Collection System Management Plan (CSMP)

Table of Contents

Letter of Transmittal

<u>Volume</u>	<u>Tab</u>	<u>Description</u>
1	A	Major Goals of CSMP
	B	Personnel Responsible for Implementing CSMP
2		Legal Authority of LRWU:
	A	Control of Private Inflow Sources
	B	Design/ Construction of Sewers & Connections
	C	Installation, Testing, & Inspection of New & Rehabilitated Sewers
	D	Address Flows from Satellite Municipal Collection Systems
	E	Implementation of Prohibitions of National Pretreatment Program
3		Lift Station Maintenance Division General Procedures
4		Collection System Maintenance Division General Procedures <i>The following are included within Volume 4:</i> <ul style="list-style-type: none">• Maintenance Procedures to Prioritize Collection System Activities• Collection System Preventive Maintenance• Identification, Prioritization, Rehabilitation of Structural Deficiencies• Equipment and Replacement Inventories• Sanitary Sewer Overflow Response Plan
5	A	Geographic Information System (GIS)
	B	Computerized Maintenance Management System
	C	Collection System Employee Training
6		Standard Specifications for Installation and Testing of New Collection System Facilities (Draft)
7		Trap Control Program
8		Typical Specifications for Rehabilitation of Collection System Facilities
9		System Evaluation and Capacity Assurance Plan <i>The following is included within Volume 9:</i> <ul style="list-style-type: none">• Current Capacity of Collection System and Treatment Facilities

Typical Specifications
for
Rehabilitation of Collection System Facilities



LITTLE ROCK, ARKANSAS

JUNE, 2004

LITTLE ROCK WASTEWATER UTILITY

SANITARY SEWER COMMITTEE

CHARLES GOSS

JIM PENDER

DALE WINTROATH

PATRICK MILLER

STUART MACKEY

UTILITY CHIEF EXECUTIVE OFFICER

REGGIE A. CORBITT, P.E.

UTILITY MANAGERS

MACK M. VOUGHT – MAINTENANCE, ENGINEERING AND CONSTRUCTION

JAMES A. BARHAM - FINANCE AND ADMINISTRATION

STAN MILLER. - OPERATIONS

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>NO. OF PAGES</u>
00001	Title Pages	2
00010	Table of Contents	1
01000	General Requirements and Procedures	2
01310	Design Submittals	2
02220	Excavation, Backfilling, and Compacting	12
02575	Pavement Repair	6
02605	Manholes	12
02607	Utility Line Bores	4
02610	Pipe and Fittings	6
02730	Sanitary Sewer Pipelines	10
02732	Sanitary Sewer Service Lines	10
02734	Inspection and Testing Of Sanitary Sewer Pipelines, Manholes, and Service Lines	10
02760	Pipeline Cleaning	6
02762	Pipeline Television Inspection	6
02766	Cured-In-Place Pipe Installed Using The Inversion Method	10
02769	Polyethylene Pipe Installed Using The Pipe Bursting Method	10
02770	Final Product Performance Requirements	4
02930	Lawns and Grasses	4
02935	Ground Cover	4
03300	Cast-In-Place Concrete	4
03400	Clearing For Construction Access	2
03500	Grout Fill Abandoned Sewer Pipelines	2
03700	Manhole Rehabilitation	14
	Little Rock Wastewater Utility – Standard Details	51

END OF SECTION 00010

SECTION 01000
GENERAL REQUIREMENTS AND PROCEDURES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. These specifications govern the construction, repair, and rehabilitation of sanitary pipelines, service lines, and manholes either by the Utility or its Contractors.
- B. These Specifications are written in imperative and abbreviated form. The imperative language is directed at the Contractor, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting “shall”, “the Contractor shall”, “shall be”, and similar mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words “shall be:” shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, all indicated requirements shall be performed whether stated imperatively or otherwise.

1.02 DEFINITIONS

- A. Engineer - The Department of Engineering Services of the Little Rock Wastewater Utility.
- B. Provide - Furnish and install, complete in place, operating, tested and approved.
- C. Products - The materials, systems, and equipment provided by the Contractor.

1.03 SUBSTITUTIONS

- A. Prebid: Refer to Section 00100.
- B. Postbid: Refer to Section 00700.

1.04 SUBMITTALS

- A. Five copies of submittal documents must be sent to the Utility.
- B. Construction procedures other than those outlined in this specification shall be submitted for approval of the Utility.
- C. Complete specifications covering any unusual or special construction procedures shall be submitted for approval and approval must be received prior to beginning any construction operations.
- D. A minimum review time of two (2) weeks shall be required on all submittals.

END OF SECTION 01000

SECTION 01310
DESIGN SUBMITTALS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Submit design calculations for liner to the Engineer to assure compliance with these specifications and standards recognized by the Little Rock Wastewater Utility.

1.02 RELATED REQUIREMENTS

- A. Section 00420 - Statement of Bidder's Qualifications.

1.03 CIPP LINER - PROCEDURES

- A. Submit to the Engineer five (5) separate bound copies of the design calculations used in determining the proper wall thickness for all pipe segments to be rehabilitated for this Project. Submit in separate sealed envelope as part of Bid package.
- B. Calculations shall reflect the following:
 - 1) 50 year design life
 - 2) Host pipe fully deteriorated (offering no structural support)
 - 3) Soil Modulus E = 700 psi
 - 4) Factor of safety 2 minimum
 - 5) Ovality factor = As Encountered, 10% maximum, 2% minimum (design)
 - 6) Maximum water depth = minimum depth of cover over existing pipe
 - 7) Surface live loads (Minimum H20 Highway)

- 8) Other conditions particular for this project which the Bidder feels is necessary
- C. State short term and long term modulus of elasticity as determined by the respective ASTM Standards.
- D. Submit formal calculations for Engineer's review with Bid in separate sealed envelope. Review period for Engineer will be three (3) working days. Calculations shall reflect thickness design for conditions specified herein for the segments indicated on the Drawings. Bidder shall summarize results of Calculations with a table indicating segment and proposed thickness. Bid amount for pipeline rehabilitation shall be based upon the design thickness for the segments for the size indicated in the Bid Schedule and the other items specified herein.
- E. In the event that the thickness the Bidder calculates is less than that calculated by the Engineer, the Bidder shall supply the thickness specified by the Engineer in accordance with the Contract Documents. Nothing in this section shall remove the Bidder from any liability or product warranty.

1.04 POLYETHYLENE LINER - PROCEDURES

- A. Bidder shall supply a polyethylene liner for the Pipe Bursting Method with a minimum SDR of 17.

END OF SECTION 01310

SECTION 02220

EXCAVATION, BACKFILLING, AND COMPACTING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Excavation, backfilling, and compaction for sanitary sewer pipelines, service lines, manholes and incidental construction.

1.02 RELATED WORK

- A. Section 02575 - Pavement Repair
- B. Section 02605 - Manholes
- C. Section 02730 - Sanitary Sewer Pipelines
- D. Section 02732 - Sanitary Sewer Service Lines
- E. Section 02930 - Lawns & Grasses
- F. Section 02935 - Ground Cover

1.03 QUALITY ASSURANCE

- A. Determine the moisture density relation of material in the laboratory in accordance with AASHTO Designation T-180 modified to use material passing a 3/4" sieve.
- B. Determine the field density of backfill in accordance with AASHTO Designation T-147.

1.04 REFERENCES

Not Used.

1.05 PROTECTION

- A. The Work included in this Project may require excavation and related activities in close proximity to existing buried and aerial utility lines and facilities, such as water lines, sewer lines, storm drains, natural gas lines, electrical power lines, telephone cables, and TV cables. Where their presence is known, the approximate location of such utilities is shown on the Drawings, but all such utilities and individual service lines are not shown. The Contractor shall be aware of the potential for such utility lines to conflict with intended construction efforts, and the Contractor shall use appropriate precautionary measures to locate and protect such utility lines and services so as to avoid damage and interruptions to service.
- B. The Contractor shall contact the owners of the various existing utilities lines and services as may be affected by the construction and solicit their assistance in identifying, locating, marking, and protecting these facilities prior to the beginning of any excavation or other work which might endanger the existing utilities. If such utilities are damaged or impaired because of the Contractor's actions or omissions, the Contractor shall be responsible for the cost of repairs or replacements of the affected or damaged utility or service line.
- C. The Contractor shall comply with the Arkansas One-Call System and shall alert potentially conflicting utility systems accordingly.
- D. In all cases, the Contractor is responsible for protecting public and private property; and, protecting any person or persons who might be injured as a result of the Contractor's work.

PART 2 - PRODUCTS

2.01 EMBEDMENT MATERIALS - GENERAL

- A. Embedment materials are restricted to Class I materials as described below and in accordance with ASTM D 2487, latest edition.

- B. Gravel material for select backfill across streets, roads, driveways, and for placement of "gravel" surfaced areas, shall be Class 7 material conforming to the Standard Specifications of the Arkansas Highway & Transportation Department, latest edition.

2.02 CLASS I EMBEDMENT MATERIAL

- A. Class I embedment material shall conform to class 1A embedment materials in accordance with ASTM D 2321, latest edition. Material shall meet the grading requirements of ASTM C 33, gradation 67, commonly referred to as ASTM #67 or 3/4" concrete aggregate. Maximum aggregate size shall be 3/4 inch. This includes materials such as crushed stone or rock, broken coral, crushed slag, cinders, or crushed shells.

2.03 SELECT NATIVE BACKFILL MATERIAL

- A. Select native material shall be good earth, sand, or gravel that is free from large rocks or hard lumpy materials. Never use materials of perishable, spongy or otherwise unsuitable nature as select material.

2.04 FLOWABLE FILL MATERIAL

- A. Flowable fill material for select backfill across streets, roads, and driveways shall be Flowable Select Material conforming to the Standard Specifications of the Arkansas Highway & Transportation Department, latest edition.

2.04 RIPRAP

- A. Riprap material for bank stabilization and erosion control shall conform to the Standard Specifications of the Arkansas Highway & Transportation Department, latest edition.

PART 3 - EXECUTION

3.01 EXCAVATION - GENERAL

- A. All excavation shall be carried accurately to the line and grade shown on the Plans and as established by the Engineer.
- B. When excavation is carried below or beyond that required, fill the over-excavated space with compacted Class I material, or with concrete as approved by the Engineer.
- C. The Contractor shall use a trench box or provide and install shoring where necessary to protect the labor, the work, or adjacent property. Shoring shall be maintained in place until the backfill has proceeded to a point where it can be safely removed.
- D. Dewater all excavations before any construction is undertaken. Install pipe only in dry trenches. Place concrete upon dry, firm foundation material only.

3.02 DISPOSAL OF EXCAVATED MATERIALS

- A. The Contractor shall be responsible for disposal of excess material, or disposal of excavated material unsuitable for backfilling.
- B. Disposal of excess material shall only be allowed on private property with written permission of the owner of the property. A copy of the written permission must be forwarded to the Engineer.

3.03 SEWER FLOW CONTROL

- A. **Plugging or Blocking:** A sewer line plug shall be inserted into the line upstream of the section or sections being worked. The plug shall be so designed that all or any portion of the sewerage can be released. After the work has been completed, flow shall be restored to normal.

- B. Pumping and Bypassing: The Contractor shall supply the pumps, conduits, and other equipment to divert the flow of sewage around the manhole section or sections in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm. The Contractor shall be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum.
- C. Flow Control Precautions: When flow in sewer line is plugged, blocked, or bypassed, sufficient precautions must be taken to protect the sewer lines from damage that might result from sewer surcharging. Further, precautions must be taken to insure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.
- D. The Owner may require a detail of the bypass plan to be submitted.

3.04 EXPLOSIVES

- A. Notify the Engineer in advance if the use of explosives is necessary for the efficient execution of the work.
- B. All work pertaining to the use of explosives shall be performed by qualified personnel.
- C. The Contractor shall obtain all the necessary permits from all governmental bodies. Copies of permits must be submitted to the Engineer and the Contractor shall keep a copy of all permits on the job site at all times.
- D. Follow all governing OSHA safety regulations.
- E. Exercise every precaution to prevent damage to adjoining improvements or property.
- F. Always use a blasting shield or mat.
- G. Any damage to private property resulting from the use of explosives is the liability of the Contractor.

3.05 TRENCH DEWATERING

- A. Dewater all trenches to the extent that sanitary sewer pipe can be placed on a dry and firm trench bottom. Never place pipe in a wet or unstable trench. The allowable dewatering methods are:
1. Well pointing; and,
 2. Over Excavation and Sump Pumping.
- Submit for approval other trench dewatering procedures.
- B. Well Pointing Procedure
1. Install well points where required to keep the excavation dry and the subgrade stable.
 2. Install well points when the excavation is within two (2) feet of the water table.
 3. Provide sufficient pumping equipment, in good working order and available at all times, to remove any water that accumulates in excavations so a stable subgrade is obtained.
 4. Keep all dewatering equipment in continuous operation until backfill is completed.
- C. Pump, pipe, and drain all water resulting from dewatering operations into existing drainage structures, such as storm sewers, ditches or streams. Prevent flooding of streets or private property.
- D. Soil that cannot be properly dewatered: excavate and install Class I bedding material tamped in place to such a depth to provide a firm trench bottom.
- E. Divert surface runoff water away from the excavation. Where the excavation crosses natural drainage channels, care should be taken to prevent unnecessary damage or delays. Route diverted surface water into existing drainage structures, such as storm sewers, ditches, or streams. Prevent flooding of streets or private property.

- F. Discharge of trench water or surface runoff into a sanitary sewer is a violation of City of Little Rock Ordinance and violators will be prosecuted as prescribed by law.

3.06 SHEETING AND SHORING

- A. Provide sheeting and shoring of trenches to:
 - 1. Protect the safety of workers;
 - 2. Provide suitable means for constructing the sewer line;
 - 3. To maintain the trench free from slides or cave-ins;
 - 4. And, to protect public or private property, including existing utilities, buildings, streets, or other structures that are close to the trench.
- B. Follow all governing OSHA safety regulations.
- C. Keep shoring in place until the backfill has proceeded to a point where it can safely be removed.

3.07 EXCAVATION – SEWER LINE TRENCHES

- A. Trench For Gravity Sewer Line - During excavation, all sewer pipe to be replaced shall be removed and disposed of offsite at a suitable landfill. Trench excavation for gravity sewer lines shall be kept within the maximum width limits as shown on the Drawings. The specified maximum trench 12-inches above the outside top of the pipe shall not be exceeded unless specifically authorized by the Engineer.
- B. Trench For Gravity Sewer Line in Paved Area – Prior to excavation in paved areas, the Contractor shall saw-cut (or other acceptable method approved by the Engineer) the existing pavement to minimize the destruction of the existing pavement outside the limits of the trench. The maximum trench width for the installation of gravity sewer lines, up to 12-inches in diameter, in paved areas shall not exceed 36-inches without written approval from Engineer. Contractor is

responsible for damage to paved areas by construction equipment outside the limits of trench excavation.

- C. Keep the trench widths within the limits specified below. This requirement is to avoid superimposed loading in excess of the designed and specified pipe strength; and to provide sufficient room for proper installation and bedding of sewer pipe.

Inside Pipe Diameter <u>(Inches)</u>	Maximum Width of Trench From Top of Pipe to <u>2' Above Top of Pipe</u>
6, 8, 10	2' - 6"
12, 14, 15, 16	3' - 0"
18, 21	3' - 6"
24, 30	4' - 0"
36	4' - 6"

- D. If necessary to prevent sliding and caving cut, the trench banks back on a slope above an elevation two (2) feet above the outside top of the pipe to reduce the earth load on the trench sides. Never exceed the specified maximum width until 2 ft. above the outside top of the pipe. See Section 00820 - 29CFR Part 1926 Subpart P.
- E. Do not advance trench excavation more than three hundred (300) feet ahead of the completed pipe work and backfill.

3.08 OVER EXCAVATION

- A. Over excavate below the required subgrade only under the conditions as listed below.
 1. The soil at the bottom of the trench is mucky or in such condition that it cannot be properly shaped and graded.
 2. The subgrade material is too soft to properly support the pipe.

- B. After over excavating, provide and install a fill consisting of Class I bedding material thoroughly tamped into place in a maximum of eight (8) inch lifts up to an elevation sufficient to prepare the subgrade for the particular bedding class required.

3.09 BEDDING AND BACKFILLING - GENERAL

- A. Install all sewer pipe using Class I embedment materials. Refer to Standard Detail Drawings.
- B. It is essential that the complete backfill be done in such a manner to minimize voids in the backfill.
- C. Backfilling includes refilling and consolidating the fill in the excavation up to the surrounding ground surface or road grade.
- D. Use select native materials for backfilling in unpaved areas.
- E. Where trenches are to be located beneath existing or proposed streets, drives, and parking areas, all backfilling procedures shall be in accordance with the Standard Detail Drawings.
- F. Use mechanical compaction devices manufactured for that purpose to compact backfill materials in trenches.

3.10 BEDDING AND BACKFILLING RIGID PIPE

- A. Bed rigid pipe as described below and in accordance with the standard trench details shown in Standard Detail Drawings. The intent of the bedding is to create a uniform support which will protect the pipe from localized stress points and to provide for a well graded trench bottom.
- B. Extend the trench excavation to a minimum depth of six (6) inches below the bottom of the pipe.
- C. Install bedding material in no greater than eight (8) inch lifts.

- D. Compact all bedding material to a minimum density of 80% standard proctor as outlined in AASHTO T-99.
- E. Install pipe in accordance with Section 02730 - Sanitary Sewer Pipelines.
- F. Backfill the excavation.

3.11 BEDDING AND BACKFILLING FLEXIBLE (PVC) PIPE

- A. A product manufacturer's representative shall be on site during initial installation of ALL profile sewer pipe to ensure that the contractor is handling and installing the pipe properly.
- B. Bed flexible (PVC) pipe as described below in accordance with Standard Detail Drawings. The intent of this bedding is to provide uniform support for the flexible pipe.
- C. Extend the trench excavation to a minimum depth of six (6) inches below the bottom of the pipe.
- D. Install bedding materials in no greater than eight (8) inch compacted lifts. Install bedding from six (6) inches below the pipe to six (6) inches above the pipe. Shovel slice bedding beneath the pipe haunches.
- E. Compact all bedding material to a minimum density of 80% standard proctor as outlined in AASHTO T-99.
- F. The maximum depth of bury for PVC pipe is sixteen (16) feet. Any depths greater than sixteen (16) feet require rigid pipe.
- G. Backfill and compact the excavation.

3.12 MANHOLE EXCAVATION

- A. Excavate the base area no larger than necessary to provide an adequate base.
- B. Dewater all excavations if required before starting any permanent construction.
- C. Provide sheeting and shoring as required.

- D. Leave at least twelve (12) inches between the outer surface of manholes and the excavation or shoring.
- E. If over excavation occurs, bring the excavation back to proper grade with either:
 - 1. Class I bedding material compacted to 80% standard proctor; or,
 - 2. Concrete poured monolithically with the base.

3.13 BACKFILLING MANHOLES

- A. Do not backfill around manholes until adequate strength has been obtained from the manhole to support the backfill without damage to the manhole.
- B. Never backfill poured-in-place manholes until the concrete has cured 48 hours.
- C. Backfill manholes with select native material compacted to a density sufficient to prevent excessive settlement.
- D. In public streets or roads backfill and compaction requirements shall be the same as for trench crossings.

3.14 EXCAVATION, BACKFILLING AND COMPACTION FOR SEWER FORCE MAINS

- A. Excavate trenches for force mains to:
 - 1. Provide a minimum cover of thirty (30) inches over the top of pipe barrel; and,
 - 2. Allow for the proper bedding material to be installed.
- B. Excavate trenches wide enough for pipe installation and joint makeup. The trench width at the top of the pipe must never exceed the outside diameter of the pipe plus two (2) feet.
- C. Where no bedding is required, accurately grade the trench so that the pipe will be in continuous and uniform contact with undisturbed soil for the full length of the pipe.
- D. Excavate for pipe bells to ensure a smooth bearing surface.

- E. If the soil at the bottom of the trench is mucky or unstable so that it cannot properly support the pipe, over excavate and backfill as described above for gravity pipelines.
- F. Backfill the trench and compact the materials as stated above for gravity lines.

3.15 EXCAVATION, BACKFILLING AND COMPACTION FOR MISCELLANEOUS STRUCTURES

- A. Excavate a sufficient distance from walls and footings to allow for forms and for proper inspection.
- B. Leave at least (12) inches between the outer surface of miscellaneous structures and the excavation or shoring.

3.16 RIPRAP

- A. The slope shall be properly prepared to receive riprap and shall include all necessary excavation and backfill and the construction of a toe trench if required.
- B. Place riprap as shown on the Drawings or as directed by the Engineer.

END OF SECTION 02220

SECTION 02575
PAVEMENT REPAIR

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers the materials and procedures used in the repair of roads, streets, or other public rights-of-way where a sewer line or structure is proposed.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling and Compacting.

1.03 REGULATIONS AND STANDARDS

- A. All permanent repairs of streets, roads, or other public rights-of-way shall comply with the requirements shown on the Standard Detail Drawings and Tables. The Contractor is responsible for following the requirements of all local Ordinances, Regulations, or Codes governing the repairs to roads, streets, or other public rights of way. In particular:
1. Repair of State Highways: per requirements of the Arkansas State Highway Commission.
 2. Repair of county roads: per requirements of the County Roads Department.
 3. Repair of City of Little Rock streets: per the requirements of Chapter 30, Article V – Restoration of Excavation and Cuts in Streets or Alley Rights-of-Way, of the City of Little Rock Municipal Code, latest edition.
 4. Permit for street cut and repairs shall be furnished by the Contractor.

- B. Temporary Repairs: Per requirements of the governmental agency having jurisdiction and these specifications. Must provide a minimum of a cold mix temporary patch.

PART 2 - PRODUCTS

2.01 MATERIALS: per the applicable standards referenced above.

PART 3 - EXECUTION

3.01 ASPHALT PAVEMENT REPAIRS

- A. Asphalt pavement shall be replaced in accordance with details shown on the Drawings and all materials shall be furnished and installed in accordance with the Arkansas Highway and Transportation Department "Standard Specifications for Highway Construction." Before replacing paved surfacing, the existing pavement shall be cut, sawed, or trimmed along straight and vertical lines. The condition of the backfill and base course material, with special regard to the degree of compaction, may be checked and approved by the Owner before any surfacing is replaced.
- B. Before placement of new surface material, all excess material shall be removed to a minimum depth of ten (10) inches. A minimum of eight (8) inches of 3000 psi concrete shall be placed within two (2) inches of the street surface. Before placing asphalt, the concrete and sides of the cut shall be primed with MC-30 at the rate of 0.3 gallon per square yard.
- C. Minimum thickness of asphalt surface replacement shall be two (2) inches, unless shown otherwise. Hot mix asphalt material shall be delivered to the site in covered vehicles, at 275 deg-F (minimum), and immediately spread to a thickness to match adjacent surfaces after rolling. Compaction shall be by steel-wheel roller to a smooth, uniform surface matching adjacent surfaces.

- D. Any settlement or failure of surface replacement shall be repaired or replaced by the Contractor.
- E. All pavement repairs shall be in accordance with the Detail Drawings as shown in the Plans.
- F. All pavement markings shall be restored to new conditions per the requirements of the governmental agency having jurisdiction.

3.02 ASPHALT RESURFACING

- A. Where work done involves four hundred (400) continuous linear feet or more of the paved portion of the public right-of-way, asphalt pavement shall be resurfaced in accordance with details shown on the Drawings and all materials shall be furnished and installed in accordance with the Arkansas Highway and Transportation Department "Standard Specifications for Highway Construction." Before replacing paved surfacing, the existing pavement shall be cut, sawed, or trimmed along straight and vertical lines.
- B. Before placement of new surface material, all excess material shall be removed as follows:
 - 1. Single Lane Resurfacing: The entire lane width from the edge of street to the centerline shall be removed by milling to a minimum depth of one and one-half (1 1/2) inches as shown in the Little Rock Wastewater Utility Details.
 - 2. Two Lane Street Resurfacing:
 - a. Existing Curb and Gutter: Beginning at the existing curb and gutter, mill one and one-half (1 1/2) of existing asphalt material tapering to daylight a distance of six (6) feet from the gutter as shown in the Little Rock Wastewater Utility Details. Repeat on opposite side of street.
 - b. No milling is required on sections where curb and gutter does not exist.

- C. For asphalt resurfacing, the base material shall be primed with MC-30 at the rate of 0.3 gallon per square yard.
- D. Minimum thickness of asphalt resurfacing shall be one and one-half (1-1/2) inches, unless shown otherwise. Hot mix asphalt material shall be delivered to the site in covered vehicles, at 275 deg-F (minimum), and immediately spread to a thickness to match adjacent surfaces after rolling. Compaction shall be by steel-wheel roller to a smooth, uniform surface matching adjacent surfaces.
- D. Any settlement or failure of surface replacement shall be repaired or replaced by the Contractor.
- E. All pavement repairs shall be in accordance with the Detail Drawings as shown in the Plans.
- F. All pavement markings shall be restored to new conditions per the requirements of the governmental agency having jurisdiction.

3.03 CONCRETE PAVEMENT REPAIRS

- A. Concrete pavement shall be replaced in accordance with details shown on the Drawings and all materials shall be furnished and installed in accordance with the Arkansas Highway and Transportation Department "Standard Specifications for Highway Construction." Before replacing paved surfacing, the existing pavement shall be cut, sawed, or trimmed along straight and vertical lines. The condition of the backfill and base course material, with special regard to the degree of compaction, may be checked and approved by the Owner before any surfacing is replaced.
- B. Before placement of concrete street material, all excess material shall be removed to a minimum depth of eight (8) inches. A minimum of eight (8) inches of 3000 psi concrete shall be placed to match the line and grade of existing street surface.
- C. Paved walkways disturbed or damaged in the process of construction shall be replaced in kind. Walkway shall be replaced to same width and thickness as original but in no case less than 4-inches thick. Joint system in replacement shall be at same style and interval as that in the undisturbed walkway.

- D. All pavement repairs shall be in accordance with the Detail Drawings as shown in the Plans.
- E. All pavement markings shall be restored to new conditions per the requirements of the governmental agency having jurisdiction.

3.04 GRAVEL SURFACING

- A. Gravel surfacing shall be replaced to at least the compacted thickness of the original surface. All excavated material shall be removed from gravel surfaces affected by construction and sufficient new gravel material shall be placed to restore the original surfaced area.
- B. Gravel material for placement of "gravel" surfaced areas, shall be Class 7 material conforming to the Standard Specifications of the Arkansas Highway & Transportation Department, latest edition.

3.05 TEMPORARY SURFACING

- A. Comply with the requirements stated above or as otherwise approved to adequately maintain traffic and proper drainage.

3.06 TRAFFIC CONTROL

- A. Whenever traffic flow restrictions of any kind are anticipated, the Contractor will be required to contact the City of Little Rock Traffic Control Division to be given permission to obstruct traffic flow.
- B. Street closing permits must be obtained from proper government agencies.
- C. Construction signs shall be placed immediately adjacent to the Work, at such locations as traffic demands.
- D. The Contractor shall notify law enforcement agencies, fire departments, and other impacted agencies and personnel.

- E. Contractor will be required to submit a barricade plan to Little Rock Public Works and the Engineer.

END OF SECTION 02575

SECTION 02605
MANHOLES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers the materials and procedures used in the construction and repair of sanitary sewer manholes.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling, and Compacting.
- B. Section 02730 - Sanitary Sewer Pipelines
- C. Section 02732 - Sanitary Sewer Service Lines
- D. Section 02766 - Cured-In-Place Pipe Installed Using The Inversion Method
- E. Section 02769 – Polyethylene Pipe Installed Using the Pipe Bursting Method
- F. Section 03300 - Cast-in-Place Concrete.

1.03 QUALITY ASSURANCE

- A. Not Used.

1.04 SUBMITTALS

- A. Furnish Shop Drawings and Submittal Data for approval prior to the delivery of any pre-cast manhole sections.
- B. Submit for approval any materials not listed specifically below.

1.05 REFERENCES

- A. Not Used.

1.06 MANHOLE DIMENSIONS AND LAYOUT

- A. Construct all manholes in accordance with the Standard Manhole Details in Standard Detail Drawings.
- B. The required dimensions on manholes are:
 - 1. Cone section height: 24 inches, minimum; 30 inches, maximum.
 - 2. Throat section height: 12 inches, maximum.
- C. Locate the manhole so the centerlines of all pipelines entering and leaving pass through the center of the manhole.

1.07 PROTECTION

- A. In all cases, the Contractor is responsible for protecting public and private property; and, protecting any person or persons who might be injured as a result of the Contractor's work.
- B. All utilities shown on the plans may not represent the exact location; however, the Contractor is responsible for verifying these locations and contacting "Arkansas One Call System" before excavating.

PART 2 - PRODUCTS

2.01 MANHOLE BRICK

- A. Radial manhole brick or common of first quality, well burnt, non-porous and free from warps, cracks, broken edges or other defects which might make the constructed manhole leak or structurally unsound.

- B. Conform to the requirements of AASHTO, M 114, Grade SW.

2.02 WATER FOR MORTAR AND GROUT

- A. Water: Potable water free from injurious amounts of acids, alkalis, oils, sewage, vegetable matter, and dirt.

2.03 CEMENT

- A. Portland Cement, conforming to AASHTO M 85, Type I.

2.04 MANHOLE BRICK MORTAR

- A. Hydrated Lime: Use only when approved by Engineer. If approved, use only first quality mason's hydrate composed of at least 95% calcium and magnesium oxides (combined) and not more than 5% carbon dioxide. Submit brand and manufacturer for approval.
- B. Masonry cement is prohibited.
- C. Fly ash is prohibited as a substitute for cement.

2.05 MANHOLE GROUT

- A. Grout: By volume, one part Portland cement to four parts sand. Add minimum amount of potable water to achieve a workable consistency.
- B. Masonry cement is prohibited.

2.06 PRECAST CONCRETE MANHOLES

- A. Conform to the latest requirements of ASTM C478.
- B. Never transport sections to the site until they have cured for at least ten (10) days.

- C. Mark each piece plainly with manhole numbers and date of manufacture so it can be installed in the proper location, as shown on the plans.
- D. Make sure factory-installed cutouts in the bottom section are appropriate for the pipe being laid.
- E. Pipe connections at manhole - Cutouts should be equipped with rubber boots to ensure a watertight connection. Material shall be equal to A-lok, Z-lok, or Z-lok XP connector, as manufactured by A-Lok Products, Inc.
- F. Joint Sealant - Flexible rubber sealant for joints in pre-cast manhole sections shall provide permanently flexible watertight joints, shall remain workable over a wide temperature range and shall not shrink, harden or oxidize upon aging. Material shall be equal to Forsheda Pipe Seal Corporation and shall meet ASTM C 443 and ASTM C 361 requirements.
- G. The frame for the lid shall be installed when cone section is cast.
- H. Heat-Shrinkable Encapsulation:
 - 1. Wrapid Seal as manufactured by Canusa CPS
 - 2. Or Approved Equal

2.07 CAST-IN-PLACE MANHOLES

- A. Construct with Class A concrete only as outlined in Section 03300 - Cast-In-Place Concrete.
- B. Reinforcement shall be as outlined in Section 03300 - Cast-in-Place Concrete.
- C. The frame for the lid shall be installed when the manhole is constructed.

2.08 FIBERGLASS MANHOLE – 2’ DIAMETER

- A. Fiberglass reinforced polyester (FRP) manhole shall be manufactured from commercial grade polyester resin with fiberglass reinforcements.
- B. Conform to the latest requirements of ASTM D-3753.

- C. Fiberglass manhole shall consist of two sections. The base section shall include a gasket system to provide a seal between the top and base section.
- D. The top section of the manhole must have the ability to be raised, lowered, or removed without disturbing the base section.
- E. Each manhole shall be marked on the inside and outside with the following information:
 - 1. Manufacturer's name or trademark
 - 2. Manufacturer's factory location
 - 3. Manufacturer's serial number
 - 4. Total length
- F. Stubouts and connections shall be by the use of Inserta-Tee fittings.
- G. The frame for the lid shall be installed when the manhole is constructed.
- H. 2' diameter fiberglass manholes will not be permitted where depths exceed 4'.
- I. Fiberglass manhole shall be manufactured by L.F. Manufacturing, Inc., Giddings, Texas, or equal.

2.09 MANHOLE DROP

- A. Drop on the outside of the manhole: Ductile iron pipe with mechanical joint fittings as specified in Section 02610 - Pipe and fittings.

2.10 STANDARD MANHOLE RING AND COVER

- A. Cover must have the words LITTLE ROCK SANITARY SEWER cast in the top. Also, include two closed pick holes in top side of cover.
- B. Minimum combined weights of the manhole ring and cover is 240 pounds. Minimum cover weight is 115 pounds. Minimum ring weight is 125 pounds.
- C. All castings: Free from porosity, blowholes, hard spots, shrinkage, distortion and other defects; smooth and well cleaned by sandblasting; manufactured true to pattern.

- D. Ring and cover dimensions: Refer to Standard Detail Drawings. Final casting dimensions may vary one-half the maximum shrinkage possessed by the metal or no more than $\pm 1/16$ inch per foot.
- E. Lid and ring bearing surface: smooth finish, non-rocking design or machined bearing surfaces to prevent rocking and rattling under traffic.
- F. Cast Iron: ASTM A 48, Class 35B.
- G. Ductile Iron: ASTM A 536, Grade 65-45-12.

2.11 WATERTIGHT MANHOLE RING AND COVER

- A. Dimensions, casting quality, material: Same as Standard manhole ring and cover.
- B. Cover: machined with dovetail groove in cover for self sealing rubber gasket.

2.12 MANHOLE STEPS

- A. Manhole steps: corrosion resistant, coated, and reinforced with steel per ASTM C-478.

2.13 RUBBER WATERSTOP GASKETS

- A. Waterstop gaskets shall be required at **ALL** manhole connections. Manhole seals shall be concrete manhole adapter by Fernco, or approved equal

2.14 MANHOLE GROUT

- A. Cementitious non-shrink grout for use in manholes shall be one specially formulated for stopping active infiltration and filling voids in manholes and similar locations. Grout mix shall provide a quick-setting, volume-stable, cementitious product suitable for patching the interior of manholes when mixed

and applied according to the manufacturer's recommendations. Grout mix shall be Strong Seal QSR, or equal.

2.15 MANHOLE RISER RING

- A. Manhole riser rings shall be compatible with the size and type of manhole cover with which it will be used.

PART 3 - EXECUTION

3.01 MANHOLES - GENERAL

- A. Perform excavation and prepare base area in accordance with Section 02220 - Excavation, Backfilling, and Compacting for Sanitary Sewer Pipelines.
- B. Never install base in a water filled excavation.
- C. Place base per the Standard Detail Drawings and Section 03300 - Cast-in-Place Concrete. Extend base a minimum of six inches beyond finished sides of manhole.
- D. Extend all pipes entirely through the manhole wall so that a joint occurs approximately six inches, but no greater than 12 inches, outside the manhole wall.
- E. After manhole is constructed, wait no less than 48 hours, then backfill per Section 02220 - Excavation, Backfilling, and Compacting.

3.02 BRICK MANHOLE CONSTRUCTION (Only in Approved Locations)

- A. Lay radial brick or common brick in a full mortar bed with the vertical joints between bricks entirely filled with mortar.
- B. Horizontal joints and interior joints: not less than 1/4" nor more than 1/2" in thickness.
- C. In vertical walls, lay brick in alternate courses of headers and stretchers with consecutive courses breaking joints.

- D. Use a full brick next to the pipes and a bat in the interior of the course where bats are necessary in forming the closures around pipes.
- E. Remove, clean, and relay with fresh mortar any brick displaced during construction.
- F. Plaster the vertical interior surface and the entire exterior surface with mortar not less than 1/2" in thickness. Finish the plastered mortar to a uniform smooth surface. Keep plastered mortar moist for 48 hours afterwards.
- G. Grout lifting holes.

3.03 CAST-IN-PLACE MANHOLES

- A. Dimension and layout: Per Little Rock Wastewater Utility Detail Drawings and Tables. The top section or cone must be concentric with the barrel unless otherwise noted.
- B. The frame shall be set in accordance with Little Rock Wastewater Utility Details.
- C. Install rubber waterstop gaskets in the walls around all pipes.
- D. Interior finish: Smooth, free of fins or sharp edges.
- E. Invert to be constructed in accordance with Little Rock Wastewater Details.
- F. Care should be taken to prevent the end of the pipe from deflecting, due to loads imposed by the weight of the concrete.
- G. Construction joints on manholes of excessive depth shall be connected with reinforcement approved by the Engineer.

3.04 PRECAST MANHOLES

- A. Dimension and layout: Per Little Rock Wastewater Utility Detail Drawings and Tables. The top section or cone must be concentric with the barrel unless otherwise noted.
- B. The bottom section for pre-cast manholes shall be manufactured as an integral part of the manhole base slab.
- C. Install remaining sections in a truly vertical plane.

- D. Fill space between pipe and periphery of cutout entirely with grout.
- E. Grout joints between sections inside and outside.
- F. Interior finish: smooth, free of fins or sharp edges.
- G. Invert to be constructed the same as a cast-in-place manhole.
- H. Grout lifting eyes for manholes.
- I. Heat-Shrinkable Encapsulation:
 - 1. Apply an external 18" sheet of heat-shrinkable encapsulation around the manhole frame in accordance with manufacturer's specifications and Little Rock Wastewater Utility Details.
 - 2. Apply an external 6" sheet of heat-shrinkable encapsulation around all cold joints in accordance with manufacturer's specifications and Little Rock Wastewater Utility Details.

3.05 FIBERGLASS MANHOLE – 2' DIAMETER

- A. Installation of fiberglass manhole must be within strict accordance with the manufacturer's specifications.
- B. Fiberglass base: Concrete may be used to form bench area and invert. Concrete may also be used on top of anti-floatation ring as required for buoyancy.
- C. Concrete base: Concrete base shall be a minimum of 6" thick. Concrete base shall extend a minimum of 6" beyond manhole outside wall. Lower manhole into wet concrete base to a minimum depth of 4". Minimum 2" thick concrete bearing surface beneath bottom edge of the manhole is required. Plumb manhole with the use of a level. On the inside concrete shall form the bench and invert area and rise a minimum of 4" above incoming lines.
- D. Backfill: Backfill shall be done as soon as the concrete base has hardened enough to provide sufficient support for manhole and fill material. Backfill should be placed evenly around manhole in 12" maximum lifts and should be thoroughly tamped to 95% Standard Proctor Density. Backfill material shall be subject to approval by the Engineer.

- E. Install iron frame and cover with a sealant between manhole and iron frame. Sealant shall be Adeka Ultra Seal P-201, or equal.

3.06 DROP MANHOLES

- A. Install a drop manhole when the vertical difference between the pipe entering and leaving the manhole exceeds two (2) feet.
- B. Construct manhole base, barrel, and top per the requirements for brick, cast-in-place, or pre-cast manholes.
- C. Construct drop of ductile iron pipe with mechanical joint fittings as per Standard Details.
- D. Encase the 90-degree bend in Class A or B concrete as per Standard Details.
- E. Extend the ductile iron pipe a minimum of five (5) feet beyond the manhole excavation before changing pipe materials.

3.07 MANHOLE FRAME AND COVER

- A. Set the manhole frame in Class A concrete as shown on the Standard Details as an integral part of the manhole construction.
- B. Set manhole frame and cover top level and to the elevation shown on the Drawings. In public rights-of-way, there set the ring and cover flush with pavements, sidewalks, or other paved surfaced areas.

3.08 MANHOLE STEPS

- A. Install manhole steps at the locations and intervals shown on the Standard Details. Locate steps so they do not interfere with flow in pipelines.
- B. Locate the first step approximately 27 inches down from the top of the manhole ring.

- C. Anchor steps securely with grout; or, embed them in cast-in-place manholes. Either method must develop adequate bearing support.

3.09 MANHOLE INVERT AND STEPS

- A. Invert depth at the flow line: Approximately one-half the pipe diameter.
- B. In curved inverts, make curves with the longest possible radius to facilitate smooth flow.
- C. Invert shape: Semicircular.
- D. Invert materials and finish: Class A Concrete, smooth finish.
- E. Invert grade: Constant, smooth grade; no offsets.
- F. Bench: Slope grout upward from the edge of the invert to the manhole wall.
- G. Form a flow channel in the bench for any services stubbed into manhole. Form invert and finish per above.
- H. Cut the upper half of any pipe extending inside the manhole wall flush with the wall. Smooth rough edges with grout.

3.10 MANHOLE REPAIRS

- A. Make all repairs in accordance with these specifications.
- B. Use manhole grout in patching around new taps.
- C. Plaster all brickwork with mortar.

3.11 SEALING LINER IN MANHOLES

- A. Seal pipe at manhole as specified in Sections describing the pipe line rehabilitation process being used.

3.12 MANHOLE RISER RING

- A. Manhole riser rings may be used to raise manhole covers to grade.
- B. The throat section height shall not exceed 12 inches. The throat section shall be defined as the distance from the bottom of the integral cast manhole ring to the top of the manhole cover.

END OF SECTION 02605

SECTION 02607
UTILITY LINE BORES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Provide encasement pipe jacked through bored tunnel for crossing of utility pipe lines under roadways where shown in the Contract Documents.
- B. Pulling or jacking carrier pipe through encasement pipe.
- C. Providing brick closures at ends of encasement pipe.

1.02 RELATED WORK

- A. Section 02730 - Sanitary Sewer Pipelines

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM A139 Specification for Electric-Fusion (Arc) - Welded Steel Pipe (sizes 4" and over).
 - 2. ASTM A211 Specifications for Spiral-welded Steel or Iron Pipe.
- B. American Welding Society (AWS):
 - 1. AWS D1.1 Structural Welding Code.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Encasement pipe: Smooth wall steel pipe conforming to ASTM A139 (Grade B), ASTM A211, or AWWA C202 (Grade B), with ends prepared for welded joints.
- B. Welding materials: Type required for materials being welded and conforming to applicable AWS Specifications.
- C. Sand: Clean, industrial sand, concrete sand, masonry sand, or other type approved by Engineer.
- D. Skids or chocks: Pressure treated wood shaped to fit outer circumference of carrier pipe and inner circumference of encasement pipe.
- E. Furnish stainless steel bands to secure skids or chocks to carrier pipe.
- F. Brick: New or used dry brick: or concrete brick.
- G. Mortar: Type "M".

2.01 MINIMUM THICKNESS

- A. Minimum thickness for encasement shall be as follows:

<u>Diameter of Casing Pipe</u>	<u>Minimum Thickness</u>
12" OR LESS	.2500"
OVER 12" – 18"	.3125"
OVER 18" – 22"	.3750"
OVER 22" – 28"	.4375"
OVER 28" – 34"	.5000"
OVER 34" – 42"	.5625"
OVER 42" – 48"	.6250"

PART 3 - EXECUTION

3.01 EXCAVATION

- A. Highway Bore: Do not set up equipment or begin excavating pit on state highway without permission of Arkansas Highway and Transportation Department District Engineer or his authorized representative.
- B. Railroad Bore: Do not set up equipment or begin excavating pit on or near railroad property without permission of the respective railroad company.
- C. Highway and railroad permits will be obtained by the Owner. Contractor shall coordinate with Owner on obtaining Right-of-way permit from railroad and shall conform to all requirements there in.

3.02 INSTALLATION, ENCASEMENT PIPE

- A. General: Install encasement pipe at grade and alignment shown on Drawing. Allow for height of skids or chocks when establishing grade for gravity line encasement pipe. Refer to Standard Detail Sheet.
- B. Bores:
 - 1. Excavate pits and trenches required at each side of crossing to minimum width and length necessary for boring and jacking operation and carrier pipe installation.
 - 2. Carefully set timber or steel guide rails in pit to attain specified grade and alignment.
 - 3. Keep pit pumped free of standing water. Maintain pit bottom to provide stable base for rails and equipment and firm footing for workmen. Granular material used in bottom of pit will not be paid for as "Additional Trench Bedding".
 - 4. Provide temporary sheeting and bracing as necessary to prevent earth slides.

5. Bore tunnel and simultaneously jack encasement pipe forward one section at a time. Connect sections by full penetration butt welding performed in accordance with AWS D1.1.
6. Remove excavated soil from boring operation as it enters pit and dispose of it offsite.

3.03 INSTALLATION, CARRIER PIPE

- A. General: Joint pipe as specified in Section 02730 Sanitary Sewer Pipelines. Pull or jack carrier pipe through encasement pipe. Do not allow cables or jacks to be in direct contact with carrier pipe while pulling or jacking pipe. Use timber or padded steel member.

3.04 BACKFILL

- A. Prior to backfill, seal ends of encasement pipe with brick and mortar and install vent as shown in Standard Detail Sheet.
- B. Use material excavated from pit.
- C. Backfill against ends of encasement pipe.
- D. Backfill pit and carrier pipe in same manner as specified in Section 02730 Sanitary Sewer Pipelines.

3.05 CLEANUP

- A. Clean up ground surface around work area in same manner as specified for line work in Section 02220 - Excavation, Backfilling and Compacting.

END OF SECTION 02607

SECTION 02610
PIPE AND FITTINGS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers the manufacture, transportation, and storage of pipe, pipe joints, and fittings for sanitary sewer pipelines and service lines.
- B. Use only pipe, fittings, and adapters approved by the Engineering Division of the Little Rock Wastewater Utility.
- C. Use bends, tees, plugs, wyes, or other approved fittings constructed from the same material as the pipe in which they are installed. Use only standard, approved fittings.

1.02 RELATED WORK

- A. Section 02605 - Manholes
- B. Section 02730 - Sanitary Sewer Pipelines
- C. Section 02732 - Sanitary Sewer Service Lines
- D. Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines

1.03 SUBMITTALS

- A. Use of materials other than those specifically listed below is prohibited.
- B. Submit the manufacturer's certificate that the pipe meets with these Specification requirements including material testing requirements.

1.04 REFERENCES

Not Used.

PART 2 - PRODUCTS

2.01 PROHIBITED PIPE MATERIALS

- A. The following materials are specifically forbidden for use either in city sewers or service lines:
1. Asphalt impregnated fiber tube pipe.
 2. Concrete pipe.
 3. Open profile PVC pipe as defined in ASTM F794.
 4. "No Hub" cast iron soil pipe or other non bell and spigot pipe.

2.02 SERVICE LINES

- A. Service lines are four (4) inches in diameter or larger.
- B. Furnish one of the following:
1. Cast iron soil pipe: per ASTM A 74 - Bell and Spigot pipe with rubber gaskets, ASTM C 564. Joints: push on equipped with a rubber gasket.
 2. Ductile iron pipe: per ANSI A 21.51 with joints same as water main pipe.
 3. Ductile Iron pipe: per ASTM A 746 with push on, rubber gasket joints.
 4. Polyvinyl chloride (PVC) pipe for service lines shall be SDR 21, 200psi and shall be completely encased as required for larger PVC pipe.

2.03 DUCTILE IRON PIPE FOR GRAVITY MAINS

- A. Minimum wall thickness: Thickness Class 50 or 51 according to ANSI/AWWA-C150/A 21.50: Thickness Design of Ductile Iron Pipe

- B. Gravity Sanitary Sewer ASTM A 746: Ductile Iron Pipe Gravity Sewer Pipe
- C. Cement lining (Double Thickness): ANSA/AWWA C 104/A 21.4: Cement Mortar Lining for Gray and Ductile Iron Pipe.
- D. Joint connections, pipe and fittings:
 - 1. Push on and mechanical rubber gasket joints: ANSI/AWWA C111/A21.11.
 - 2. Flanged: ANSI/AWWA C115/A21.15, ANSI B16.1.
 - 3. Grooved and shouldered ANSI/AWWA C606.
- E. Corrosion Control
 - 1. Polyethylene wrap in tube or sheet form conforming to the requirements of ANSI/AWWA C105/A21.5.

2.04 POLYVINYL CHLORIDE (PVC) GRAVITY SEWER PIPE (Solid Wall)

- A. Pipe eight (8) inches in diameter and larger: conform to ASTM D 3034 and D 3915. Maximum standard dimension ratio (SDR) shall be thirty five (SDR35).
- B. Pipe six (6) inches in diameter: conform to ASTM D 3034. Maximum standard dimension ratio (SDR) shall be twenty six (SDR26).
- C. Joint connections: push on, elastomeric gasket type conforming to ASTM D 3212.

2.05 POLYVINYL CHLORIDE (PVC) GRAVITY SEWER PIPE REPAIR COUPLINGS

- A. Use PVC repair couplings instead of flexible rubber coupling when connecting two PVC pipes.
- B. Install repair couplings in accordance with manufacturer's recommendations.

2.06 PVC LARGE DIAMETER (24" & LARGER) CLOSED PROFILE GRAVITY SEWER PIPE

- A. PVC closed profile pipe and fittings shall be manufactured in accordance with requirements of ASTM F794, latest edition and ASTM F1803, latest edition.

- B. PVC closed profile wall pipe shall be made from a compound meeting the requirements of cell classification 123464A as defined by ASTM D1784.
- C. Maximum long term deflection is five percent. Lag factor to be 1.5 and soil modulus of 500 psi. Factor of safety to be 2.5.
- D. Minimum stiffness factor to be 46 psi.
- E. Manufactured by Lamson Vylon, or equal. All large diameter closed profile wall gravity sewer pipe must be approved by the Little Rock Wastewater Utility prior to being installed.

2.07 PVC LARGE DIAMETER (24" & LARGER) DUAL WALL CORRUGATED PROFILE GRAVITY SEWER PIPE

- A. PVC dual wall corrugated profile pipe and fittings shall be manufactured in accordance with requirements of ASTM F794, latest edition and ASTM F949, latest edition
- B. PVC dual wall corrugated profile wall pipe shall be made from a compound meeting the requirements of cell classification 12454 as defined by ASTM D1784.
- C. Maximum long term deflection is five percent. Lag factor to be 1.5 and soil modulus of 500 psi. Factor of safety to be 2.5.
- D. Minimum stiffness factor to be 46 psi.
- E. Manufactured by Contech, or equal. All large diameter open profile wall gravity sewer pipe must be approved by the Little Rock Wastewater Utility prior to being installed.

2.08 CENTRIFUGALLY CAST FIBERGLASS GRAVITY SEWER PIPE

- A. Pipe shall conform to all requirements of ASTM 3262 for fiberglass pipe.
- B. Pipe stiffness shall meet or exceed manufacturer's recommendations. Minimum pipe stiffness shall be 46 psi.
- C. Manufactured by Hobas USA, Inc. or equal.

2.09 FLEXIBLE RUBBER COUPLINGS

- A. Materials: Chemical resistant rubber. Flexible rubber coupling shall be Fernco or equal.
- B. Clamping bands: two (2) each stainless steel bands.
- C. Dimensions: Inside diameter to fit the outside diameter of the different pipe materials being connected: take care that proper alignment is maintained and the spacing between pipes does not exceed 1/2 inch as shown in the Standard Detail Drawings.

2.10 SERVICE SADDLES

- A. A flexible saddle manufactured out of Elastomeric Poly Vinyl Chloride (PVC) reinforced with molded in inserts in skirt to aid in the sealing process as shown in the Standard Details.
- B. A composite saddle using a Virgin SBR compound gasket (ASTM D-2000 3 BA715) and a ductile iron saddle casting (ASTM A 536 Grade 65-44-12) as shown in the Standard Details.
- C. A compression fit three piece service connection consisting of an ASTM D-3034 PVC hub, a Stainless Steel band, and a rubber sleeve conforming to ASTM C-443. Refer to the Standard Details.
- D. All saddles shall be approved by the Engineer prior to installation.

2.11 SERVICE WYES

- A. The wye material and joint type must match that of the mainline pipe.
- B. Wyes shall terminate in a bell suitable for connection of a 4 inch service line pipe as specified herein.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Sanitary Sewer Pipelines: Refer to Section 02730
- B. Sanitary Sewer Service Lines: Refer to Section 02732

END OF SECTION 02610

SECTION 02730
SANITARY SEWER PIPELINES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Installation of sanitary sewer pipelines.
- B. Point repairs on existing sanitary sewer pipelines.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling, and Compacting.
- B. Section 02575 - Pavement Repair.
- C. Sections 02605 - Manholes.
- D. Section 02610 - Pipe and Fittings.
- E. Section 02732 - Sanitary Sewer Service Lines
- F. Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.
- G. Section 03300 - Cast-in-place Concrete.

1.03 DEFINITIONS

- A. New Pipelines - Pipelines installed in such a manner that there is no sewage flow during construction.
- B. Replacement Pipelines - Pipelines installed in a trench while there is a flow from "live" service connections.
- C. Point Repairs - Replacement of a short section (less than 50 feet in length) in an existing pipeline.

- D. Force Mains - Sewer pipelines that transport wastewater under pressure from a pump station to a discharge point.

1.04 QUALITY ASSURANCE

- A. Inspect all pipelines per Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.

1.05 SUBMITTALS

- A. Submit to the Engineer for approval all materials and procedures not described in these specifications.

1.06 REFERENCES

Not Used.

1.07 PROTECTION

- A. In all cases, the Contractor is responsible for protecting public and private property; protecting any person or persons who might be injured as a result of the Contractors' Work.
- B. All utilities shown on the plans may not represent the exact location; however, the Contractor is responsible for verifying these locations and contacting "Arkansas One Call System" before excavating.

PART 2 - PRODUCTS

2.01 BEDDING AND BACKFILL

- A. Refer to Section 02220 - Excavation, Backfilling, and Compacting.

2.02 PIPE AND FITTINGS

- A. Refer to Section 02610 - Pipe and Fittings.

2.03 MANHOLES, MANHOLE RINGS, AND LIDS

- A. Refer to Section 02605 - Manholes.

2.04 CONCRETE

- A. Refer to Section 03300 - Cast-in-place Concrete.

PART 3 - EXECUTION

3.01 EXCAVATION - GENERAL

- A. Perform excavation and prepare bedding in accordance with Section 02220 - Excavation, Backfilling, and Compacting.
- B. Never lay pipe in a water-filled trench, or when trench conditions or weather are unsuitable for such Work.
- C. Divert surface water and de-water trenches during excavation.
- D. Excavate for bells so that the entire barrel of the pipe will be uniformly supported on the pipe bedding before placing pipe in the trench.

3.02 LAYOUT

- A. The Contractor shall install sewer lines, wyes, and manholes as shown on the Plans.

3.03 SHALLOW BURY

- A. Ductile iron pipe shall be required when the existing grade or the proposed finish grade, whichever is less, provides less than 30 inches of cover. The ductile iron pipe shall, whenever feasible, extend from manhole to manhole. The ductile iron pipe shall meet the requirements of Section 02610 - Pipe and Fittings, of these Specifications.

3.04 PIERS

- A. Install concrete piers as indicated on the plans per Section 03300 - Cast-in-place Concrete.

3.05 STEEP GRADES

- A. Whenever the grade of the sewer line exceeds 15 percent, ductile iron pipe shall be required. The ductile iron pipe shall meet the requirements of Section 02610 - Pipe and Fittings, of these Specifications.
- B. Sewers on 20 percent slopes or greater shall be anchored securely with concrete anchors spaced as follows:
 - 1. Not over 36 feet center to center on grades 20 percent and up to 35 percent.
 - 2. Not over 24 feet center to center on grades 35 percent and up to 50 percent.
 - 3. Not over 16 feet center to center on grades 50 percent and over.
- C. Anchor collars should be placed on downstream side of bell. Where no bell is available, a retainer gland shall be installed.

3.06 PIPE INSTALLATION

- A. A product manufacturer's representative shall be on site during initial installation of ALL profile sewer pipe to ensure that the contractor is handling and installing the pipe properly.
- B. Inspect each joint of pipe carefully before it is placed in the trench. Plainly mark and separate from the remaining pipe any joint found to be cracked, warped, or otherwise damaged. Remove these damaged joints from the project site as soon as possible.
- C. Cut pipe in a neat and workmanlike manner without damage to pipe or pipe lining when trimming joint length.
- D. Lay all pipe with the bell upstream.
- E. Use proper equipment for lowering sections of pipe into trenches. Lower pipe carefully into the trench so the spigot and bell will not become contaminated.
- F. Lay each pipe joint to line and grade using laser beam grade light, keeping a minimum of six inches between the pipe and the trench wall.
- G. Keep the pipe joints' interior clean from all dirt and other foreign matter as the Work progresses. Maintain the pipe's interior cleanliness until accepted or put in service.
- H. Close the open ends of the pipeline temporarily with an appropriate manufactured plug at the end of each day's Work or when discontinuing pipe laying for an appreciable period.

3.07 PIPE TO PIPE CONNECTIONS

- A. Make all pipe joints in strict accordance with the manufacturer's recommendation and as stated below for the particular type of connection. Make all joints watertight in accordance with the latest ASTM Standards.
- B. Slip-type or Push-on Joints Connection Procedure
 - 1. Clean the bell and spigot end of the pipes prior to jointing thoroughly with a brush. Exercise particular care to clean the gasket seat.

2. Apply pipe lubricant and attach gasket in strict accordance with the specific joint manufacturer's recommendations. Clean and insert the rubber gasket in the gasket seat within the bell. Insert the spigot end of the upstream pipe in the bell of the downstream pipe. Push the upstream joint until it is in firm contact with the shoulder of the bell.

C. Mechanical Joints Connection Procedure

1. Clean thoroughly the spigot end of the pipe, the bell of the connecting pipe, and the rubber gasket as specified for slip-type or push-on joints. Clean the gland in a similar manner.
2. After the gland and gasket are placed on the spigot end of the pipe, a sufficient distance from the end to avoid fouling the bell, insert the spigot end in the fitting bell to the point of firm contact with the bell shoulder. Then advance the rubber gasket into the bell and seat in the gasket seat. Exercise care to center the spigot end within the bell. Bring the gland into contact with the gasket, enter all bolts, and make all nuts hand tight. Exercise continued care to keep the spigot centered in the bell.
3. Make the joints tight by turning the nuts with a torque wrench: First partially tightening a nut, then partially tightening the nut 180 degrees away from it. Work around the pipe with uniformly applied tension until the required torque is applied to all nuts. Required torque ranges and indicated wrench lengths for standard cast iron bolts are as follows:

Diameter	Range of Torque		Length of Wrench
	<u>Inches</u>	<u>Foot Pounds</u>	
5/8	40 – 60	8	
3/4	60 – 90	10	
1	70 – 100	12	
1-1/4	90 – 120	14	

- D. Flexible Rubber Couplings
 - 1. Install flexible rubber coupling only where dissimilar pipe materials are connected.
 - 2. Take care that proper alignment is maintained and a minimum spacing between pipes does not exceed one-half inch.
 - 3. Encase rubber coupling in Class B concrete as shown on the Standard Details.

3.08 WYE FITTINGS FOR SERVICE CONNECTIONS

- A. Use in-line wye fittings for all service connections except on ductile iron pipe and polyethylene pipe.
- B. The wye material and joint type must match that of the mainline pipe.
- C. Use taps instead of wyes only on ductile iron pipe and polyethylene pipe.
- D. Install wye branches at the location of live services or as indicated on the construction plans. Install wye connections for services in accordance with the manufacturer's recommendations.
- E. Place Class "B" concrete under each wye branch to prevent cracking or twisting under earth loads.
- F. Mark wyes for future connections using detectable tape or ski rope terminated at the ground surface. Install on each service wye either:
 - 1. A service stub terminated with a plugged bell; or,
 - 2. A plugged adapter capable of connecting to a four-inch cast iron service.
- G. Terminate wyes for future connections in a bell suitable for connection of a four-inch cast iron soil pipe service line. Securely plug all wyes and service stubs for future connections.
- H. For Service Wye Details, see the Standard Detail Drawings.

3.09 BACKFILLING AND INSPECTION

- A. Before backfilling, place concrete encasement at transitions between different types of pipe and around all flexible rubber couplings as shown in the Project Plans. Use Class B concrete per Section 03300-Cast-in-place Concrete.
- B. Before backfilling, install concrete anchor collars in accordance with the details at the location and interval and shown on the Plans. Use Class A concrete and reinforce with steel bars per Section 03300-Cast-in-place Concrete.
- C. After the pipeline is installed and visually inspected by the Engineer, backfill the trench per Section 02220-Excavation, Backfilling, and Compacting.
- D. Test the pipeline per Section 02734-Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.
- E. Repair all pavements per Section 02575-Pavement Repair.
- F. Repair all incidental damage to buildings, structures, utilities, pavements, landscaping, etc.
- G. Repair sodded and grass areas to original condition.

3.10 CONNECTION OF NEW SEWER PIPELINES TO EXISTING SANITARY SEWERS

- A. Construct, clean, test, and obtain Engineer's approval for pipelines and manholes before connecting new pipeline to the existing sewer.
- B. If, in the opinion of the Engineer, conditions exist which require connection prior to final line acceptance, plug all lines entering the manhole connecting to the existing system until the new system is accepted. In addition, plug the line leaving the first manhole upstream. Never allow water being used to flush the new lines to enter the existing system.
- C. All new pipelines must connect to the existing system at a new or existing manhole. If a new manhole is built over an existing sewer line, do not break out the top of the existing pipe until the new line is accepted.

- D. If a new pipeline is to discharge into an existing manhole, divert the sewage flow around the existing manhole while the tie-in is under construction. Intercept the sewage flow at the existing manhole first upstream from the tie-in construction. Provide suitable pumping equipment and re-routing conduit to pump the sewage around the tie-in construction. Discharge into an appropriate manhole downstream from the construction.
- E. Connect new pipelines to existing manholes in a neat, workmanlike manner, to ensure a watertight connection.

3.11 GRAVITY SEWER PIPELINE INSTALLATION – LIVE SEWER PIPELINES AND POINT REPAIRS

- A. Install sewer pipeline and point repairs as detailed above for new pipelines with the following exceptions:
 - 1. Divert all upstream flow around the section to be replaced with plugs or pumps. The bedding must be kept dry during installation. If trench bottom is too wet, excavate wet portion and replace with bedding material.
 - 2. Make transitions to original pipe using materials and procedures specified. Take care that replacement pipe is aligned properly with no offsets. Install concrete encasement around transitions. Take care that no concrete from the encasement enters the existing pipeline. If this occurs, remove the concrete.
 - 3. At the end of each day's work, and when for any reason the laying of pipe will be discontinued for an appreciable period, place a temporary section of pipe in the live line.
 - 4. Pressure testing is not required. Visual and television testing are required.
 - 5. Mandrel testing may be required.
 - 6. Service line pressure testing is not required.
 - 7. A temporary debris catcher, as shown in the Standard Detail Drawings, shall be used in the downstream manhole.

3.12 GRAVITY SEWER PIPELINE INSTALLATION - AERIAL CROSSINGS

- A. Construct piers as shown on Plans.
- B. Install pipe on piers to grade.

3.13 FORCE MAIN PIPELINE INSTALLATION

- A. Install all pipe and fittings to the line and grade as detailed on the Plans. Submit fitting substitution requests to the Engineer for approval.
- B. Remove all dirt and other foreign matter from the inside of pipe and fittings before they are lowered into the trench. Keep pipe and fittings clean during and after laying. Take care to keep dirt out of the bells. Plug all pipe openings at the end of each days work or when pipe laying is discontinued.
- C. Use proper equipment for lowering sections of pipe into trenches. Lower pipe carefully into the trench so the spigot and bell will not become contaminated.
- D. Cut pipe in a neat and workmanlike manner without damage to pipe or pipe lining when trimming joint length.
- E. Install pipe with bell ends facing in the direction of laying. Face bells upgrade on lines on an appreciable slope.
- F. When necessary to deflect pipe from a straight line in either the horizontal or vertical plan to avoid obstructions, do not deflect the pipe beyond the point recommended by the pipe manufacturer.
- G. Before backfilling, install concrete thrust blocking in accordance with Standard Details on Plans.
- H. Test the pipeline per Section 02734-Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.
- I. After the pipeline is installed and visually inspected by the Engineer, backfill the trench per Section 02220-Excavation, Backfilling, and Compacting. Repair all pavements per Section 02575-Pavement Repair. Repair all incidental damage to buildings, structures, utilities, pavements, landscaping, etc.
- J. Repair sodded and grass areas to original condition.

END OF SECTION 02730

SECTION 02732
SANITARY SEWER SERVICE LINES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers:
 - 1. Installation of sanitary sewer service lines.
 - 2. Point repairs on existing sanitary sewer service lines.
- B. Sewer lines 6 inches in diameter and larger are constructed under the requirements of Section 02730 - Sanitary Sewer Pipelines.

1.02 RELATED WORK

- A. Standard Detail Drawings
- B. Section 01000 - General Requirements and Procedures
- C. Section 02220 - Excavation, Backfilling, and Compacting
- D. Section 02575 - Pavement Repair
- E. Section 02605 - Manholes
- F. Section 02610 - Pipe and Fittings
- G. Section 02730 - Sanitary Sewer Pipelines
- H. Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines
- I. Section 03300 - Cast-In-Place Concrete

1.03 DEFINITIONS

- A. City Sewer Main - A public sanitary sewer in which all owners of abutting properties have equal rights and is maintained and controlled by the Little Rock

Wastewater Utility. No sewer line smaller than six (6) inches in diameter is a city sewer.

- B. Service Line - The sewer which conveys the discharge from a building's plumbing system or other approved waste system to the city sanitary sewer system. The service line begins at the connection to the city sanitary sewer and ends at the building foundation.
- C. Permit - Written authorization issued to a plumber or contractor upon request allowing installation of a service line to connect to the Little Rock Wastewater Utility system.
- D. Plumbing Permit - Written authorization issued to a plumber or contractor upon request allowing work on existing plumbing in an existing structure or to install plumbing in a new or existing structure.

1.04 QUALITY ASSURANCE

- A. Inspect all service lines per Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.

1.05 SUBMITTALS

- A. Submit to the Engineer for approval all materials and procedures not described in these specifications.

1.06 REFERENCES

- A. Arkansas State Plumbing Code
- B. City of Little Rock Plumbing Code

1.07 SPECIAL REQUIREMENTS CONCERNING FIELD LOCATION OF PIPE, BENDS, CLEANOUTS, AND MANHOLES ON SERVICE LINES

- A. Bends
 - 1. Avoid using short radius ninety degree bends on 4" service lines.
 - 2. Use only long sweep bends where bends are absolutely necessary.
- B. Cleanouts
 - 1. Cleanouts are required at the building foundation per the Little Rock Plumbing Code.
 - 2. On lines longer than one hundred (100) feet, cleanouts are required at one hundred (100) foot spacing.
 - 3. Install cleanouts adjacent to any ninety degree bend.
 - 4. Install pipe on cleanout riser up to finish grade.
 - 5. The cleanout shall be the same diameter as the pipe on which it is installed.
- C. Backwater Traps (Sewage check valve)
 - 1. Provide backwater traps as required by Section 6.14 of the Arkansas Plumbing Code or as shown on the plans.
 - 2. Place backwater traps in a meter box to allow periodic servicing.

1.08 PROTECTION

- A. In all cases the Contractor is responsible for protecting public and private property; and, protecting any person or persons who might be injured as a result of the Contractor's work.
- B. All utilities shown on the plans may not represent the exact location; however, the contractor is responsible for verifying these locations and contacting "Arkansas One Call System" before excavating.

PART 2 - PRODUCTS

2.01 BEDDING AND BACKFILL

- A. Refer to Section 02220 - Excavation, Backfilling, and Compacting.

2.02 PIPE AND FITTINGS

- A. Refer to Section 02610 - Pipe and Fittings for allowable materials.

2.03 BACKFILL AND ASPHALT FOR PAVEMENT REPAIRS

- A Refer to Section 02575 - Pavement Repair

2.04 MANHOLES, MANHOLE RINGS AND LIDS

- A. Refer to Section 02605 - Manholes

2.05 CONCRETE

- A. Refer to Section 03300 - Cast-In-Place Concrete

PART 3 - EXECUTION

3.01 EXCAVATION

- A. Perform excavation and prepare bedding in accordance with Section 02220 - Excavation, Backfilling, and Compacting for Sanitary Sewer Pipelines.
- B. Never lay pipe in a water filled trench.

- C. Excavate for bells so that the entire barrel of the pipe will be uniformly supported before placing pipe in the trench.

3.02 PIERS

- A. Install concrete piers as indicated on the plans in accordance with Section 03300 - Cast-In-Place Concrete.
- B. Use only ductile iron pipe on piers.

3.03 PIPE INSTALLATION

- A. Inspect each joint of pipe carefully before it is placed in the trench. Discard damaged joints.
- B. If trimming joint length is required, cut pipe in a neat and workmanlike manner without damage to pipe or pipe lining.
- C. Lay all pipe with the bell upstream.
- D. Lower pipe carefully into the trench so the spigot and bell will not become contaminated.
- E. Lay the service line on a straight alignment and at a constant slope. Install pipe a minimum slope of one percent (1.00%); this equals one-eighth inch fall per lineal foot (1/8" / LF). The maximum allowable deflection in a horizontal plane is one inch per lineal foot (1.00"/LF).
- F. Install bends on 4" service lines at all changes in alignment and slope. Cleanouts are required at 90 degree bends and every 100 feet on lines longer than 100 feet. Bends on 6" and larger service lines are only permitted within 5 feet of the building foundation and 2 feet of the manhole being connected to; if longer than 150 feet, bends are not allowed and manholes must be built.
- G. Keep the pipe joints' interior clean from all dirt and other foreign matter as the work progresses. Maintain the pipe's interior cleanliness until accepted or put in service.

- H. At the end of each day's work, and when for any reason the laying of pipe will be discontinued for an appreciable period, close the open ends of the pipeline temporarily with an appropriate manufactured plug.

3.04 PIPE TO PIPE CONNECTIONS

- A. Make all pipe joints in strict accordance with the manufacturer's recommendation and these specifications as stated below for the particular type of connection. Make all joints watertight in accordance with the latest ASTM Standards.
- B. "No-Hub" type pipe connections are not permitted.
- C. Slip-Type Or Push-On Joints Connection Procedure
 1. Clean the bell and spigot end of the pipes prior to jointing thoroughly by whatever means necessary to remove all foreign matter and attain the required cleanliness. Use a brush as necessary. Exercise particular care to clean the gasket seat.
 2. Apply lubricant and attach gasket in strict accordance with the specific joint manufacturer's recommendations. Clean and insert the rubber gasket in the gasket seat within the bell. Insert the spigot end of the pipe in the bell of the pipe to which connection is being made, and force a firm contact with the shoulder of the bell.
- D. Mechanical Joints Connection Procedure
 1. Clean thoroughly the spigot end of pipe, the bell of fitting, and the rubber gasket as specified for slip-type or push-on joints. Clean the gland in a similar manner.
 2. After the gland and gasket are placed on the spigot end of the pipe a sufficient distance from the end to avoid fouling the bell, insert the spigot end in the fitting bell to the point of firm contact with the bell shoulder. Then advance the rubber gasket into the bell and seat in the gasket seat. Exercise care to center the spigot end within the bell.

3. Bring the gland into contact with the gasket, enter all bolts, and make all nuts hand tight. Exercise continued care to keep the spigot centered in the bell.
 4. Make the joints tight by turning the nuts with a wrench - first partially tightening a nut, then partially tightening the nut 180 degrees therefrom and working thus around the pipe with uniformly applied tension until the required torque is applied to all nuts. Required torque ranges and indicated wrench lengths for standard cast iron bolts are shown in Section 02730 - Sanitary Sewer Pipelines.
- E. Flexible Rubber Couplings
1. Install a flexible rubber coupling only where dissimilar pipe materials are mated.
 2. Take care that proper alignment is maintained.
 3. Encase flexible rubber coupling in Class B concrete as shown on the Standard Details.

3.05 SERVICE LINE CONNECTIONS TO CITY SEWER PIPELINES

- A. Wye connection - Use existing wye or other prefabricated outlet if one has been left in the city sewer for sewer service to a lot unless it can be shown that the dwelling unit or building cannot drain by gravity to the wye.
- B. Taps
1. Where a wye or other prefabricated outlet in the city sewer is not available to serve a lot, a tap connection shall be installed at a location approved by the Utility to connect the building sewer to the city sewer.
 2. The Contractor shall install all taps using approved materials and equipment.
- C. Manhole Taps
1. Make manhole tap connections into existing manholes as indicated on the plans.

2. Install manhole taps no more than twenty-four (24) inches above the manhole invert.
3. Make manhole tap watertight and flush with inside surface of manhole.
4. Manhole taps are considered as part of the service line and are subject to inspection.

3.06 BACKFILLING AND INSPECTION

- A. Before backfilling, place concrete encasement at transitions between different types of pipe and around all flexible rubber couplings as shown on the Standard Details.
- B. Install backwater traps (Sewage check valve) if required.
- C. Before backfilling, install concrete anchor collars in accordance with the details at the location and interval and shown on the plans. Use Class "A" concrete and reinforce with steel bars per Section 03300 - Cast-In-Place Concrete.
- D. After the pipeline is installed and visually inspected by the Engineer, backfill the trench and clean up the site per Section 02220 - Excavation, Backfilling, and Compacting.
- E. Test the service line per Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.
- F. Repair all pavements per Section 02575 - Pavement Repair.
- G. Repair all incidental damage to buildings, structures, utilities, pavements, landscaping, etc.

3.07 SERVICE LINE REPLACEMENT/REPAIRS

- A. Obtain permit per Little Rock Wastewater Utility requirements.
- B. When possible, the existing tap or wye should be used to connect a repaired or replaced service line.

- C. When the existing wye or tap cannot be used, then the Contractor shall seal original wye or tap (to prevent entrance of rainwater or debris into the city sewer) and contact LRWU Engineering Services to arrange for inspection of seal.
- D. Repair damaged portion in accordance with these specifications.
- E. If flexible rubber couplings are required, be sure to encase them in Class B Concrete as shown in the Standard Details.
- F. Contact LRWU Engineering Services to arrange for inspection of service line repair.

3.08 RELOCATE SERVICE EXIT

- A. Obtain Plumbing Permit from the Little Rock Public Works Permit Section. A copy of the permit shall be given to the Utility.
- B. Relocate where the sanitary sewer line exits the structure and plug the old sewer line where it was cut to be rerouted.
- C. Have the work inspected by the City Plumbing Inspector and provide the Utility a copy of the Approval Slip.

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END OF SECTION 02732

SECTION 02734
INSPECTION AND TESTING OF
SANITARY SEWER PIPELINES, MANHOLES, AND SERVICE LINES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers the inspection and testing of pipelines, manholes, and service lines. Testing is required before final acceptance of pipelines and service lines by the Utility.

1.02 RELATED WORK

- A. Section 02605 - Manholes
- B. Section 02610 - Pipe and Fittings
- C. Section 02730 - Sanitary Sewer Pipelines
- D. Section 02732 - Sanitary Sewer Service Lines
- E. Section 02766 - Cured-In-Place Pipe Installed Using The Inversion Method
- F. Section 02769 - Polyethylene Pipe Installed Using the Pipe Bursting Method
- G. Section 03700 - Manhole Rehabilitation

1.03 SCOPE OF WORK

All pipelines shall be inspected and tested before final acceptance. The methods to be used are as follows:

- A. New Gravity Sewer Pipelines
 - 1. Visual inspection during installation and before backfill.
 - 2. Low pressure air test.

3. Television inspection.
 4. Mandrel test (Flexible pipes only)
 5. Final Visual Inspection
 6. Infiltration/exfiltration
- B. Manholes
1. Visual inspection during installation and before backfill.
 2. Vacuum testing.
 3. Exfiltration test.
 4. Final Visual Inspection.
- C. Replacement Pipelines and Point Repairs
1. Visual inspection during installation and before backfill.
 2. Low pressure air test/exfiltration, infiltration.
 3. Television inspection.
 4. Mandrel test (Flexible pipes only).
 5. Final Visual Inspection.
- D. Force Mains
1. Visual inspection during installation and before backfill.
 2. Hydrostatic pressure test.
- E. Service Lines
1. Visual inspection during installation and before backfill.
 2. Low pressure air test.
 3. Exfiltration test.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 VISUAL INSPECTION DURING INSTALLATION AND BEFORE BACKFILL

- A. The Engineer will inspect pipelines, manholes, and service lines during all phases of construction. The level of inspection is at the discretion of the Engineer and will be based partly on the Contractors ability, experience, and past performance. All work not conforming to these specifications that is discovered during this inspection phase will be corrected by the Contractor.

3.02 PRESSURE TEST FOR GRAVITY SEWER PIPELINES

- A. The Contractor will perform pressure tests on all gravity sewer pipelines.
- B. Lines will not be accepted until they pass all required tests.
- C. Perform the tests in the presence of the Utility representative. Provide at least 24 hours notice before beginning testing.
- D. The primary test method is the Low Pressure Air Loss test for lines smaller than 24 inches in diameter. Under special conditions and when approved in advance by the Engineer the exfiltration/infiltration test procedure may be used.

3.03 LOW PRESSURE AIR LOSS PROCEDURE FOR GRAVITY SEWER PIPELINES

- A. Plug all pipe outlets with suitable test plugs. Brace each plug securely.
- B. Pipe air supply to pipeline to be tested so that air supply may be shut off, pressure observed, and air pressure released from the pipe without entering the manhole. Install a valved branch in the supply line past the shut-off valve terminating in a 1/4" female pipe thread for installation of the test gauge.
- C. Add air slowly to portion of pipe under test until test gauge reads at least 4 psig, but less than 5 psig.

- D. Shut air supply valve and allow at least two minutes for internal pressure to stabilize.
- E. Determine time in seconds for pressure to fall 1 psig so that pressure at the end of time of the test is at least 2.5 psig.
- F. Compare observed time with minimum allowable times in the following chart for pass/fail determination.

TEST CHART FOR AIR TESTING SEWERS

Leakage Testing of Sewers by Low Pressure Air Loss

(Time Pressure Drop Method)

Table 1 - Minimum Test Times in Seconds for 1 psig drop (3.5 psig to 2.5 psig)								
Distance Between Manholes	Nominal Pipe Diameter (inches)							
	6	8	10	12	15	18	21	24
100	40	70	110	155	245	350	480	625
150	60	105	165	235	365	500	595	680
200	80	140	220	315	425	510	595	680
250	100	176	270	340	425	510	595	680
300	120	215	283	340	425	510	595	680
350	140	226	283	340	425	510	595	680
400	160	226	283	340	425	510	595	680
450	170	226	283	340	425	510	595	680
500				340	425	510	595	680
550						510	595	680
600							595	680

NOTE: Due to force resisted by plug restraints, testing of sewers larger than 24" is not recommended.

G. Where groundwater level is above the crown of the pipe being tested, increase test pressure at the rate of 1 psi for every 2.5 feet of water above the crown.

H. Air Testing Safety Requirements:

1. Securely brace plugs used to close the sewer pipe for the air test; this is to prevent the unintentional release of a plug which can become a high velocity projectile. For example: four pounds (gauge) air pressure develops a force against the plug in a 12" diameter pipe of approximately 450

pounds; this force can propel a 12-inch plug weighing 10 pounds to supersonic speeds.

2. Locate gauges, air piping manifolds, and valves at the top of the ground. Entry by anyone into a manhole where a plugged pipe is under pressure is strictly prohibited.
3. Do not use the air test on gravity sewer pipes larger than 24" in diameter because of the difficulty of adequately blocking the plugs.

3.04 WATER LOSS TEST PROCEDURE (USE ONLY IF APPROVED IN ADVANCE BY THE ENGINEER)

- A. Perform the water test procedure to determine the quality of the sewer line against infiltration and exfiltration only when specifically approved by the Engineer. The Low Pressure Air Loss Test outlined above is the standard test procedure. Where approved, follow the procedure below.
- B. Infiltration Test: Minimum test time is 2 hours. The allowable pipeline leakage rate under exterior ground water pressures is:
 1. For all pipe materials: 100 gallons (or less) per inch of nominal pipe diameter per mile of pipeline per 24 hours. Submit procedure to Engineer for approval if this test is used.
- C. Exfiltration Test: This test will be used if the Engineer decides the ground water table at the time of testing is too low to produce dependable results from the infiltration test. This test will not be used if the Engineer decides the ground water table is too high. The allowable pipeline leakage rates are the same as stated for the Infiltration Test. Submit procedure to Engineer for approval if this test is used.

3.05 TELEVISION INSPECTION

The Contractor shall televise all newly installed sewer mains as follows:

- A. The Contractor shall clean all lines thoroughly prior to the start of televising.

- B. The Contractor shall televise each segment of pipe.
- C. The Contractor shall review the video for possible defects in material or workmanship.
- D. The Contractor shall correct any defects discovered during the television inspection at the Contractor's expense.
- E. The Contractor shall deliver to the Engineer final video and logs after all defects have been repaired.

3.06 MANDREL TEST (FLEXIBLE PIPE ONLY)

- A. The maximum allowable pipe deflection is five (5) percent of the inside pipe diameter.
- B. Any sewer pipe which fails the mandrel test prior to final acceptance will not be accepted by the Utility until the defects are corrected.
- C. All mandrel tests shall be performed by the Contractor while observed by Utility personnel.

3.07 SUPPLEMENTAL MANDREL TESTING

- A. The Utility may at any time after final acceptance perform supplemental mandrel testing on pipelines constructed of flexible pipe material. These supplemental tests will be performed as detailed above with a maximum allowable long term deflection of five percent (5%).
- B. Any sewer pipe which fails the mandrel test prior to expiration of the maintenance bond will be corrected by the Contractor at the Contractor's expense. If the Contractor fails to correct these defects after a reasonable time, the Utility will correct the defects and file a claim with the bonding company.

3.08 FINAL VISUAL INSPECTION

- A. Upon completion of the above tests the Engineer will perform a final visual inspection of pipelines and manholes.
- B. A punch list of defects (including obvious running leaks) will be prepared and sent to the Contractor for correction at the Contractors' expense.

3.09 INSPECTION FOR SERVICE LINES

- A. All building sewer installations shall be inspected and approved by an authorized Wastewater Utility inspector.
- B. Backfill may only be placed on the completed portions of a building sewer following inspection. No approval certificate shall be issued until all portions of a building sewer from the main connection to the building foundation have been inspected and approved by an authorized inspector. At the time of inspection, the pipe should be in place in the trench and "safed-up", but the top half of the pipe barrel exposed. No approval will be given for building sewers all or a portion of which are covered at the time of inspection.
- C. All building sewers are subject to testing to insure water tightness. All tests must be performed in the presence of The Engineer. Tests may be either by:
 - 1. Water Loss Test Procedure; or,
 - 2. Low Pressure Air Loss Procedure.
- D. If, in the opinion of the Engineer, the line in question is properly installed and free from open joints and breaks, building sewers constructed entirely of cast iron soil pipe may be connected to the city sewer without testing.
- E. Water Loss Test Procedure
 - 1. Plug the section of line to be tested at the lower end and fill section with water so that at least four (4) feet of head is obtained.
 - 2. The maximum acceptable water loss while so filled is not more than 100 gallons per twenty-four hours per inch of pipe diameter per mile of pipe.

This is approximately 3/16 gallon for a one hundred (100) foot long section of four (4) inch pipe tested thirty minutes.

- F. Low Pressure Air Loss Procedure
1. Plug securely both ends of the line to be tested.
 2. Charge the line with air to a pressure of 4.5 psig.
 3. Allow at least five minutes for the temperature in the pipe to stabilize.
 4. Measure the time required for a one (1.0) psi drop in pressure.
 5. The minimum time for a one psi loss is $28.5 \times d$ seconds where d = the nominal diameter in inches of the pipe being tested.

3.10 PRESSURE TEST FOR FORCE MAINS

- A. Perform hydrostatic leakage tests for force mains by filling the force main with water and increasing the pressure to a testing pressure of 150% of the working pressure with a minimum of 100 psi.
- B. The duration of the leakage test shall be two hours or as specified by the Engineer.
- C. The force main will not be accepted until the actual leakage is equal to or less than the allowable. In addition, all obvious leaks shall be repaired.
- D. The allowable leakage rate per hour for ductile iron, PVC, or concrete pipe shall be calculated by the following formula:

$$L = \frac{ND \times P^5}{7400}$$

L = Allowable Leakage (gallons per hour)

N = Number of Joints in Pipeline Tested

D = Nominal Diameter (inches)

P = Test Pressure (psi)

3.11 MANHOLE TESTING

- A. The Contractor shall vacuum test all new manholes constructed.
- B. The Contractor shall vacuum test all manholes that have been sealed (waterproofed).
- C. The Contractor shall vacuum test all manholes that have been epoxy lined.
- D. Manholes shall be tested in accordance with ASTM C 1244-93. Vacuum test shall not be performed earlier than 7 days after construction or installation. The Contractor shall provide all testing equipment, pump, hosing, seal, and other incidentals. Vacuum test head shall be positioned at the top of the casting (the surface on which the manhole cover rests, to include grade rings) in accordance with the equipment manufacturer's instructions. A vacuum of 10-inches of mercury shall be drawn and the vacuum pump isolated by the shut-off valve on the test head connection. When valve is closed, time measurement shall commence, and the time required for vacuum drop to 9-inches of mercury shall be observed and recorded. Manholes shall pass if the time for the vacuum reading to drop from 10-inches of mercury to 9-inches of mercury meets or exceeds the time values in seconds in the following table.

Depth (feet)	Diameter (inches)								
	30	33	36	42	48	54	60	66	72
<10	11	12	14	17	20	23	26	29	33
10	14	15	18	21	25	29	33	36	41
12	17	18	21	25	30	35	39	43	49
14	20	21	25	30	35	41	46	51	57
16	22	24	29	34	40	46	57	58	67
18	25	27	32	38	45	52	59	65	73
20	28	30	35	42	50	53	65	72	81
22	31	33	39	46	55	64	72	79	89
24	33	36	42	51	59	70	78	87	97
26	36	39	46	55	64	75	85	94	105
28	39	42	49	59	69	81	91	101	113
30	42	45	53	63	74	87	98	108	121

- E. Manholes showing greater than the allowable leakage shall be repaired and re-tested until a satisfactory leakage result is obtained.

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END OF SECTION 02734

SECTION 02760
PIPELINE CLEANING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This Section covers the cleaning of sanitary sewer lines.

1.02 RELATED WORK

- A. Standard Detail Drawings
- B. Section 02605 - Manholes
- C. Section 02730 - Sanitary Sewer Pipelines
- D. Section 02732 - Sanitary Sewer Service Lines
- E. Section 02762 - Pipeline Television Inspection
- F. Section 02766 - Cured-In-Place Pipe Installed Using the Inversion Method
- G. Section 02769 – Polyethylene Pipe Installed Using the Pipe Bursting Method
- H. Section 03350 - Manhole Rehabilitation

1.03 SUBMITTALS

- A. The Contractor shall submit for approval manufacturer's brochures and specifications for his proposed cleaning equipment. The equipment and methods selected for cleaning shall be approved by the Engineer.

PART 2 - PRODUCTS

2.01 EQUIPMENT

Equipment selected for cleaning shall be of a type generally recognized by the trade for the purpose being used and that has proved satisfactory. The equipment shall be capable of removing all roots, dirt, grease, rock and other deleterious material and obstructions from the sewer lines and manholes that would prevent efficient use of the inspection equipment.

- A. Hydraulic cleaning equipment shall be of a movable dam type and shall be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. Sewer cleaning balls or other such equipment which cannot be collapsed instantly will not be considered acceptable cleaning equipment. The moveable dam shall be of the same diameter as the pipe being cleaned and shall provide a flexible scraper around the outer periphery to insure total removal of grease. If a line segment is found to be completely stopped up or plugged or heavily intruded with roots, then a mechanical root cutter shall be used.
- B. High velocity hydro-cleaning equipment shall be truck mounted for ease of operation. The equipment shall have minimum of 600 feet of 1 inch I.D. high pressure hose with a selection of two or more high velocity nozzles. The nozzles shall have a capacity of 60 GPM at a minimum working pressure of 1000 pounds per square inch (psi). The nozzles shall be capable of producing a scouring action from 15 degrees to 45 degrees in all size lines designated to be cleaned. Equipment shall also have a high velocity gun for washing and scouring manhole walls and floor. The equipment shall carry its own water tank capable of holding corrosive or caustic cleaning or sanitizing chemicals, auxiliary engines, pump and a hydraulically driven hose reel. All controls shall be located so that equipment can be operated above ground with minimal interference to traffic and/or danger to the operator.

- C. Mechanical cleaning equipment shall be used to remove heavy accumulations of silt, sludge, etc., and roots. Bucket machines shall be operated in pairs with each machine powered by an engine with a minimum of 16 horsepower (HP) to ensure sufficient pulling power. Machines shall be capable of operating at least two speeds to match job conditions. Sufficient accessories and tools shall be furnished to accomplish the required cleaning in a complete and efficient manner.
- D. Power rodding machines shall be of a continuous rod type, capable of holding a minimum of 1000 feet of rod. The rod shall be specifically treated steel. The machine shall have a positive rod drive and produce a 2000 pound rod pull. To insure safe operation, the machine shall have a fully enclosed body and an automatic safety throw-out clutch.
- E. Cleaning equipment shall be provided that includes an air conveying vacuum system to provide for the simultaneous removal of the debris flushed to the manhole.
- F. A temporary debris catcher, as approved by the Engineer, shall be used in the downstream manhole. See Standard Detail Drawings.

2.02 PERSONNEL

- A. Contractor personnel shall be thoroughly familiar with all phases of sewer line cleaning to insure satisfactory end results without causing damage to the sewer lines or adjacent property.

PART 3 - EXECUTION

3.01 CLEANING EQUIPMENT

- A. Since the success of related work depends a great deal upon the cleanliness of the lines, the importance of the cleaning operation cannot be too strongly emphasized. The equipment selected for cleaning shall be capable of removing all dirt, grass,

rocks and other deleterious materials from the sewer lines and manholes. Particular emphasis is placed on the removal of grease accumulations so that cracks and breaks can be observed during television inspection and so that joints can be isolated during testing and sealing operations.

- B. The Contractor shall make an inspection of the lines to be cleaned in order to determine the type of cleaning equipment that is required. It is anticipated that hydraulic cleaning will be adequate for most of the line segments.

3.02 CLEANING REQUIREMENTS

Prior to inspection, the designated sewer lines, as shown on the project drawings, will be thoroughly cleaned as specified below:

- A. The sewer lines shall be cleaned by using standard mechanically powered or hydraulically propelled cleaning tools or combinations thereof, such as rodding machines, boring machines, hydraulic balls, cones, ferrets, or other similar devices.
- B. All roots, sludge, dirt, sand, rock, grease and other solid or semi-solid material resulting from the cleaning operations shall be removed at the downstream manhole without passing the material from section to section, which could cause stoppage of the lines or accumulation in the wet well and damage to pumping equipment. When cleaning equipment is used, a debris catch riser as shown in the standard details shall be used in the downstream manhole so that both solids and water shall be trapped. All solids or semi-solids resulting from the cleaning operations shall be removed from the site and disposed of at no additional cost to the Owner. It is the responsibility of the Contractor to secure a legal dump site for the disposal of this material.
- C. Satisfactory precautions shall be taken to protect the sewer lines from damage that might be inflicted by the improper use of cleaning equipment. Whenever hydraulically propelled cleaning tools, which depend upon water pressure to provide their cleaning force or any tools which retard the flow of water in the

sewer lines are used, precautions shall be taken to insure that the water pressure created does not cause any damage or flooding to public or private property being served by the manhole section involved. The flow of sewage present in the sewer lines shall be utilized to provide necessary fluid for hydraulic cleaning devices whenever possible. When additional quantities of water from fire hydrants are necessary to avoid delay in normal working procedures, the water shall be conserved and not used unnecessarily. No fire hydrant shall be obstructed or used when there is a fire in the area. Before using any water from the City water supply system, the Contractor shall apply for and receive permission from the Little Rock Municipal Water Works. The Contractor shall be responsible for the water meter and related charges for the set up, including the water usage bill. All expenses shall be considered incidental to cleaning.

- D. **UNDER NO CIRCUMSTANCES SHALL SEWAGE OR SOLIDS REMOVED THEREFROM BE DUMPED ONTO STREETS OR INTO DITCHES, CATCH BASINS, STORM DRAINS OR SANITARY SEWER MANHOLES.**

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END OF SECTION 02760

SECTION 02762
PIPELINE TELEVISION INSPECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

This section covers the television inspection of sanitary sewer lines.

- A. The inspection of each line shall be by a television (TV) camera especially designed to accurately show the condition of the lines from the interior and with the ability to pinpoint the locations of line faults and necessary repairs.
- B. A sewer line joint means the junction of two adjacent lengths of sewer pipe, and a fault is any crack too small to warrant pipe replacement. The term “manhole section” as used in these specifications shall mean the length of pipe connection two manholes.

1.02 RELATED WORK

- A. Section 02730 - Sanitary Sewer Pipelines
- B. Section 02732 - Sanitary Sewer Service Lines
- C. Section 02760 - Pipeline Cleaning
- D. Section 02766 - Cured in Place Pipe Installed Using the Inversion Method
- E. Section 02769 – Polyethylene Pipe Installed Using the Pipe Bursting Method

1.03 SUBMITTALS

- A. The Contractor shall submit for approval manufacturer’s brochures and specifications for proposed TV equipment.

1.04 INSPECTION

- A. Immediately upon cleaning the sewer line in one location, it shall be televised to determine the condition of the line and location of existing service connections, etc.
- B. The sewer lines shall be visually inspected by TV camera. The section being inspected shall be suitably isolated from the remainder of the sewer line as necessary.
- C. The camera shall be moved through the line in either direction at a uniform slow rate not to exceed 60 feet per minute, by means of cable winches, or similar mechanisms. **Under no circumstances shall the camera be tethered to a hydraulically propelled or high-velocity jet cleaning device while the cleaning device is on.**
- D. The camera shall stop at each service connection and provide a view up the service line.
- E. Telephone, or similar suitable means of communications, shall be set up between the two winches, the pumping unit and the monitor control.
- F. Under certain conditions, it may be impossible for inspection equipment to pass through a manhole section due to damaged pipe or other obstructions not correctable by internal methods. In such cases, the Engineer will be notified.
- G. TV inspection will be done one manhole section at a time and the flow in the section being inspected will be suitably controlled. Sewer flow will not exceed those shown below as measured in the manhole:

6" - 10" Pipe	1 inch
12" - 14" Pipe	2 inches
14" - 24" Pipe	3 inches
Over 24" Pipe	4 inches
- H. The Contractor will make all provisions for pumping or bypassing the flow around the manhole section and the cost shall be incidental to TV inspection.

Contractor shall not be allowed to float the camera unless permitted by the Engineer.

- I. It is possible that some sections of the sewer line cannot be televised; therefore, house or building connection lines will have to be located on the ground by the Contractor. All cost for locating these service lines shall be included in the cost bid for house or building service line reconnection.

PART 2 - PRODUCTS

2.01 TELEVISION INSPECTION EQUIPMENT

- A. The television camera and monitoring equipment shall be specifically designed and constructed to perform the work as specified. The camera shall be operative in conditions of 100% humidity and/or under water. The camera shall be small enough to pass through a 6 inch diameter sewer and shall be waterproof with a self contained lighting system capable of producing enough light to produce clear, bright, sharp pictures on the monitor. The lighting and camera quality shall be suitable to allow a clear, in focus picture of a minimum of 6 linear feet of the entire inside periphery of the sewer pipe. Picture quality and definition shall be to the satisfaction of Engineer; otherwise, the equipment shall be removed from the line without pay.
- B. The monitor shall be located within a temperature controlled television unit that will accommodate three people to watch the sewer line inspection. The monitor will have a 12 inch minimum viewing screen. The Engineer will have access to view the television monitor at all times.

PART 3 - EXECUTION

3.01 RECORDS

- A. The Utility has televised some of the lines to be rehabilitated and has on file logs and tapes.
- B. Logs may be obtained from the Utility. Tapes may be viewed at the Utility. Viewing time will be set up and scheduled by appointment only by the Engineer. The Utility will not be responsible for the accuracy of the information provided in the tapes nor the accompanying television logs. Contractors shall satisfy themselves regarding pertinent information needed to complete the work.

3.02 TELEVISION INSPECTION BY THE CONTRACTOR

- A. When television inspection is requested and paid for by the Utility, the Contractor shall furnish tapes of the lines televised to the Engineering Services Department of the Utility for review and comments, which may require up to thirty (30) calendar days from the date submittal to the Department. The video media shall be VHS, CD, or DVD format. Each video media shall be permanently labeled with the following information furnished:
 - 1. Wastewater Project Job Number
 - 2. Manhole to Manhole Designation
 - 3. Name of Contractor
 - 4. Date Televised
- B. The following information shall be recorded and visible onscreen for 10 seconds immediately before the start of televising each line segment:
 - 1. Wastewater Project Job Number
 - 2. Manhole to Manhole Designation (Number, Pipe Material, Size of Line, and Direction of Televising)
 - 3. Name of Contractor

4. Date Televised
 5. Street and or Easement Location
 6. Drawing Sheet Number
- C. A continuous uninterrupted recording of distance from the insertion manhole shall be visible at the lower left corner of the screen at all times during inspection.
- D. The following information shall be provided in hard copy to accompany each tape:
1. Wastewater Project Job Number
 2. Name of Contractor
 3. Date Televised
 4. Street or Other Location
 5. Upstream Manhole Designation
 6. Downstream Manhole Designation
 7. Pipe Material
 8. Pipe Diameter
 9. Direction of Televising (Downstream or Upstream)
 10. Continuous Time Log Designating Start and Finish of Each Line Segment Televised. Time shall begin at 0hr 0min 0sec at the beginning of each tape.
 11. Location of Service Connections
- B. Tapes will become the property of the Utility and will be retained by the Department of Engineering Services. If the tapes are of such poor quality that the Engineer is unable to evaluate the condition of the sewer line or to locate service connections, the Contractor will be required to retelevising and provide a good tape of the line at no additional cost to the Utility. If a good tape cannot be provided of such quality that can be reviewed by the Engineer, no payment for television this portion shall be made. Also, no payment shall be made for positions of lines not televised or portions where manholes cannot be negotiated with the TV camera.

- C. Lines being rehabilitated by trenchless methods shall be televised by Contractor before and after rehabilitation. The following items shall be provided the Utility:
 - 1. Video media and log of the line prior to rehabilitation stating location of offset joints, live service connections, and point repairs.
 - 2. Video media and log of the line after rehabilitation showing reinstated live service connections.

- C. Lines being installed by open cut methods shall be televised by Contractor after installation. The following items shall be provided the Utility:
 - 1. Video media and log of the line after installation showing live service connections.

END OF SECTION 02762

SECTION 02766
CURED-IN-PLACE PIPE
INSTALLED USING THE INVERSION METHOD

PART 1 - GENERAL

1.01 WORK INCLUDED

It is the intent of this specification to provide for the reconstruction of pipelines and conduits by the installation of a resin-impregnated flexible tube which is inverted into the original conduit by use of a hydrostatic head or other method approved by the Engineer. The resin is cured by circulating hot water within the tube or other method approved by the Engineer. When cured, the finished pipe (CIPP) will be continuous and tight fitting.

1.02 RELATED WORK

- A. Section 01310 - Design Submittals
- B. Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines
- C. Section 02760 - Pipeline Cleaning
- D. Section 02770 - Final Product Performance Requirements

1.03 REFERENCES

This specification references ASTM F1216, F1743, D5813, and D790 which is made a part thereof by such reference and shall be the latest edition and revision thereof. In case of conflicting requirements between this specification and those referenced, this specification will govern.

1.04 PREQUALIFICATIONS

The contractor and the proposed method of reconstruction shall be prequalified as outlined in Section 00100 and section 00420 of this Specification.

1.05 SUBMITTALS

- A. Submit shop drawings, ASTM standards, manufacturer's data, etc. for:
1. Thermosetting Resin.
 2. Certification that all materials comply with ASTM standards.
 3. A design thickness based on local conditions and the cured pipe properties for each location. Such design shall be based on criteria outlined in Section 01310. Refer to Section 01310 for design calculation submittals.
 4. Quality control procedures for field mixing of resin and catalyst.
 5. Provide prior to commencing the work all ASTM standards referred to in this Section.

1.06 PATENTS

The Contractor shall warrant and save harmless the Owner against all claims for patent infringement and any loss thereof.

PART 2 - MATERIALS

2.01 TUBE

- A. The tube material shall meet the requirements of ASTM F1216, Section 5.1.
- B. The tubes shall have a thickness that when compressed at installation pressures will equal the design thickness based on local conditions and cured pipe properties for each location.

- C. The tube shall be fabricated to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during inversion.
- D. The outside layer of the tube (before inversion) shall be plastic coated with a translucent flexible material that clearly allows inspection of the resin impregnation (wetout) procedure. The plastic coating shall not be subject to delamination after curing of the CIPP.
- E. The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No materials shall be included in the tube that are subject to delamination in the cured CIPP.
- F. The wall color of the interior pipe surface of the CIPP after installation shall be white or light brown so that a clear detail examination with closed circuit television inspection equipment may be made.
- G. The Contractor is solely responsible for field verification of all pipe diameters and lengths prior to fabrication and installation. The Contractor shall remedy, at no cost to the Owner, any defects in the installed resin tube resulting from field measurement errors, concealed changes in diameter, or from errors in diameters and lengths shown in the Unit Price Schedule. Contractor shall determine the minimum length necessary to effectively span the distance between access points.

2.02 RESIN

The resin system shall meet the requirements of ASTM F1216.

2.03 STRUCTURAL REQUIREMENTS

- A. The CIPP shall be designed as per ASTM F1216, Appendix X1 and based on criteria outlined in Section 01310. The CIPP design shall assume no bonding to the original pipe wall. Design of CIPP shall be submitted to the Engineer as per Section 02766. Subsection 1.05 - Submittals.

- B. The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blades moves freely between the layers; nor shall separation of the layers occur during testing performed under the requirements of this specification.
- C. The cured pipe material (CIPP) shall conform to the minimum initial structural standards as listed below.

<u>Cured Pipe</u>	<u>Standard</u>	<u>Result</u>
Flexural Stress	ASTM D-790	4,000 psi
Flexural Modulus	ASTM D-790	400,000 psi

2.04 TESTING REQUIREMENTS

A. CHEMICAL RESISTANCE

The CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical testing requirements.

B. HYDRAULIC CAPACITY

The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition. The roughness coefficient of the CIPP shall be verified by field test data upon the request of the Owner.

C. CIPP FIELD SAMPLES

When requested by the Owner, the Contractor shall submit test results from previous field installations in the USA of the same resin system and tube materials as proposed for the actual installation. These test results must verify that the CIPP physical properties specified herein have been achieved in previous field

applications. Testing samples for this project shall be made and tested as described herein.

2.05 REPAIR OF CIPP

Contractor shall provide a method of repair for CIPP should the liner be damaged after the warranty period has expired.

PART 3 - INSTALLATION

3.01 SITE PREPARATION

- A. It shall be the responsibility of the Owner to locate and designate all manhole access points open and accessible for the Work, and provide rights of access to these points.
- B. When working in public right-of-way, Contractor shall obtain an approved barricade plan from City of Little Rock Traffic Engineer.
- C. Contractor shall properly install all protection devices, barricades, etc. as required on approved barricade plan.

3.02 PROTECTION

- A. In all cases, the Contractor is responsible for protecting public and private property; and, protecting any person or persons who might be injured as a result of the Contractor's work.
- B. All utilities shown on the plans may not represent the exact location; however, the Contractor is responsible for verifying these locations and contracting "Arkansas One Call System" before excavating.
- C. Contractor shall abide to all applicable OSHA standards.

3.03 SEWER FLOW CONTROL

- A. **Plugging or Blocking:** A sewer line plug shall be inserted into the line upstream of the section or sections being worked. The plug shall be so designed that all or any portion of the sewerage can be released. After the work has been completed, flow shall be restored to normal.
- B. **Pumping and Bypassing:** The Contractor shall supply the pumps, conduits, and other equipment to divert the flow of sewage around the manhole section or sections in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm. The Contractor shall be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum.
- C. **Flow Control Precautions:** When flow in sewer line is plugged, blocked, or bypassed, sufficient precautions must be taken to protect the sewer lines from damage that might result from sewer surcharging. Further, precautions must be taken to insure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.
- D. The Owner may require a detail of the bypass plan to be submitted.

3.04 SEWER LINE CLEANING

The Contractor shall remove all internal debris out of the sewer line that will interfere with the installation of CIPP. Sewer line cleaning shall be in accordance with Section 02760 - Pipeline Cleaning.

3.05 TELEVISION INSPECTION (TV)

- A. Television Inspection shall be in accordance with Section 02762 - Pipeline Television Inspection and shall be performed by experienced personnel trained in locating breaks, obstructions, and service connections by close circuit television. The interior of the pipeline shall be carefully inspected to determine the location of any conditions which may prevent proper installation of CIPP into the pipelines, and it shall be noted so that these conditions can be corrected. A video tape and suitable log shall be kept for a later reference by the Owner.
- B. Line Obstructions - It shall be the responsibility of the Contractor to clear the line of obstructions such as solids, roots, and protruding service connections that will prevent the insertion of CIPP. Such work will be considered as incidental to the cost of lining the pipe with the CIPP Method. If pre-installation inspection reveals an obstruction such as a dropped joint or a collapse that will prevent the inversion process, and it cannot be removed by conventional sewer cleaning equipment or by internal tap cutting equipment, the Contractor shall call this to the attention of the Owner who may elect to have the condition corrected by point repair as described elsewhere in these Specifications.

3.06 INSTALLATION OF CURED-IN-PLACE PIPE (CIPP)

- A. CIPP installation shall be in accordance with ASTM F1216, Section 7, with the following additional requirements.
 - 1. Resin Impregnation - The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks irregularities in the original pipe wall. A vacuum impregnation process shall be used. A roller system shall be used to uniformly distribute the resin throughout the tube.

2. Temperature gauges shall be placed to determine the temperature of the incoming and outgoing water from the heat source. Another such gauge shall be placed inside the tube at the remote end to determine the temperature at that location during the cure cycle.

3.07 REINSTATEMENT OF BRANCH CONNECTIONS AND SERVICE CONNECTION

- A. It is the intent of these specifications that active branch connections and service connections to buildings be reopened without excavations, utilizing a remotely controlled cutting device monitored by a video TV camera. Services shall be reinstated to at least 95% of the original service opening. Reconnection of services shall be smoothed out using a wire brush. Rough or jagged reconnections will not be accepted. The Contractor shall have a minimum of 2 complete working cutters plus spare key components on the site before each inversion. No additional payment will be made for excavations for the purpose of reopening connections and the Contractor shall be responsible for all costs and liability associated with such excavation and restoration work.

3.08 TESTING

- A. CIPP samples shall be prepared and tested in accordance with ASTM F1216, Section 8.1 using either method proposed.
- B. Leakage testing of the CIPP shall be accomplished during cure while under a positive head. CIPP products in which the pipe wall is cured while not in direct contact with the pressurizing fluid (e.g., a removable bladder) must be tested by an alternative method approved by the Owner.
- C. Visual inspection of the CIPP shall be in accordance with ASTM F1216, Section 8.4 and Section 02734 – Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.

3.09 CLEANUP

Upon acceptance of the installation work and testing, the Contractor shall reinstate the project area affected by the operations.

3.10 POST TELEVISION INSPECTION

Refer to Section 02762 – Pipeline Television Inspection.

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END OF SECTION 02766

SECTION 02769
POLYETHYLENE PIPE
INSTALLED USING THE PIPE BURSTING METHOD

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This Section covers:

1. Installation of a polyethylene pipeline using the Pipe Bursting method.
2. **PIPE BURSTING** shall be defined as follows:

The reconstruction of gravity sewer pipe by installing an approved pipe material by means of a preapproved method. The Process involves the use of static, hydraulic or pneumatic hammer "moling" device, suitably sized to break out the old pipe or using a modified boring "knife" with a flared plug that implodes and crushes the existing sewer pipe. The replacement pipe is either pulled or pushed into the bore.

1.02 RELATED WORK

- A. Standard Detail Drawings
- B. Section 02734 - Testing of Sanitary Sewer Pipelines and Service Lines
- C. Section 02760 - Pipeline Cleaning
- D. Section 02762 - Pipeline Television Inspection
- E. Section 02770 - Final Product Performance Requirements

1.03 REFERENCES

- A. This specification references ASTM standards which are made a part thereof by such reference and shall be the latest edition and revision thereof. In case of conflicting requirements between this specification and ASTM standards, this specification will govern.

1.04 PREQUALIFICATIONS

- A. The contractor and the proposed method of reconstruction shall be prequalified as outlined in Section 00100 and Section 00420 of the Specification.

1.05 SUBMITTALS

- A. Submit shop drawings, ASTM standards, manufacturer's data, etc. for:
 - 1. Polyethylene Resin.
 - 2. Certification that all materials comply with ASTM standards.
 - 3. A design thickness based on local conditions and the pipe properties for each location. Such design shall be based on criteria outlined in Section 01310. Refer to Section 01310 for design calculation submittals.
 - 4. Provide, prior to commencing the work, all ASTM standards referred to in this section.

1.06 PATENTS

- A. The Contractor shall warrant and save harmless the Owner against all claims for patent infringement and any loss thereof.
- B. The wall color of the interior pipe surface of the polyethylene pipe after installation shall be White or light brown so that a clear detail examination with closed circuit television inspection equipment may be made.

- C. The Contractor is solely responsible for field verification of all pipe diameters and lengths prior to fabrication and installation. The Contractor shall remedy, at no cost to the Owner, any defects in the installed polyethylene tube resulting from field measurement errors in diameters and lengths shown in the Unit Price Schedule. The Contractor shall determine the minimum length necessary to effectively span the distance between access points.

PART 2 - PRODUCTS

2.01 RESIN

- A. The Contractor shall furnish a polyethylene high density resin that meets or exceeds the standards of PE 408, Type III, Class B, Category 5, Grade P34 in accordance with ASTM D1248, with a PPI rating of PE 3408.

2.02 POLYETHYLENE PIPE SYSTEM

- A. The polyethylene pipe shall conform to the minimum standards as specified in ASTM D-3350 cell classification of 345434.

2.03 TESTING REQUIREMENTS

A. CHEMICAL RESISTANCE

The Contractor shall certify that the polyethylene pipe shall meet the chemical resistance requirements of ASTM D543. Polyethylene samples for testing shall be of polyethylene tube system similar to that proposed for actual construction.

B. HYDRAULIC CAPACITY

The Contractor shall certify that the polyethylene pipe shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated

capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition. The roughness coefficient of the polyethylene pipe shall be verified by field test data upon the request of the Owner.

2.04 POLYETHYLENE FIELD SAMPLES

- A. When requested by the Owner, the Contractor shall submit test results from previous field installations in the USA of the same resin system as proposed for the actual installation. These test results must verify that the polyethylene pipe physical properties specified herein have been achieved in previous field applications. Testing samples for this project shall be made and tested as described herein.

2.05 REPAIR OF POLYETHYLENE PIPE

- A. Contractor shall provide a method of repair for polyethylene pipe should the polyethylene liner be damaged after the warranty period has expired.

PART 3 - EXECUTION

3.01 SITE PREPARATION

- A. It shall be the responsibility of the Owner to locate and designate all manhole access points open and accessible for the work.
- B. When working in public right-of-way, Contractor shall obtain an approved barricade plan from the City of Little Rock Traffic Engineer.
- C. Contractor shall properly install all protection devices, barricades, etc. as required on approved barricade plan.

3.02 PROTECTION

- A. In all cases, the contractor is responsible for protecting public and private property; and, protecting any person or persons who might be injured as a result of the Contractor's work.
- B. All utilities shown on the plans may not represent the exact location; however, the contractor is responsible for verifying these locations and contacting "Arkansas One Call System" before excavating.
- C. The Contractor shall abide to all applicable OSHA standards.

3.03 SEWER FLOW CONTROL

- A. **Plugging or Blocking:** A sewer line plug shall be inserted into the line upstream of the section being worked. The plug shall be so designed that all or any portion of the sewage can be released. After the work has been completed, flow shall be restored to normal.
- B. **Pumping and Bypassing:** The Contractor shall supply the pumps, conduits, and other equipment to divert the flow of sewage around the manhole section in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm. The Contractor will be responsible for furnishing the necessary labor and supervision to set up and OPERATE the pumping and bypassing system. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum.
- C. **Flow Control Precautions:** When flow in a sewer line is plugged, blocked or bypassed, sufficient precautions must be taken to insure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.
- D. The Owner may require a detail of the bypass plan to be submitted.

3.04 SEWER LINE CLEANING

- A. The Contractor shall remove all internal debris out of the sewer line that will interfere with the installation of polyethylene pipe by the Pipe Bursting Method. Sewer line cleaning shall be in accordance with Section 02760-Pipeline Cleaning.

3.05 TELEVISION INSPECTION (TV)

- A. Television Inspection shall be in accordance with Section 02762-Pipeline Television Inspection and shall be performed by experienced personnel trained in locating breaks, obstructions, and service connections by close circuit television. The interior of the pipeline shall be carefully inspected to determine the location of any conditions which may prevent proper installation of the polyethylene pipe by the Pipe Bursting Method into the pipelines, and it shall be noted so that these conditions can be corrected. A video tape and suitable log shall be kept for later reference by the Owner.
- B. Line Obstructions - It shall be the responsibility of the Contractor to clear the line of obstructions such as solids, roots, and protruding service connections that will prevent the insertion of the polyethylene pipe by the Pipe Bursting Method. Such work will be considered as incidental to the cost of lining the pipe with the Pipe Bursting Method.. If pre-installation inspection reveals an obstruction such as a dropped joint or a collapse that will prevent the insertion of the polyethylene pipe by the Pipe Bursting Method, and it cannot be removed by conventional sewer cleaning equipment, the Contractor shall call this to the attention of the Owner who may elect to have the condition corrected by point repair as described elsewhere in these Specifications.

3.06 INSTALLATION OF THE POLYETHYLENE PIPE USING THE PIPE BURSTING METHOD

- A. Polyethylene pipe installation shall be in accordance with Manufacturer's standards, with the following additional requirements.
- B. The thickness of the polyethylene pipe shall be per ASTM standards and Section 01310.
- C. Contractor shall submit a detailed procedure to be followed for the installation of the pipe bursting system being used. All such procedures shall be followed during installation unless changes are agreed to by the Engineer. The length of the bottom of the insertion pit before sloping up to natural grade shall be a minimum of 2 times the length of the bursting tool. The tool must be launched level. The minimum bending radius of HDPE SDR-17 pipe shall be 25 times the outside diameter of the pipe.
- D. The location and number of insertion or access pits shall be planned by the Contractor and submitted in writing for approval by the Engineer prior to excavation. The pits shall be located such that their total number shall be minimized and the length of replacement pipe installed in a single pull be maximized.
- E. Sections of the polyethylene replacement pipe shall be assembled and joined on the job site above ground. Jointing shall be accomplished by the heating and butt-fusion method in strict conformance with the manufacturer's printed instructions. The butt-fusion method for pipe joining shall be carried out in the field by certified operators with prior experience in fusing polyethylene pipe with similar equipment using proper jigs and tools per standard procedures outlined by the pipe manufacturer. These joints shall have a smooth, uniform, double rolled back bead made while applying the proper melt, pressure, and alignment. It shall be the sole responsibility of the Contractor to provide an acceptable butt-fusion joint. All joints shall be made available for inspection by the Engineer before insertion. The replacement pipe shall be joined on the site in appropriate working lengths near

the insertion pit. The maximum length of continuous replacement pipe shall be assembled above ground and pulled on the job site at any one time shall be 600 linear feet, unless approved by the Engineer.

- F. Polyethylene Pipe Installation - The installed replacement pipe shall be continuous over the entire length of each pipe segment from manhole to manhole and shall be free from visual defects such as foreign inclusions, concentrated ridges, discoloration pitting, varying wall thickness, pipe separations and other deformities. Replacement pipe with gashes, nicks, abrasions, or any such physical damage which may have occurred during storage or handling, which are deeper than 10% of the wall thickness shall not be used and shall be removed from the construction site. Where excavations for the insertion of the replacement pipe are made between two manholes, the ends of the HDPE will be cut smooth and square to the axis, so that it can be joined in a workman like manner such that both ends meet and touch uniformly and continuously. An all Stainless steel (including bolts and lugs) full circle universal clamp coupling shall be used, JCM Industries Type 108 or approved equal. Clamps shall be selected to fit the outside diameter of the replacement pipe. Minimum clamp width for 4" through 8" Liner shall be 12" and minimum clamp width for 10" or larger liner shall be 18".
- G. Sealing the Polyethylene Pipe by the Pipe Bursting Method at Manholes - The replacement pipe shall be installed with a tight fitting seal with the existing or new manhole, Fernco CMA, or equal. The Contractor shall be required to submit the method and products to be used to the Engineer for approval. The top half of the pipe within the manhole shall be neatly cut off and not broken or sheared off, at least four inches away from the manhole walls. The channel in the manhole shall be a smooth continuation of the pipe(s) and shall be merged with other lines or channels, if any. Channel cross section shall be U shaped with a minimum height of half pipe diameter to three fourths of the pipe diameter for fifteen inches and larger. The side of the channel shall be built up with mortar/concrete, as specified to provide benches at a maximum of 1 in 12 pitch towards the channel.

Payment for manhole work will be incidental to the price of Pipe Bursting the existing sewer main.

- H. Service Connections - After the polyethylene pipe has been installed, the Contractor shall restore the existing active service connections and branch connections as determined by Contractors television logs. Service laterals shall not be reconnected to the new main until replacement and testing are completed. Any service laterals remaining off line for an extended period of time, or any connections as deemed necessary by the Engineer to protect the customer, shall be bypass pumped until such time that they can be reconnected. All service laterals shall be restored within 24 hours unless approval is received by the Engineer. Any damage resulting from not restoring the service laterals shall be the sole responsibility of the Contractor. Sewer service lateral connections for 10-inch and smaller main sewer pipe shall be by external saddle only. Sewer service lateral connections for larger than 10-inch main sewer pipe shall be as shown on the Standard Details. Service lateral materials used during connection to the existing service lateral shall meet the requirements of Section 02610, Section 02730, and Section 02732.

3.07 TESTING

- A. Testing of the polyethylene pipe shall be in accordance with Section 02734.

3.08 CLEANUP

- A. Upon acceptance of the installation work and testing, the Contractor shall reinstate the project area.

3.09 POST TELEVISION INSPECTION

- A. Refer to Section 02762.
- B. A videotape and log of the line after rehabilitation showing reinstated live service connections and a view up the service line shall be provided to the Owner.

END OF SECTION 02769

SECTION 02770
FINAL PRODUCT PERFORMANCE REQUIREMENTS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This Section covers the final product requirements for the rehabilitated pipe section using any of the preapproved methods mentioned in these specifications.

1.02 RELATED WORK

- A. Standard Detail Drawings
- B. Section 02730 - Sanitary Sewer Pipelines
- C. Section 02732 - Sanitary Sewer Service Lines
- D. Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes and Service Lines
- E. Section 02762 - Pipeline Television Inspection
- F. Section 02766 - Cured In Place Pipe Installed Using The Inversion Method
- G. Section 02769 - Polyethylene Pipe Installed Using The Pipe Bursting Method

PART 2- PRODUCT PERFORMANCE REQUIREMENTS

2.01 PRODUCT SEAL AT MANHOLE

- A. Seal of rehabilitated pipe at new and existing manholes will be inspected upon completion of each line segment and again at a final inspection prior to final acceptance of the project. No visible leaks will be allowed. Should a leak be present at any of the inspection times it will be the responsibility of the Contractor to stop the leak with a method approved by the Engineer. All retainage being held

by the Owner will be retained until such time as all visible leaks have been repaired to the Engineer's satisfaction. After final acceptance of the project the seals will be inspected again within a 6 month period and any additional leaks will be repaired under the Warranty Period.

2.02 FINAL REHABILITATED PIPE PRODUCT

- A. Television Inspection - All rehabilitated pipeline sections regardless of the method used will be televised as required by these specifications. Should the television camera fail to pass smoothly and without unnecessary force through a pipeline section that section will be considered as unsatisfactory and repair of the section will be performed as required by these specifications.
- B. Mandrel Inspection - All rehabilitated pipeline sections regardless of the method used will be inspected by means of a mandrel pulled by hand through the pipeline section. The mandrel will have an outside diameter equal to approximately 80% of the original inside diameter of the pipeline section prior to rehabilitation. Should the mandrel fail to pass through the section being pulled by hand, the section will be considered as unsatisfactory and repair of the section will be performed as required by these specifications. Mandrel (80% Diameter) will be supplied by the Contractor and checked and approved by Engineer prior to performing test. Mandrel test may be made in conjunction with Television inspection if Mandrel is attached in front of camera to allow Engineer to visually see results.
- C. Deformations Within The Invert Area - During the television inspection of all rehabilitated pipeline sections, the lower third of the pipe cross-section will be checked for deformations in the rehabilitated pipeline that in the opinion of the Engineer will affect the natural flow of the pipeline. Deformations will be considered any abnormal protrusion either parallel or perpendicular with the flow of the pipeline. Should any deformations be found in the lower third of the pipe cross-section , the section will be considered as unsatisfactory and repair of the

section will be performed as required by these specifications. Deformations caused by the original pipeline section will also not be accepted. It will be the Contractor's responsibility to identify those locations of the original pipeline that may cause such deformities and make required repairs prior to the rehabilitation process. Such repairs will be considered incidental to the price bid for rehabilitation of the pipeline section.

- D. Service Reinstatements - During the final televising of the rehabilitated section, the camera shall stop and pan all services to assure the Engineer that all services have been installed properly and without visible groundwater leaks. No visible leaks will be allowed. Should a leak be present, it will be the responsibility of the Contractor to stop the leak with a method approved by the Engineer. All retainage being held by the Owner will be retained until such time as all visible leaks have been repaired to the Engineer's satisfaction.
- E. Site Cleanup - The entire construction area will be returned to its original condition including the replacement of vegetation as required by these specifications as soon as possible after final acceptance of the pipeline section has been made. No retainage will be released on the project until all areas have been restored to their original condition.

PART 3 - REPAIR OF DEFECTS

3.01 PIPELINE SECTION REPAIR

- A. All sections of rehabilitated pipeline considered as unsatisfactory for any of the reasons mentioned in these specifications may be repaired as follows:
 - 1. Open Cut Methods – Pipe will be removed and replaced with a pipe installed according to the requirements of these specifications.
 - 2. Liner Methods - Liner will be removed and replaced with a liner installed according to the requirements of these specifications.

3. Pipe Bursting Method - Point repair area considered unsatisfactory with approved materials. Care should be taken in joining the sections of pipe to assure they are joined according to these specifications.

3.02 DEDUCTION FOR NONREPAIRED SECTIONS

- A. If, at the sole discretion of the Engineer, the unsatisfactory pipe section is allowed to remain, a deduction of 30% of the bid amount for that line segment from manhole to manhole containing the unsatisfactory section will be made. The Contractor has the alternative of repairing the unsatisfactory pipe section as mentioned above if they do not want the deduction of the bid amount to occur. The alternative mentioned in this section to repairing the unsatisfactory pipeline section will be only at the Engineer's discretion and the Engineer's decision will be final.

END OF SECTION 02770

SECTION 02930
LAWNS AND GRASSES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This Section covers the replacement of sod in lawns disturbed by the construction.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling, and Compacting

1.03 SCOPE OF WORK

- A. This Section covers the furnishing and placing of sod to form solid mats on areas shown on the Plans or areas disturbed by the Contractor.
- B. It covers the furnishing and applying of water for sod.
- C. It covers the furnishing and placing of four (4) inches of topsoil on areas.
- D. It covers the furnishing and placing of fertilizer.
- E. All work shall be in accordance with details shown on the Plans and within these specifications.

PART 2 - PRODUCTS

2.01 SOD

- A. Solid sod shall be cut from well established viable Bermuda, Zoysia or St. Augustine grass. Sod type shall match that established in the disturbed areas.

2.02 TOPSOIL

- A. Topsoil shall be reasonably free from subsoil, clay, lumps, brush, objectionable weeds and/or other litter and shall be free from roots and toxic substances or other material or substances that might be harmful to plant growth or be a hindrance to grading, planting and maintenance operations.

2.03 FERTILIZER

Fertilizer shall be a standard commercial product complying with State and Federal laws and with the requirements issued by proper authorities.

- A. Fertilizer shall be delivered to the site in the manufacturer's original container, on which shall be plainly marked the manufacturer's name and the guaranteed chemical analysis.
- B. Except as noted in the following sentence, fertilizer shall contain not less than the percentages by weight of ingredients as follows:

Nitrogen	- 12 percent
Phosphorus, P2O5	- 12 percent
Potash, K ₂ O	- 12 percent

Other 1:1:1 ratio fertilizers may be used, provided the available plant food remains the same as herein specified.

- C. All fertilizer shall be solid and shall be in a condition which will permit proper distribution.

2.04 WATER

- A. Water shall be free from any substances, in solution or in suspension, which would inhibit the rapid growth of grass.

PART 3 - EXECUTION

3.01 SOD PLACEMENT

- A. In this paragraph, "Solid Sod" is interchangeable with the word "sod."
- B. Solid sod or topsoil shall not be placed until all other items of work are complete.
- C. Areas to be sodded shall be shaped in such manner that they will, after placement of sod, conform to the typical sections.
- D. Prior to placing the topsoil in the areas designated, the ground surface shall be cleared of materials that might hinder proper grading, tillage, or subsequent maintenance operations such as stumps, stones, roots, cable, wire, grade stakes, etc., and brought to four (4) inches below the finished grade. The areas shall then be thoroughly tilled to a depth of at least two (2) inches by plowing, disking, harrowing or other acceptable means.
- E. The Contractor shall then obtain an approved topsoil from any available source and place uniformly on the designated areas and spread evenly to a minimum thickness of four (4) inches. Irregularities in the surface shall be corrected so as to prevent formation of depressions where water will stand. **TOPSOIL SHALL NOT BE PLACED WHEN THE SUBGRADE IS FROZEN, EXCESSIVELY WET, OR IN A CONDITION DETRIMENTAL TO THE PROPOSED PLANTING AND PROPER GRADING.**
- F. After the topsoil has been spread and graded, the surface shall be cleared of stones, stumps or other objects that might hinder planting or maintenance preparations. Paved areas over which hauling operations are conducted shall be kept clean.

- G. Where any portion of the surface becomes gullied or otherwise damaged, the affected areas shall be repaired to the aforementioned condition.

3.02 FERTILIZER APPLICATION

- A. Fertilizer shall be applied to the loosened layers (two (2) inches deep) at the rate of one and one-half (1-1/2) pounds per 100 square feet for all areas, regardless of whether topsoil has been added. Distribution shall be uniform.

3.03 WATERING

- A. Prior to placement of sod, areas shall be sprinkled with water sufficiently to make them moist, but not muddy. The initial application of water may be omitted if the area is sufficient moist from rainfall.
- B. Immediately following the placing and tamping of sod, the covered area shall be wetted thoroughly. Subsequent applications of water shall be as required.

3.04 COMPLETENESS

- A. The sodding operations shall not be considered complete until it has produced areas of solid, living grass.

3.05 INTERMITTENT CLEANUP

- A. Immediately following the sodding operations, all gutters, sidewalks, driveways, street pavement, yard or other areas shall be cleaned of all debris, excess sod, topsoil or other objectionable matter. All such cleanup operations shall be completed before sodded areas are measured for payment.

END OF SECTION 02930

SECTION 02935
GROUND COVER

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Consists of furnishing and applying fertilizer, seed, mulch cover, asphalt and water at all locations disturbed by the construction.
- B. Maintenance service.

1.02 QUALITY ASSURANCE

- A. Perform work with personnel experienced in the work required of this section under direction of a skilled foreman.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver plant materials to the site in accordance with Owner's policies and requirements.
- B. Keep grass seed and fertilizer dry and out of the weather.

1.04 WARRANTY

- A. Provide one year warranty from date of final acceptance.
- B. Replace areas found dead, or not in a healthy growing condition.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Fertilizer shall be commercial grade, uniform in composition, free flowing and suitable for application with mechanical equipment, delivered to the site in labeled containers, conforming to current fertilizer laws and bearing the name, trademark and warranty of the producer.
- B. The seed shall be labeled in accordance with current rules and regulations of the U.S. Department of Agriculture and shall have a minimum of 98% pure seed and 85% germination by weight, and shall contain no more than 1% weed seeds. A combined total of 50 noxious weed seeds shall be the maximum amount allowed per pound of seed with the following exceptions: Johnson grass seed, wild onion seed, wild garlic seed, field bindweed seed, or nut grass seed will not be allowed in any amount whatsoever. Seed shall be furnished in sealed, standard containers. Seed which has become wet, moldy or otherwise damaged in transit or in storage will not be acceptable.
- C. Legumes shall be inoculated with an approved culture as recommended by the manufacturer, just prior to seeding. After planting, watering will continue after germination until growth is established.
- D. Seed shall be composed of the varieties and amount by weight as shown below, based on time of application:

	Weight Lbs.
	<u>Per Acre</u>
<u>February 15 - March 15</u>	
Tall Fescue (Ky. 31)	35
Weeping Love Grass (Eragrostis Curreala)	5
Lespedeza (Kobe)	35

March 15 - June 1

Bermuda Grass (Common), Hulled	10
Weeping Love Grass (Eragrostis Currala)	5
Bahia (Pensacola)	20
Lespedeza (Kobe)	35

June 1 - September 15

Weeping Love Grass (Eragrostis Currala)	5
Bermuda Seed (Common), Hulled	5
Bermuda Seed (Common), Unhulled	10
Bahia Grass(Pensacola)	20
Brown Top Millet	15

September 15 - November 15

Tall Fescue (Ky.31)	35
Rye Grass (Annual)	10
Crimson Clover (Dixie)	20

- E. Much cover shall consist of straw. Mulch shall be dry and reasonably free from Johnson grass or other noxious weeds, and shall not be excessively brittle or in an advanced state of decomposition. All material will be inspected and approved prior to use.
- F. Asphalt in mulch cover shall be of such quality that the mulch cover will be bound together to form a cover mat which will stay intact under normal climatic conditions.
- G. Water shall be of irrigation quality and free of impurities that would be detrimental to plant growth.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Areas to be seeded shall be dressed to natural shape.
- B. The seed bed shall be thoroughly pulverized by means of disk harrows or other approved methods, thoroughly mixing soil to a depth of not less than 6 inches.
- C. Fertilizer shall be applied at the rate of 800 pounds per acre of 10-20-10, or the equivalent amount of plant food. Fertilizer shall be uniformly incorporated into the soil to a depth of at least 2 inches.
- D. Broadcast sowing of seed may be accomplished by hand seeders or by approved poser equipment. Either method shall result in uniform distribution and no work shall be performed during high winds. The area seeded shall be lightly firmed with a cultipacker immediately after broadcast.
- E. Mulch cover shall be applied at the rate of 4,000 pounds per acre immediately after seeding and shall be spread uniformly over the entire area by approved poser mulching equipment.
- F. Immediately following or during the application of the mulch cover on seeded area, asphalt shall be applied at the rate of 0.05 gallons per square yard.
- G. After application of the mulch cover, water shall be applied in sufficient quantity to thoroughly moisten the soil to the depth of pulverization and then as necessary to germinate the seed and maintain growth.
- H. The contractor shall water and maintain seeded areas from time of completion until final acceptance of the project.
- I. The contractor shall be responsible for establishing ground cover on all disturbed areas. Repeated seeding shall be required if necessary throughout the warranty period.

END OF SECTION 02935

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This section covers cast-in-place concrete materials, reinforcing steel, forms, and finishing in conjunction with sanitary sewer pipeline construction.
- B. Use Class A Concrete in all manholes and other structures.
- C. Use Class B Concrete for bedding and encasement only.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling, and Compacting
- B. Section 02575 - Pavement Repair
- C. Section 02605 - Manholes
- D. Section 02730 - Sanitary Sewer Pipelines
- E. Section 02732 - Sanitary Sewer Service Lines

1.03 QUALITY ASSURANCE

Not used.

1.04 SUBMITTALS

- A. Submit mix design, equipment details, and vendor name for field batched concrete.

1.05 REFERENCES

Not used.

PART 2 - PRODUCTS

2.01 CONCRETE

- A. Concrete: composed of Portland Cement; fine and coarse aggregate; water; and, an air entraining agent. Provide either Class A concrete or Class B concrete as described below.
- B. For Class A concrete use ready-mixed concrete; conform to ASTM C 94, latest edition; deliver and place within one hour after all materials have been placed in the mixing drum.
- C. For Class B concrete use ready-mixed or field mixed concrete.
- D. Proportion components, except water, by weight. Water may be measured by volume. One sack of Portland Cement consists of one cubic foot or 94 pounds. Proportion components to meet these requirements:
 - 1. Class A Concrete:
 - a. Minimum sacks of cement per cubic yard: six (6)
 - b. Slump range: 2 - 4 inches
 - c. Minimum 28 day compressive strength: 4000 PSI
 - d. Air Content: 4 - 7 percent
 - 2. Class B Concrete:
 - a. Minimum sacks of cement per cubic yard: five (5)
 - b. Slump range: 2 - 4 inches
 - c. Minimum 28 day compressive strength: 3000 PSI
 - d. Air Content: Not Applicable
- E. Cement: Portland Cement conforming to AASHTO M 85, Type I. Use Type III cement (high early strength) only if approved by the Engineer.

- F. Water: potable water free from injurious amounts of acids, alkalis, oils, sewage, vegetable matter and dirt.
- G. Air entraining agent: use in all Class A concrete; conform to AASHTO M 154; add to the mixing water in solution; proportion to provide four (4) to seven (7) percent air in the concrete.
- H. Fine aggregate: clean, hard, durable particles of natural sand free from injurious amounts of organic impurities; conform to the gradation requirements of AASHTO T 27.
- I. Coarse aggregate: clean, hard and durable crushed stone or washed gravel; reasonably well graded from course to fine; per AASHTO T 27.

2.02 REINFORCING STEEL

- A. Steel bars: deformed, conforming to ASTM A 615 or A 617.
- B. Steel wire: conform to ASTM A 82, Cold-Drawn Steel Wire for Concrete Reinforcement.
- C. Wire mesh: conform to ASTM A 185; gauge and mesh per plans.
- D. Submit reinforcing steel bars shop drawings for approval.
- E. All steel reinforcement: free from rust, scale, mortar, dirt, or other objectionable coatings.

PART 3 - EXECUTION

- A. Perform excavation per Section 02220 - Excavation, Backfilling, and Compacting.
- B. Build forms neat, square, and flat so concrete will have smooth finish when forms are pulled. Construct forms to provide finished concrete to dimensions shown on plans.
- C. Place reinforcing steel accurately in accordance with details shown on the plans and properly secure in position.

- D. Vibrate all structural concrete as it is placed using internal vibrators capable of transmitting vibration to the concrete at frequencies not less than 4,500 impulses per minute. Do not use form vibrators. Limit vibration to provide satisfactory consolidation without causing segregation. Do not insert vibrator be more than six (6) inches into the lower courses previously vibrated. Use vibrators in a substantially vertical position; insert at uniformly spaced points no farther apart than the visible effectiveness of the vibrator.
- E. Vibration is not required in manhole bases and pipe encasements; consolidate concrete in these places with a tamping rod so a dense void free mass is formed.
- F. Allow concrete to cure for at least 48 hours before stripping forms. If concrete is in a structural member, do not remove forms until the concrete can withstand safely all superimposed loads.
- G. On all exposed surfaces, including the inside surface of manholes, remove all fins and projections so the surface is smooth. Cut out and fill with grout any honeycombed areas. Extensive honeycombing is not allowable.

END OF SECTION 03300

SECTION 03400
CLEARING FOR CONSTRUCTION ACCESS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Excavation, grading, cutting and removal of trees, shrubs and underbrush, and the removal of any debris existing above natural ground surface and within the cleared area necessary to permit the construction of the improvements.

1.02 RELATED WORK

- A.. Section 02605 - Manholes
- B. Section 02730 - Sanitary Sewer Pipelines
- C. Section 02732 - Sanitary Sewer Service Lines
- D. Section 02734 - Inspection and Testing of Sanitary Sewer Pipelines, Manholes and Service Lines

1.03 PROTECTION

- A. In all cases the Contractor is responsible for protecting public and private property: and, protecting any person or persons who might be injured as a result of the Contractor's work.
- B. All utilities shown on the plans may not represent the exact location: however, the Contractor is responsible for verifying these locations and contacting the Arkansas One Call System before excavating.

PART 2 - MATERIALS

Not used

PART 3 - EXECUTION

3.01 GENERAL

- A. The Contractor will be required to submit a plan to build access roads/trails for approval by the Engineer.
- B. It shall be the responsibility of each bidder to examine the site carefully and make his own calculations as to costs to be incurred by reason of the requirements of this section.
- C. Trees, shrubs, underbrush and debris removed from the improvement right of way shall be disposed of by the Contractor in a manner approved by the Engineer.

END OF SECTION 03400

SECTION 03500
GROUT FILL ABANDONED SEWER PIPELINES

PART 1 - GENERAL

1.01 GENERAL

- A. This section covers the materials and procedures used in grout filling abandoned sewer pipelines with a lightweight, pumpable cementitious mix.

1.02 RELATED WORK

- A. Section 02220 - Excavation, Backfilling, and Compacting
- B. Section 02730 - Sanitary Sewer Pipelines

1.03 SUBMITTALS

- A. Submit to the Engineer for review and approval all materials and procedures to be used in grout filling of abandoned lines.

PART 2 - PRODUCTS

2.01 CEMENTITIOUS GROUT

- A. Cementitious grout shall consist of a preblend of lightweight aggregate, cement, fly ash and admix to prevent segregation and promote expansion upon setting. Loose bulk density for the dry mix materials shall be 30 to 35 pounds per cubic foot. Grout shall equal or exceed Strong-Seal Grout 250 - Product Code 2133 and shall be packaged in 2 cubic foot bags.

2.02 FLOWABLE FILL

- A. Flowable fill shall conform to Section 206 – Flowable Select Material of the Arkansas State Highway and Transportation Department’s Standard Specifications for Highway Construction, latest edition.

2.03 WATER

- A. Potable water free from injurious amounts of acids, alkalies, oils, sewage, vegetable matter and dirt shall be used.

PART 3 - EXECUTION

3.01 GENERAL

- A. Components shall be combined and thoroughly mixed in an approved mixer to a uniform pumpable mix. Equipment shall be of special design to insure proper mixing in as short a duration as possible. A water meter or measuring tank shall be utilized to insure that a correct and consistent mix is produced for pumping and flow to fill voids. Mixing and pumping shall be continuous and at such a rate as to insure that voids are filled prior to setting of mix. A pressure gauge shall be used to insure a continuous uniform flow of high quality grout without shutdowns or delays.

END OF SECTION 03500

SECTION 03700
MANHOLE REHABILITATION

PART 1 – GENERAL

The manholes to be addressed in this section are highlighted and labeled on the vicinity map pages included with the project drawings. The contractor shall refer to these drawing sheets as well as the Manhole Rehabilitation Table, attached to this document, for a determination on proper rehabilitation methods for each designed manhole.

1.01 WORK INCLUDED

- A. This section includes the rehabilitation of existing sanitary manholes including the method of repair, materials and equipment.
- B. Rehabilitation of sewer manholes shall include one or more of the following:
 - 1. Replace with poured-in-place manhole
 - 2. Replace with fiberglass manhole
 - 3. Seal (waterproof) entire manhole
 - 4. Abandon & grout fill manhole
 - 5. Replace with standard ring & cover
 - 6. Replace with watertight ring & cover

1.02 RELATED WORK

- A. Section 01000 – General Requirements and Procedures
- B. Section 02575 – Pavement Repair
- C. Section 02605 – Manholes
- D. Section 02734 – Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines
- E. Section 02760 – Pipeline Cleaning

- F. Section 02770 – Final Product Performance Requirements

1.03 QUALITY ASSURANCE

- A. Inspect all manholes per Section 02734 – Inspection and Testing of Sanitary Sewer Pipelines, Manholes, and Service Lines.

1.04 SUBMITTALS

- A. Use of materials other than those specifically listed below is prohibited without prior approval from the Engineer and Little Rock Wastewater Utility.
- B. Submittal of the manufacturer’s certificate that the materials delivered meet or exceed these Specification requirements shall accompany delivery.

1.05 PROTECTION

- A. In all cases, the contractor is responsible for protecting public and private property; and protecting any person or persons who might be injured as a result of the Contractor’s work.
- B. All utilities shown on the plans may not represent the exact location; however, the Contractor is responsible for verifying these locations and contacting “Arkansas One Call System” before excavating.
- C. The Contractor shall abide to all applicable OSHA standards.

PART 2 – PRODUCTS AND MATERIALS

2.01 MANHOLE RING AND COVER

- A. Replacement cast iron ring and cover will conform to Section 02605, 2.09 for standard, and 2.10 for watertight cover.

2.02 MANHOLE WALL AND CRACK SEALANT

- A. Acceptable products:
1. Non-shrink grout:
 - a. Grout 250 as manufactured by Strong-Seal Systems Inc.
 - b. Octocrete as manufactured by IPA Systems, Inc.
 - c. Speedcrete as manufactured by Standard Dry Wall Products.
 - d. Preco Patch as manufactured by Preco, Ltd.
 - e. Or Approved Equal.
 2. Cementitious Coatings:
 - a. MS-2A as manufactured by Strong-Seal Systems Inc.
 - b. Quadex
 - c. Profile Mix as manufactured by Strong-Seal Systems, Inc.
 - d. Or Approved Equal
 3. Quick-set grout:
 - a. QSR as manufactured by Strong-Seal Systems Inc.
 - b. Ipanex R as manufactured by IPA systems, Inc., mixed with Portland cement or Octoplug.
 - c. Prime Flex 900LV, 920, and 970 HydroGel as manufactured by Prime Resins, Inc.
 - d. Waterplug as manufactured by Standard Dry Wall Products.
 - e. Preco Plug as manufactured by Preco, LTD.
 - f. Or Approved Equal
 4. Epoxy Liners:
 - a. Raven 404 as manufactured by Raven Lining Systems, Inc.
 - b. SLS-20 as manufactured by Citadel Technologies, Inc.
 - c. Strong-Seal Systems Epoxy Topcoat as manufactured by Chemtron International, Inc.
 - d. Or Approved Equal

5. Structural Epoxy Liners:
 - a. Raven 405 as manufactured by Raven Lining Systems, Inc.
 - b. SLS-30 as manufactured by Citadel Technologies, Inc.
 - c. Or Approved Equal
6. Heat-Shrinkable Encapsulation:
 - a. Wrapid Seal as manufactured by Canusa CPS
 - b. Or Approved Equal

2.03 MANHOLE REPLACEMENT MATERIALS

- A. Poured-in-place manholes:
 1. Comply with Section 02605 – Manholes
- B. Fiberglass Manholes:
 1. Flowtite Manholes as manufactured by Containment Solutions, Inc.
 2. Fiberglass reinforced polyester manhole as manufactured by L.F. Manufacturing, Inc.
 3. Or Approved Equal

2.04 FLOWABLE FILL

- A. Flowable fill shall conform to Section 206 – Flowable Select Material of the Arkansas State Highway and Transportation Department’s Standard Specifications for Highway Construction, latest edition.
- B. Or Approved Equal

2.05 WATER

- A. Potable water free from injurious amounts of acids, alkalies, oils, sewage, vegetable matter and dirt shall be used.

PART 3 - EXECUTION

3.01 SITE PREPARATION

- A. It shall be the responsibility of the Owner to locate and designate all manhole access points open and accessible for the work.
- B. When working in public right-of-way, Contractor shall obtain an approved barricade plan from the City of Little Rock Traffic Engineer.
- C. Contractor shall properly install all protection devices, barricades, etc. as required on approved barricade plan.

3.02 SEWER FLOW CONTROL

- A. **Plugging or Blocking:** A sewer line plug may be inserted into the line upstream of the section being worked. The plug shall be so designed that all or any portion of the sewage can be released. After the work has been completed, flow shall be restored to normal.
- B. **Pumping and Bypassing:** The Contractor may supply the pumps, conduits, and other equipment to divert the flow of sewage around the manhole section in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm. The Contractor will be responsible for furnishing the necessary labor and supervision to set up and OPERATE the pumping and bypassing system. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum.
- C. **Flow Control Precautions:** When flow in a sewer line is plugged, blocked or bypassed, sufficient precautions must be taken to insure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.
- D. The Owner may require a detail of the bypass plan to be submitted.

3.03 REPLACE WITH POURED-IN-PLACE MANHOLE

- A. Comply with Section 02605 – MANHOLES

3.04 REPLACE WITH FIBERGLASS MANHOLE

- A. This specification shall govern for the furnishing of all work necessary to accomplish and complete the installation of glass-fiber reinforced polyester (FRP) manholes. Glass-fiber reinforced polyester manholes shall be a one-piece monolithic designed unit constructed of glass-fiber reinforced, supplier certified, unsaturated isophthalic polyester resin containing chemically enhanced silica to improve corrosion resistance, strength and overall performance. FRP manholes shall be manufactured in strict accordance with ASTM D-3753 “Standard Specification for Glass-Fiber Reinforced Polyester Manholes”.
- B. Dimensions: The manhole shall be a circular cylinder, reduced at the top to a circular manway not smaller than 22½” inside diameter. Manholes shall be produced in half-foot increments of length +/- 2”. Nominal inside diameters shall be 48”. Tolerance on the inside diameter shall be +/- 1%. The minimum wall thickness for all FRP manholes at all depths shall be 0.480”.
- C. Class: The FRP manhole shall be manufactured in the H-20 wheel load rating (minimum 16,000 pounds dynamic wheel load) or higher.
- D. Stubouts and Connections:
 - 1. Joints for sewer pipe line and drop connections sizes 4” – 12” shall be made by means of Inserta-Tee watertight compression connection, or approved equal. Installation shall be in strict accordance with manufacturer’s written instructions.
 - 2. Pipe Stubouts:
 - a. Install rubber gasketed PVC sewer pipe stubouts to manhole with resin and glass-fiber reinforced lay-up. Gaskets shall meet the same performance requirements of the sewer pipe to be installed. Resin

and fiberglass shall be of the same type and grade as used in the fabrication of the fiberglass manhole.

- b. Install PVC pipe stubouts for use with resilient pipe-to-manhole connectors (boots) which conform to the performance requirements of ASTM C-923.

E. **Marking and Identification:** All manholes shall be marked in letters no less than 1" in height with the following information:

1. Manufacturers Identification
2. Manufacturers Serial Number
3. Manhole Length
4. ASTM Designation
5. Installation assist marks (vertical lines 90° apart at base of manhole).

F. **Installation Methods:**

1. Installation of fiberglass manhole must be within strict accordance with the manufacturer's specifications. Correct FRP manhole installation requires proper concrete foundation, good backfill and proper handling to prevent manhole damage and insure long-term corrosion resistant service.
2. Pour concrete base: Concrete slab base should be a minimum of 6" thick. Concrete slab should extend a minimum of 12" beyond manhole outside wall. Lower manhole into wet concrete base to a minimum depth of 4". Minimum 2" thick concrete bearing surface beneath bottom edge of the manhole is required. Plumb manhole using standard bubble level and by moving manhole with hands. Work concrete around manhole base and 6 inch minimum over incoming lines. Inverts and laterals are made following standard procedures.
3. Backfill: Backfilling is done just as soon as the concrete base has hardened enough to provided sufficient support for manhole and fill. Native soil (or sand, in unstable areas) free of large stones, debris, or concrete chunks may be used for backfill. Backfill should be placed evenly around manhole in 12" maximum lifts and should thoroughly tamped to 90% standard proctor

density before the next layer is installed. Backfill material shall be subject to approval by the Engineer.

4. **Bring to Grade:** Construct chimney on flat shoulder of manhole using precast concrete rings.
5. **Set Ring and Lid:** Set the new cast iron manhole frame in full mortar bed with a mastic seal between mortar and iron frame. After installation of the ring and cover, and after the mortar has set, the Contractor shall apply either:
 - a. For manhole covers at ground level – apply an external 18” sheet of heat-shrinkable encapsulation in accordance with manufacturer’s specifications.

3.05 SEAL (WATERPROOF) ENTIRE MANHOLE

A. The Contractor, approved and trained by the manufacturer, shall furnish all labor, equipment and materials for applying a cementitious mix to form a structural monolithic liner of a minimum ½ inch thickness, with machinery specially designed and manufactured by the material supplier for the application. All aspects of the installation shall be in accordance with the manufacturer’s recommendation and per the following specifications.

B. **APPLICATION:**

1. **PREPARATION:**

- a. Place covers over invert to prevent extraneous material from entering the sewer lines.
- b. All foreign material shall be removed from the manhole wall and bench using a high pressure water spray (minimum 2500 psi). Loose and protruding brick, mortar, and concrete shall be removed using a mason’s hammer and chisel and/or scraper. Fill any large voids with quick setting grout.
- c. Active leaks shall be stopped using approved quick setting grouts or fillers. Some leaks may require weep holes to localize the infiltration

during the application. After application the weep holes shall be plugged with the quick setting material prior to the application of the final coat. When severe infiltration exists, drilling may be required in order to pressure grout using a cementitious grout or chemical grout. Manufacturer's recommendations shall be followed when pressure grouting is required.

2. INVERT REPAIR:

- a. After all preparations have been completed, remove all loose material and wash wall again.
- b. Any bench, invert, or service line repairs shall be made at this time using the quick setting materials and shall be used per manufacturer's recommendations.
- c. Invert repair shall be performed on all inverts with visible damage or where infiltration is present or when vacuum testing is specified. After blocking flow through manhole, and thoroughly cleaning invert, the Prime Flex 970 Hydro Gel, QSR Patching Material, or approved equal shall be applied to the invert in an expeditious manner. The material shall be troweled uniformly onto the damaged invert at a minimum thickness of ½ inch at the invert extending out onto the bench of the manhole sufficiently to tie into the structurally enhanced monolithic liner to be spray applied. The finished invert surfaces shall be smooth and free of ridges.

3. SPRAYING:

- a. The surface shall be clean and free of all foreign material and shall be damp without noticeable free water droplets or running water, but totally saturated just prior to application of material. Materials shall be spray applied up to one (1) inch thick in one or more passes from the bottom of the frame, however, minimum thickness shall not be less than ½ inch. The surface is then troweled to relatively smooth finish, being careful not to over trowel.

- b. A brush finish shall be applied to the trowel finished surface. Manufacturer's recommendations shall be followed whenever more than 24 hours have elapsed between applications.
- c. The wooden covers shall be removed at this time and the bench sprayed with materials mixed per specifications and spray applied in such a manner that a gradual slope is produced from the walls to the invert with the thickness at the invert to be no less than ½ inch. The wall/bench intersection shall be rounded to uniform radius the full circumference of the intersection.

3.06 EPOXY LINER SYSTEM:

A. GENERAL:

1. The epoxy liner shall be a 100% solids, two part, ultra-build system. The product must be capable of providing a structural liner applied to a minimum thickness of 125 mils in one application.
2. There should be no special storage requirements, nor should the epoxy contain water or VOC's.
3. The resin should be a non-regulated material, but the hardener may be considered a caustic corrosive. Although not extremely hazardous, the Contractor shall use good safety practices at all times.

B. SURFACE PREPARATION:

1. All foreign and loose materials shall be removed from the manhole interior using high pressure water spray capable of a minimum 2500 psi and using a zero degree rotating head.
2. All voids larger than approximately one inch in diameter are to be filled with patching compound prior to application of epoxy liner.
3. Active leaks shall be stopped using products specifically for that purpose and according to manufacturer's recommendation.

C. APPLICATION AND INSPECTION:

1. All storage, handling, mixing and application shall be in strict accordance with the manufacturer's recommendations.
2. To provide both a structural liner and a chemical barrier, a two component, 100% solids epoxy system shall be applied on all surfaces from the cast iron ring down to and including the invert.
3. During the application, a wet film gauge shall be used regularly to insure that design thickness is being maintained.
4. After the epoxy liner has set (hard to touch), all visible pinholes are to be repaired. Repairs are made by lightly abrading the surface and brushing the lining material over the area.
5. After the product has set to touch, the surface is to be inspected for pinholes and thin spots using a Holiday Detector capable of 16,000 volts.

3.07 REPLACEMENT OF MANHOLE FRAME AND COVER

- A. New matching ring and covers will be provided by the Contractor.
- B. Salvaged ring and covers shall remain the property of the Owner.
- C. Contractor shall deliver, unload and place as directed all salvaged ring and covers to 5300 Shackleford Road (Clearwater Shop).
- D. Construction Methods:
 1. Materials shall be removed from around the frame to a depth to expose the entire frame and cover and at least two brick courses or 6 inches of the top of the manhole corbel.
 2. If the manhole is located in pavement, the frame and cover removal shall be accomplished by saw cutting a 4 feet by 4 feet square cut, or 4 feet diameter circular cut in the pavement.
 3. Removed material shall be stockpiled.
 4. Rebuild and adjust, if necessary, the top of manhole to required elevation.

5. Set the new cast iron manhole frame in full mortar bed with a mastic seal between mortar and iron frame.
6. After installation of the ring and cover, and after the mortar has set, the Contractor shall apply either:
 - a. For manhole covers at ground level – apply an external 18” sheet of heat-shrinkable encapsulation in accordance with manufacturer’s specifications.
7. Backfill under flexible base streets (asphalt) shall be compacted to 95% maximum density (Modified Proctor).
8. Backfill under concrete streets shall be SB-2 compacted to 95% modified density.
9. Backfill in other areas shall be compacted to 90% maximum density ASTM D-698 (Standard Proctor).
10. If the manhole is in a pavement area, replace the base and pavement.

3.08 RAISE MANHOLE FRAME AND COVER TO GRADE

- A. New matching ring and covers will be provided by the Contractor.
- B. Salvaged ring and covers shall remain the property of the Owner.
- C. Contractor shall deliver, unload and place as directed all salvaged ring and covers to 5300 Shackleford Road (Clearwater Shop).
- D. Construction Methods:
 1. Materials shall be removed from around the frame to a depth to expose the entire frame and cover and at least two brick courses or 6 inches of the top of the manhole corbel.
 2. If the manhole is located in pavement, the frame and cover removal shall be accomplished by saw cutting a 4 feet by 4 feet square cut, or 4 feet diameter circular cut in the pavement.
 3. Removed material shall be stockpiled.
 4. Rebuild and adjust, if necessary, the top of manhole to required elevation.

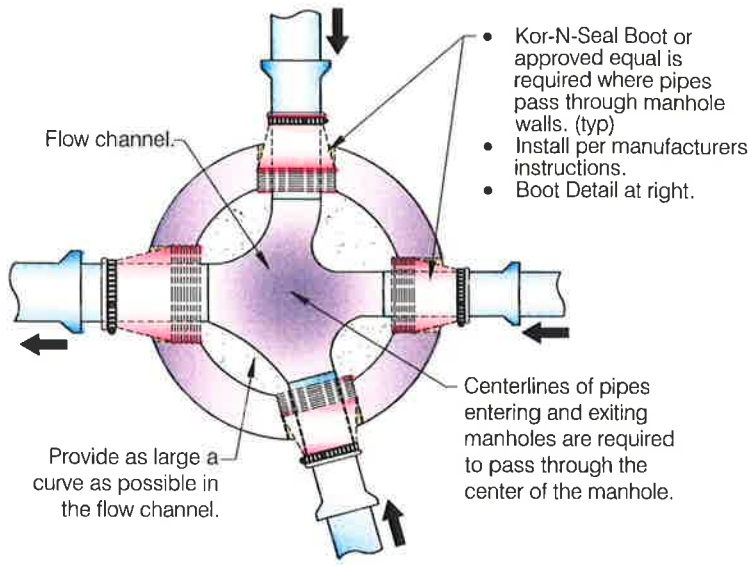
5. Set the new cast iron manhole frame in full mortar bed with a mastic seal between mortar and iron frame.
6. After installation of the ring and cover, and after the mortar has set, the Contractor shall apply either:
 - a. For manhole covers at ground level – apply an external 18” sheet of heat-shrinkable encapsulation in accordance with manufacturer’s specifications.
7. Backfill under flexible base streets (asphalt) shall be compacted to 95% maximum density (Modified Proctor).
8. Backfill under concrete streets shall be SB-2 compacted to 95% modified density.
9. Backfill in other areas shall be compacted to 90% maximum density ASTM D-698 (Standard Proctor).
10. If the manhole is in a pavement area, replace the base and pavement.

3.09 ABANDON AND GROUT FILL MANHOLE

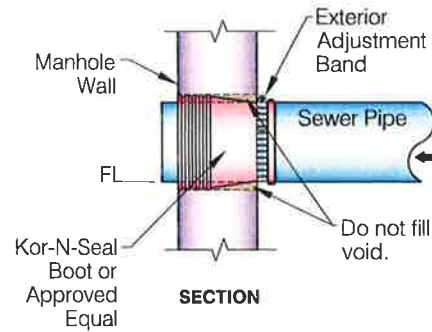
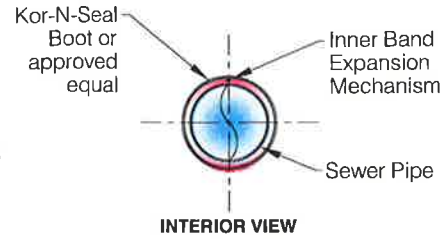
- A. This specification shall govern for the furnishing of all work necessary to accomplish and complete the abandon and grout fill manhole. Grout material shall conform to Section 03700, 2.04 – Flowable Fill.
- B. Components shall be combined and thoroughly mixed in an approved mixer to a uniform pumpable mix. Equipment shall be of special design to insure proper mixing in as short a duration as possible. A water meter or measuring tank shall be utilized to insure that a correct and consistent mix is produced for pumping and flow to fill voids. Mixing and pumping shall be continuous and at such a rate as to insure that voids are filled prior to setting of mix.

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END OF SECTION 03700



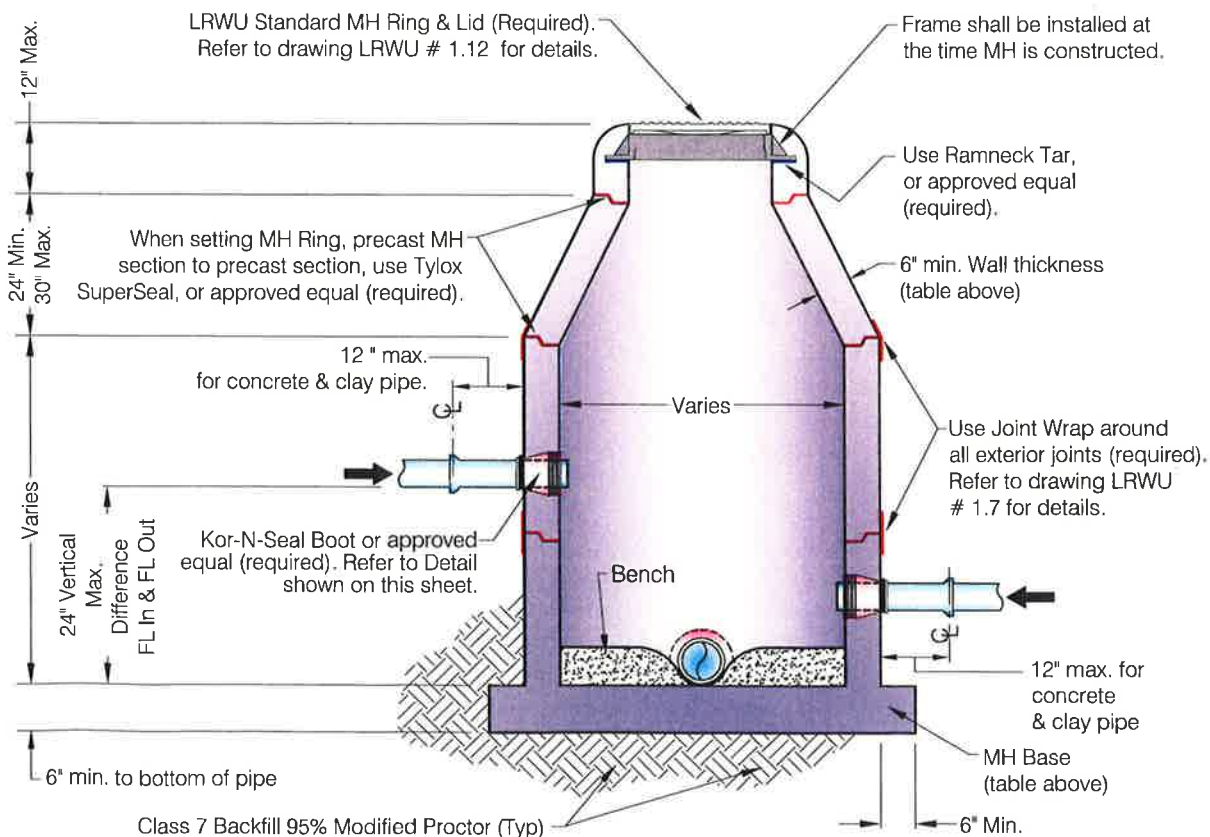
MANHOLE FLOW CHANNEL



BOOT DETAILS

MANHOLE INFORMATION TABLE

Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Manhole Depth	Minimum Lid & Ring Size
4' DIA	6"	6"	0' - 8'	24"
5' DIA	8"	8"	8' - 12'	(< or Equal to 24" Pipes)
6' DIA	8"	12"	↓ DEEPER	36"
				(> 24" Pipes)



SECTION

STANDARD PRECAST MANHOLE DETAILS

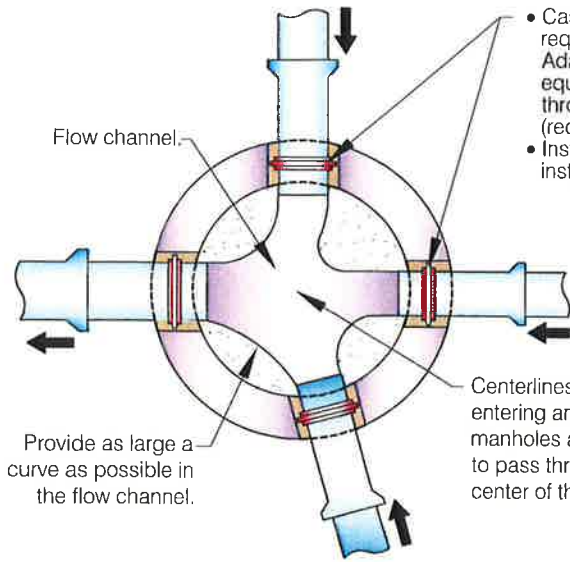


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2/14/2006 7:43:03 AM
Drawing Status: **APPROVED**
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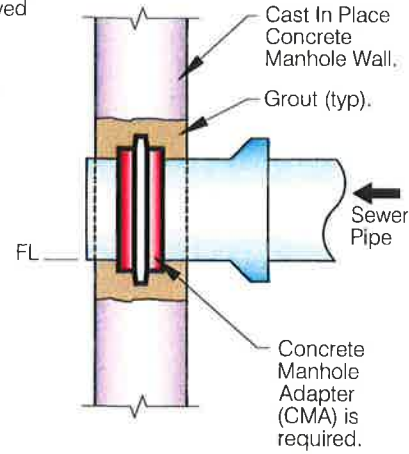
Notes

STANDARD CAST IN PLACE MANHOLE DETAILS & TABLE



MANHOLE FLOW CHANNEL

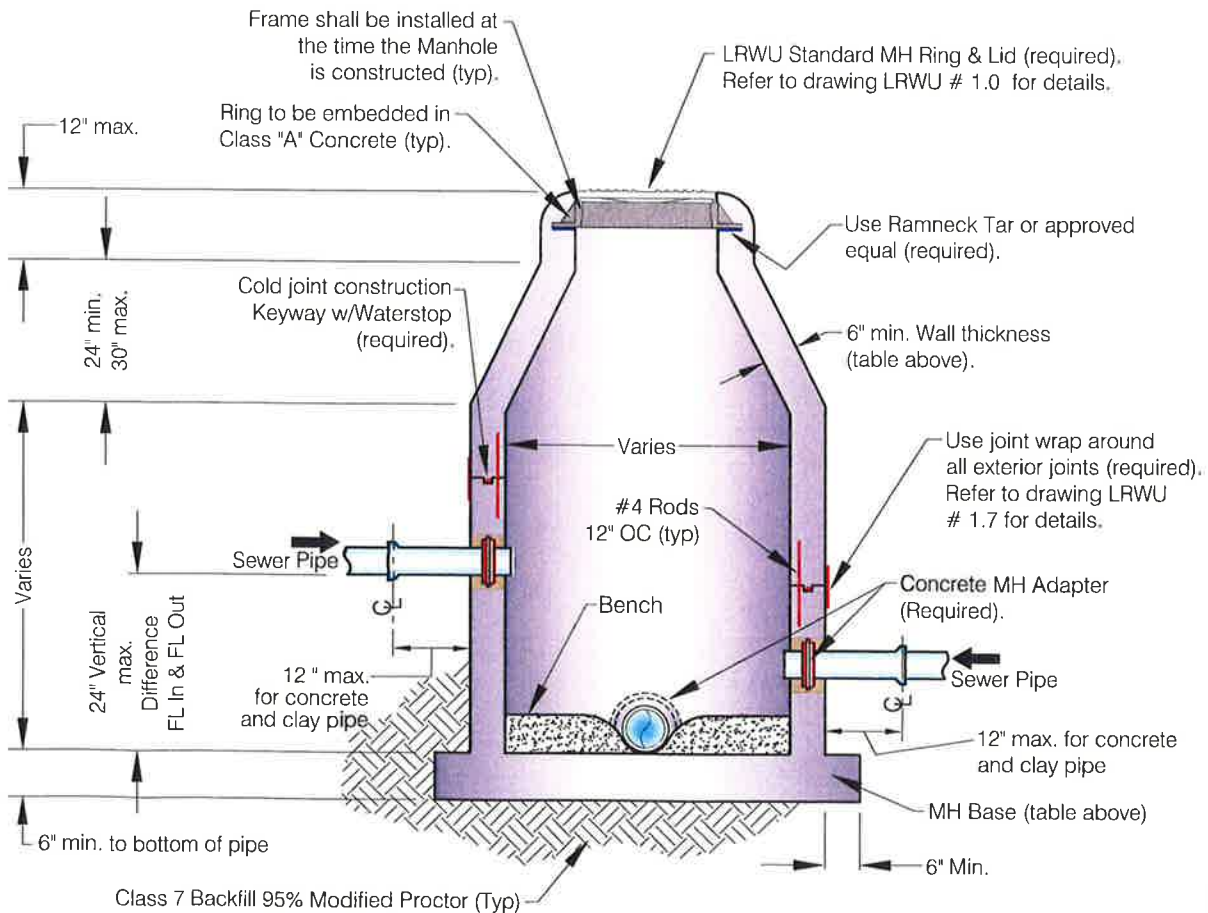
- Cast In Place Manhole requires a Concrete MH Adapter (CMA) or approved equal where pipes pass through manhole walls. (required)
- Install per manufacturers instructions.



CONCRETE MANHOLE ADAPTER (CMA) DETAIL

MANHOLE INFORMATION TABLE

Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Manhole Depth	Minimum Lid & Ring Size
4' DIA	6"	6"	0' - 8'	24"
5' DIA	8"	8"	8' - 12'	(< or Equal to 24" Pipes)
6' DIA	8"	12"	↓ DEEPER	36"
				(> 24" Pipes)



CAST IN PLACE

Little Rock Wastewater Utility



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Notes

**PRECAST ECCENTRIC
MANHOLE DETAIL & TABLE**

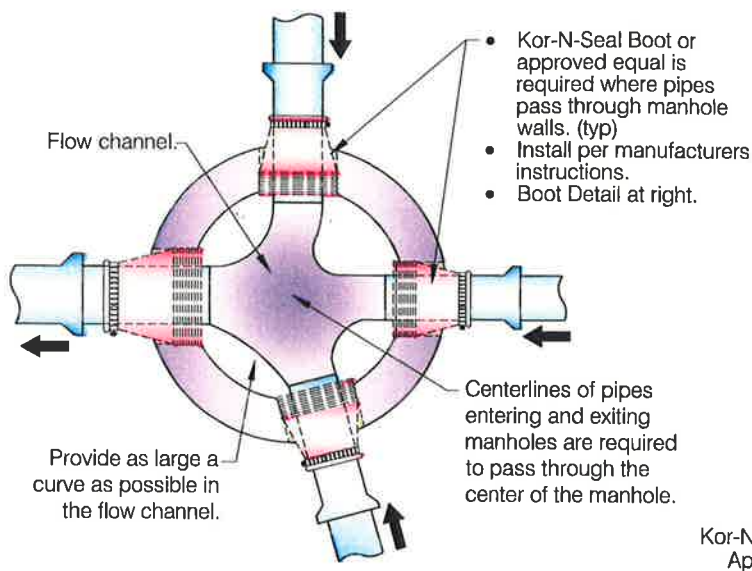
Little Rock Wastewater Utility
SPECIFICATIONS



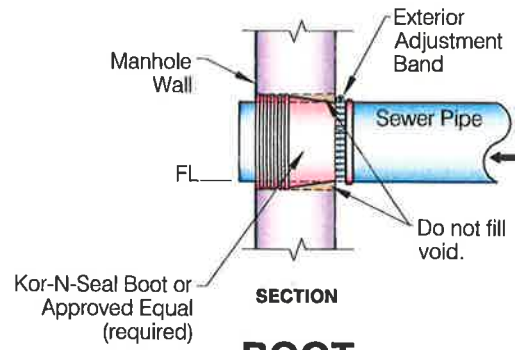
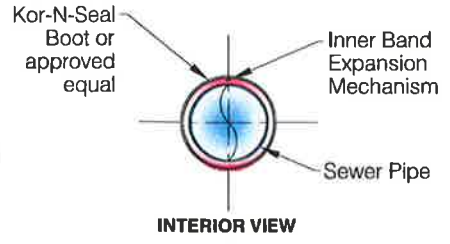
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Updated: 12/21/2005 8:49:48 AM
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Filename: LRWU 1.2 - PRECAST ECCENTRIC MH.dwg

1. ALL CHANGES/REVISIONS/ETC.
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Notes

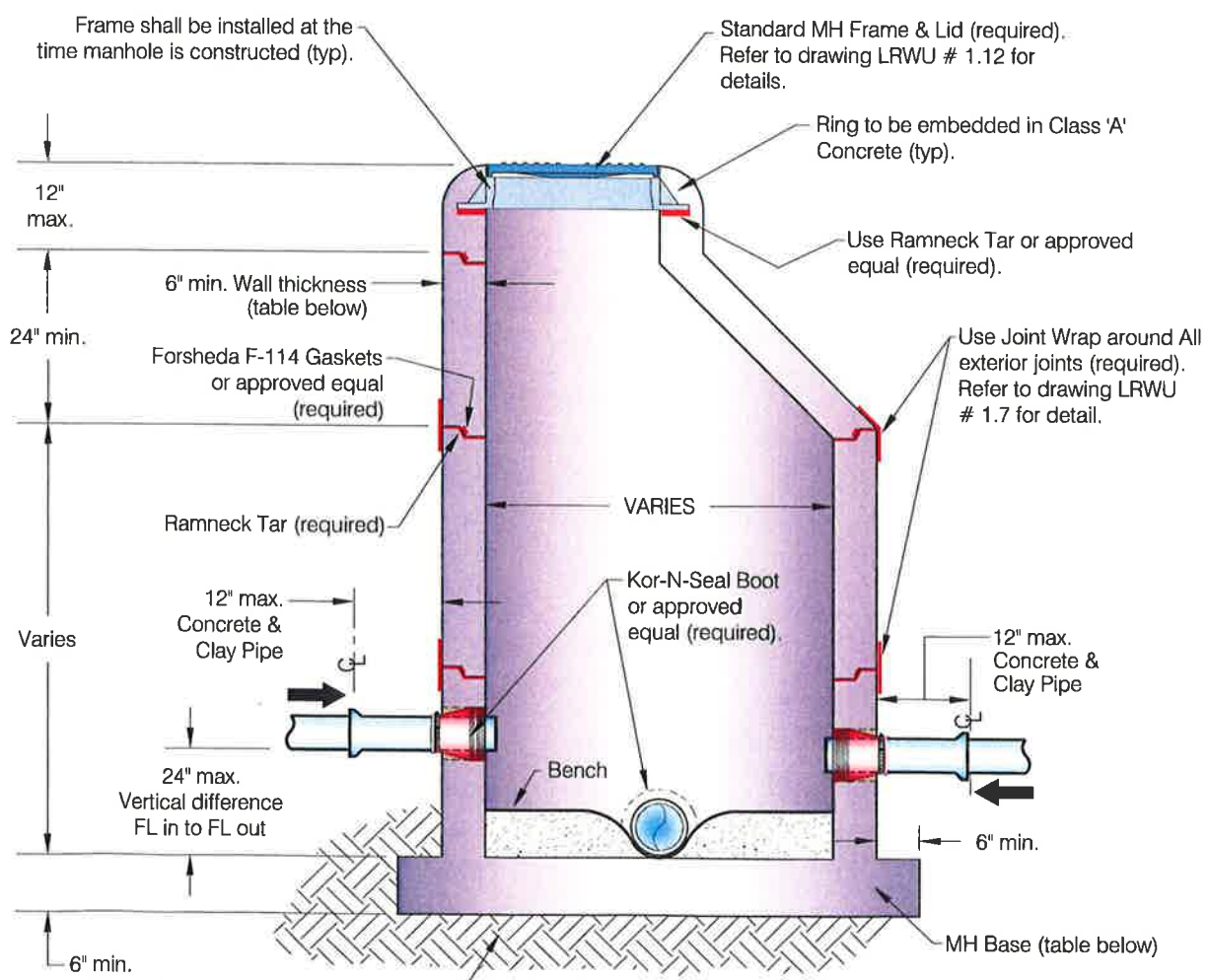


**MANHOLE
FLOW CHANNEL**

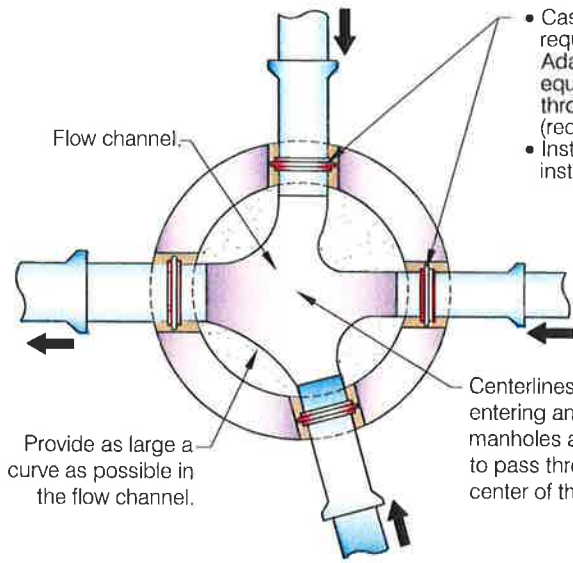


**BOOT
DETAILS**

MH INFO TABLE				
I.D. OF MH	MIN. WALL THICKNESS	MIN. LID & RING SIZE	BASE THICKNESS	MANHOLE DEPTH
4' DIA	6"	24"	6"	0' - 8'
5' DIA	8"	30"	8"	8' - 12'
6' DIA	8"	36"	12"	↓ DEEPER

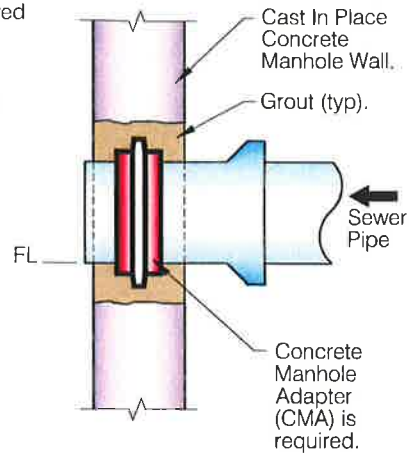


SECTION



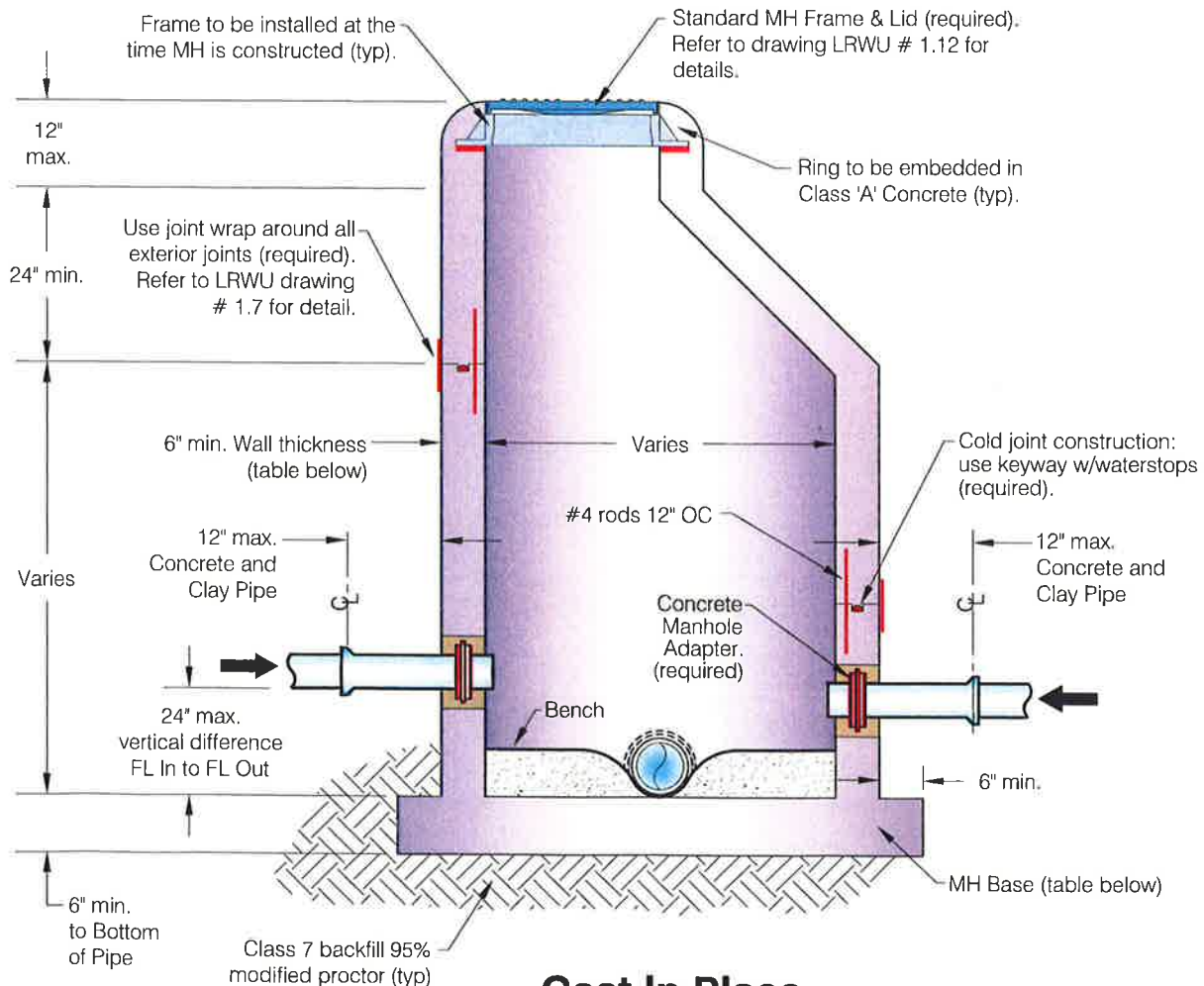
MANHOLE FLOW CHANNEL

- Cast In Place Manhole requires a Concrete MH Adapter (CMA) or approved equal where pipes pass through manhole walls. (required)
- Install per manufacturers instructions.



CONCRETE MANHOLE ADAPTER (CMA) DETAIL

MH INFO TABLE				
I.D. OF MH	MIN. WALL THICKNESS	MIN. LID & RING SIZE	BASE THICKNESS	MANHOLE DEPTH
4' DIA	6"	24"	6"	0' - 8'
5' DIA	8"	30"	8"	8' - 12'
6' DIA	8"	36"	12"	↓ DEEPER



Cast In Place

CAST IN PLACE ECCENTRIC MANHOLE DETAIL & TABLE

Little Rock Wastewater Utility
SPECIFICATIONS



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Filename: LRWU 1.3 - CAST IN PLACE ECCENTRIC MH.dwg

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STANDARD DROP MANHOLE DETAIL

Little Rock Wastewater Utility
SPECIFICATIONS



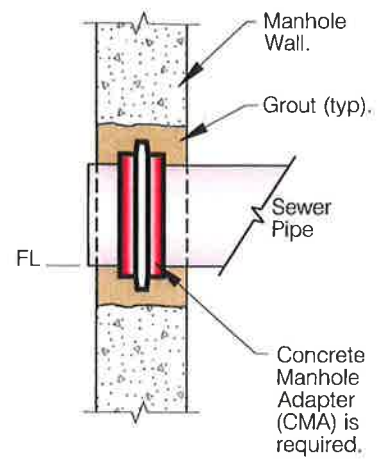
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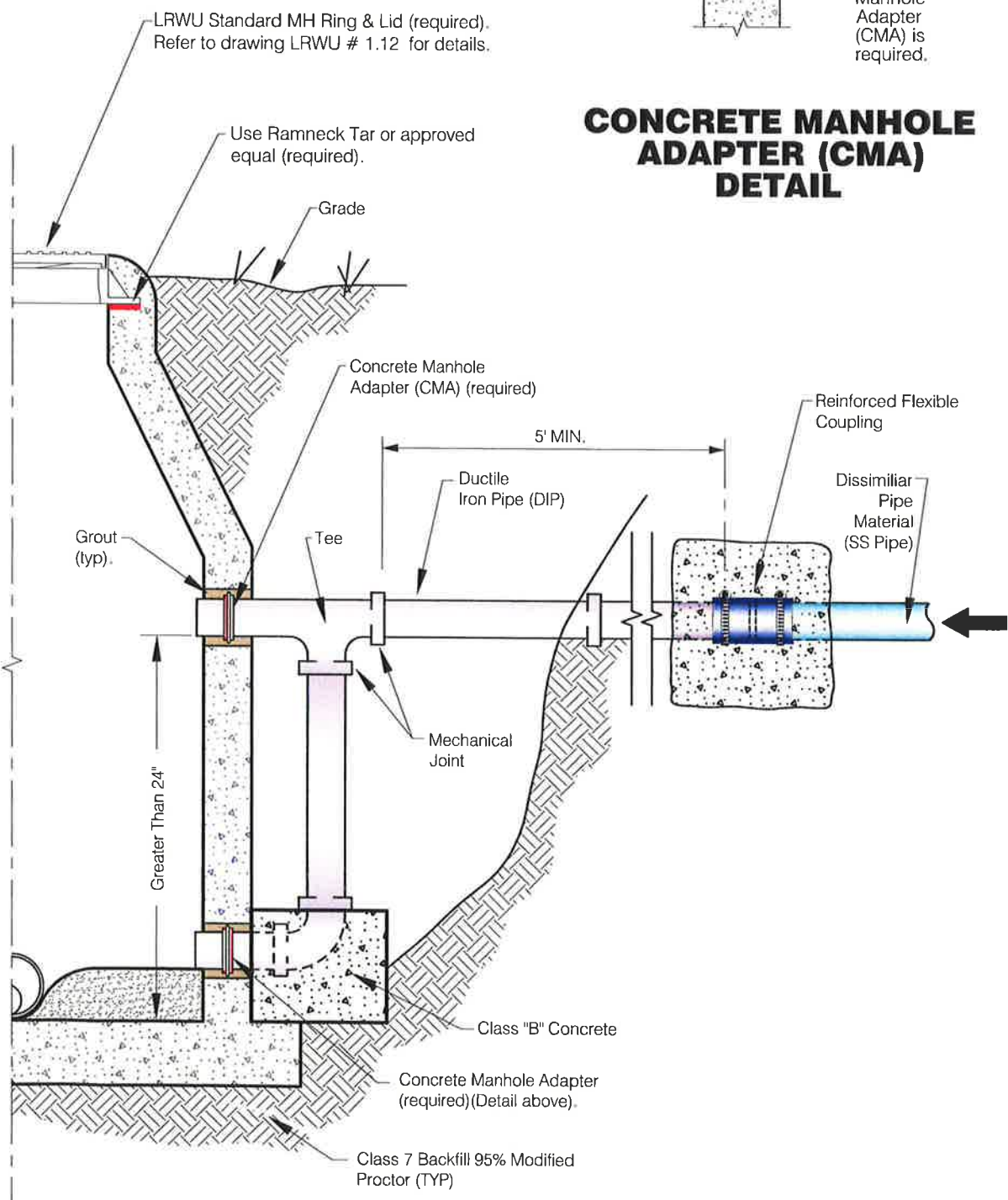
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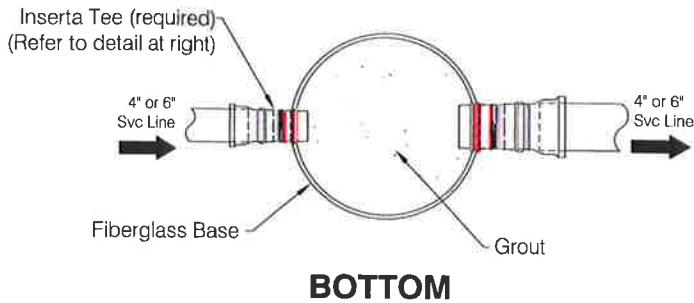
1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

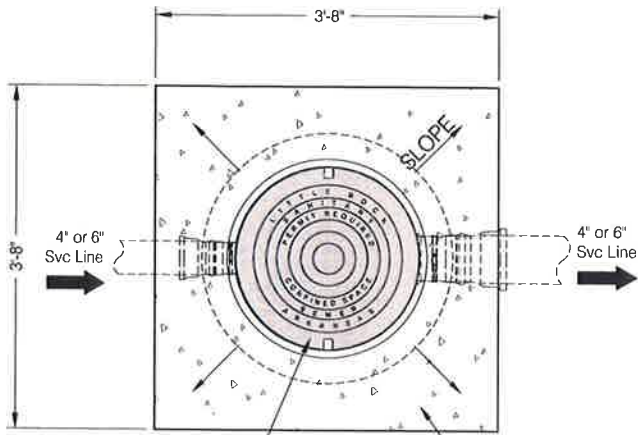


CONCRETE MANHOLE ADAPTER (CMA) DETAIL





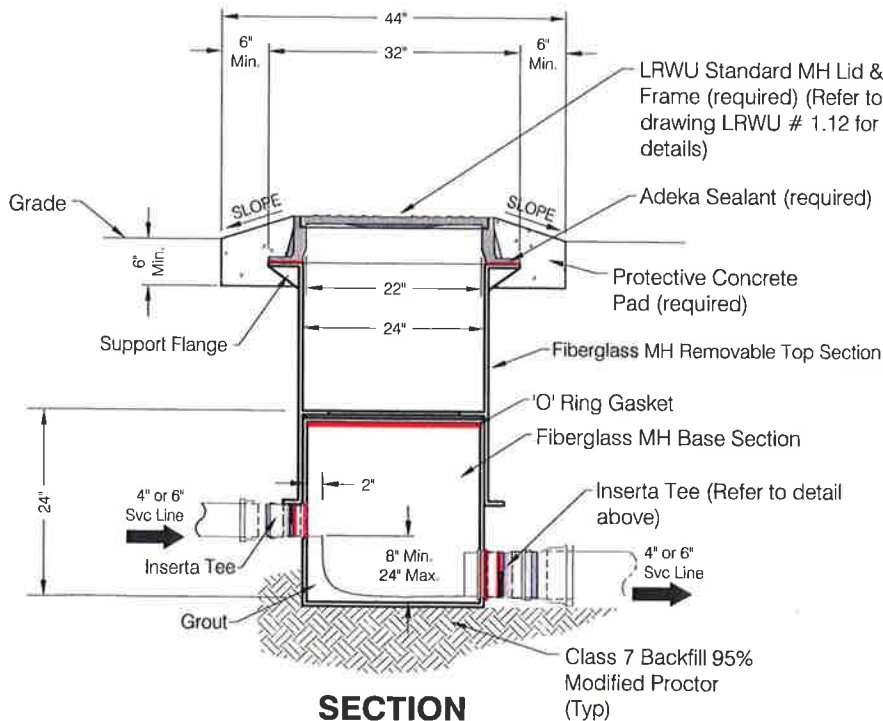
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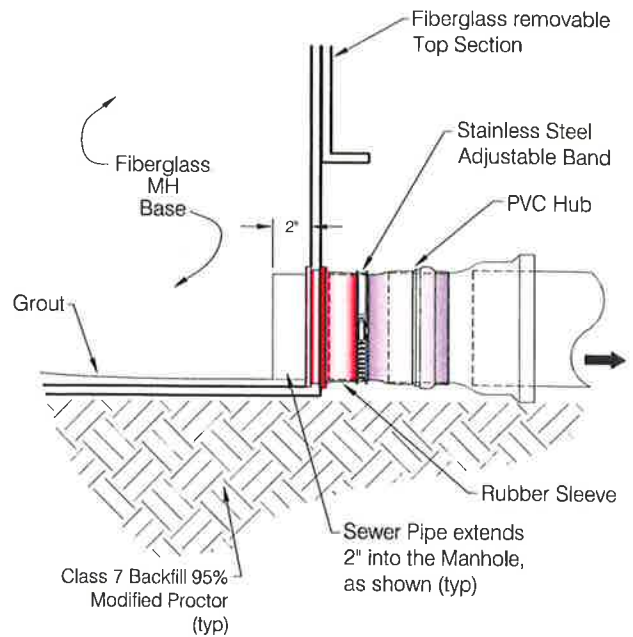
LRWU Standard MH Lid & Frame (required) (Refer to drawing LRWU # 1.12 for details)

Protective Concrete Pad (required)

PLAN VIEW



SECTION



INSERTA TEE DETAIL

Inserta Tee 3-piece Compression Fit Service Connection (or approved equal) consisting of the following: PVC Hub, Rubber Sleeve, and Stainless Steel Band.

- 2-ft Manholes shall be manufactured from commercial grade polyester resin or other suitable polyester or vinyl, ester resins, with fiberglass reinforcements.
- Shall consist of two sections, a removable top section and a base section.
- Manufactured to meet or exceed all specifications of A.S.T.M. D-3753 latest edition.
- Base section shall include a gasket system to provide a seal between the top and base sections.

Notes

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENVIRONMENTAL ASSESSMENT.

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 Updated: 2/14/2006 8:04:09 AM
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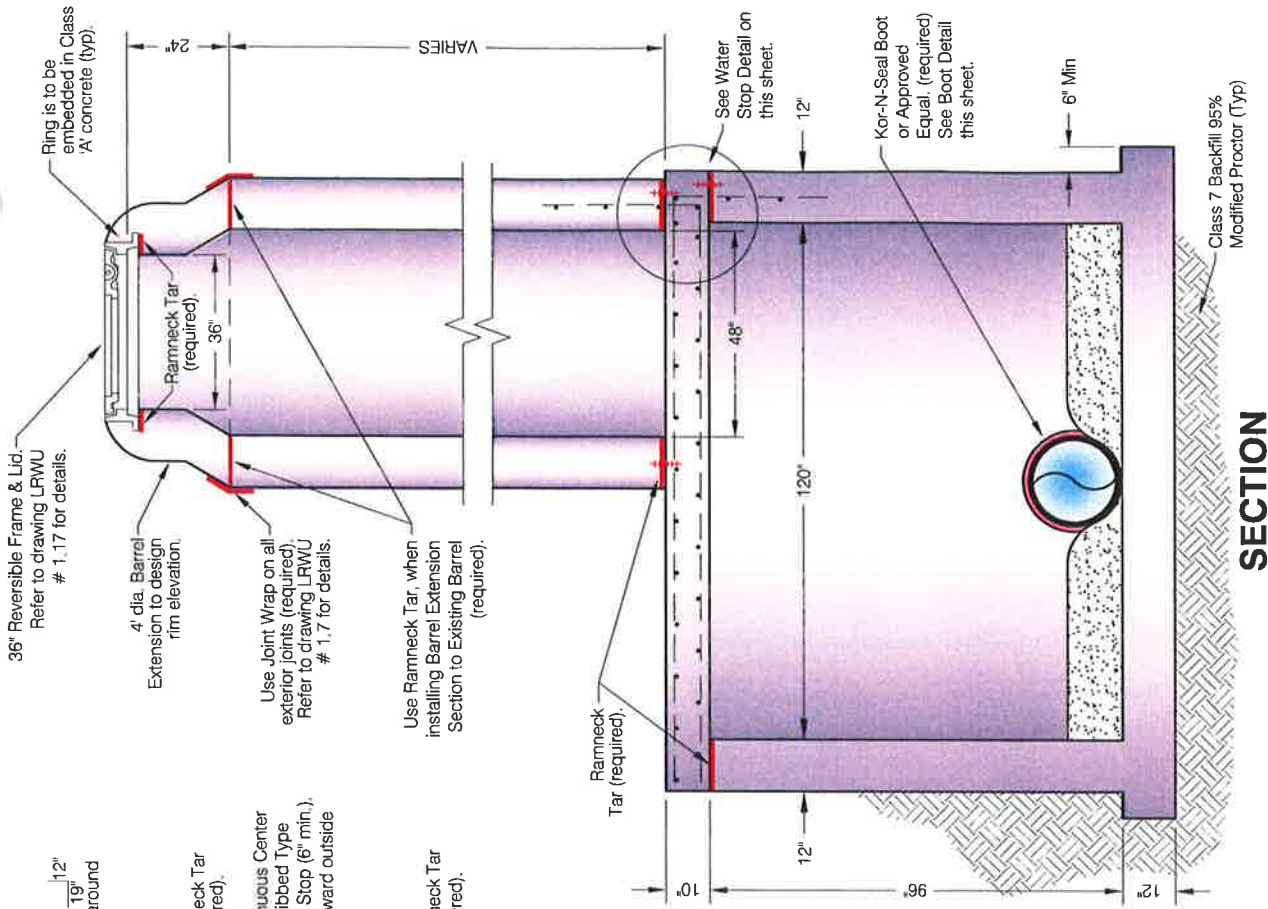
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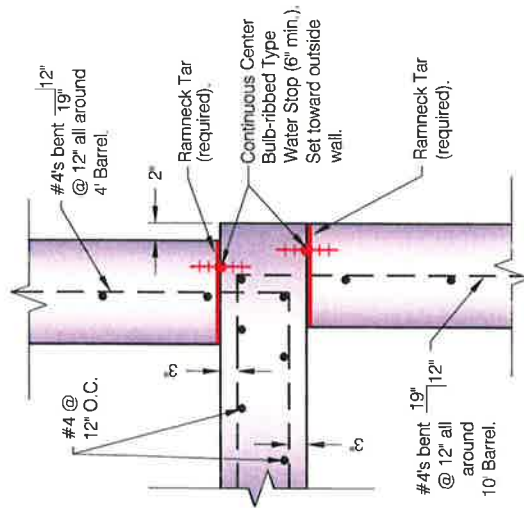
**STANDARD
 2-FT MANHOLE
 DETAILS**

LRWU

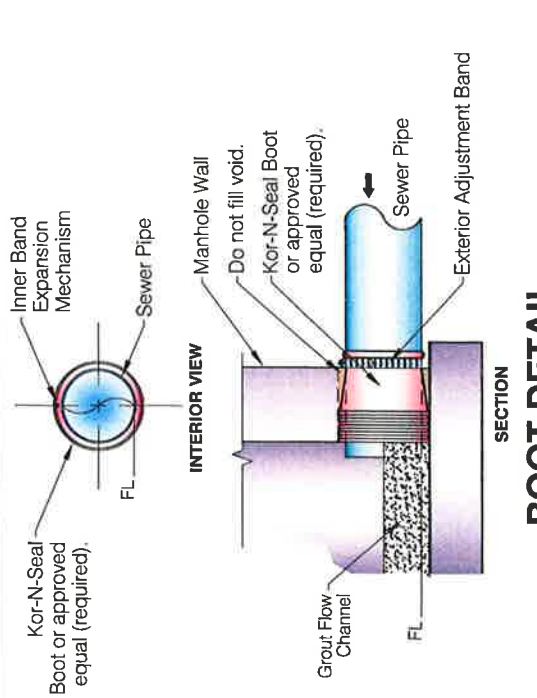
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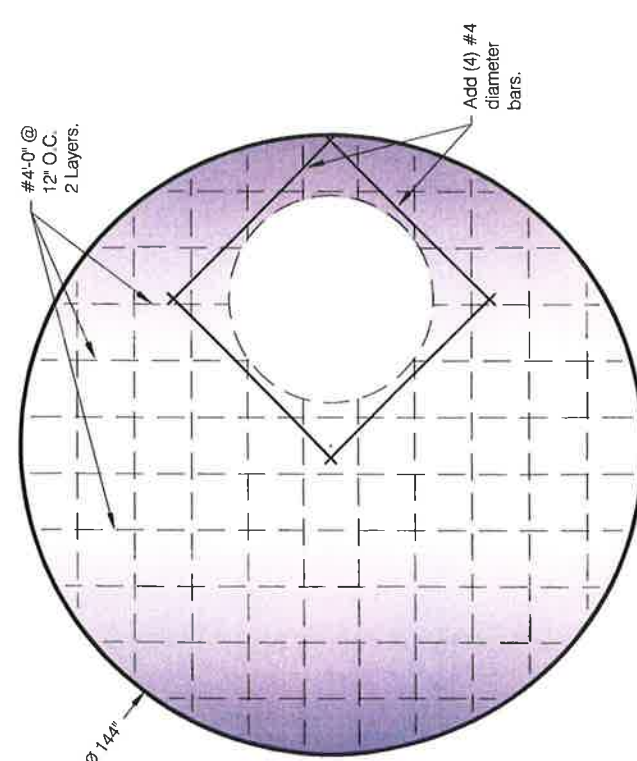
SECTION



WATER STOP DETAIL



BOOT DETAIL



TOP CAP DETAIL

Little Rock Wastewater Utility
SPECIFICATIONS

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Drawing Status:

APPROVED

Filename: LRWU 1.6 - 10' DIA MH.dwg

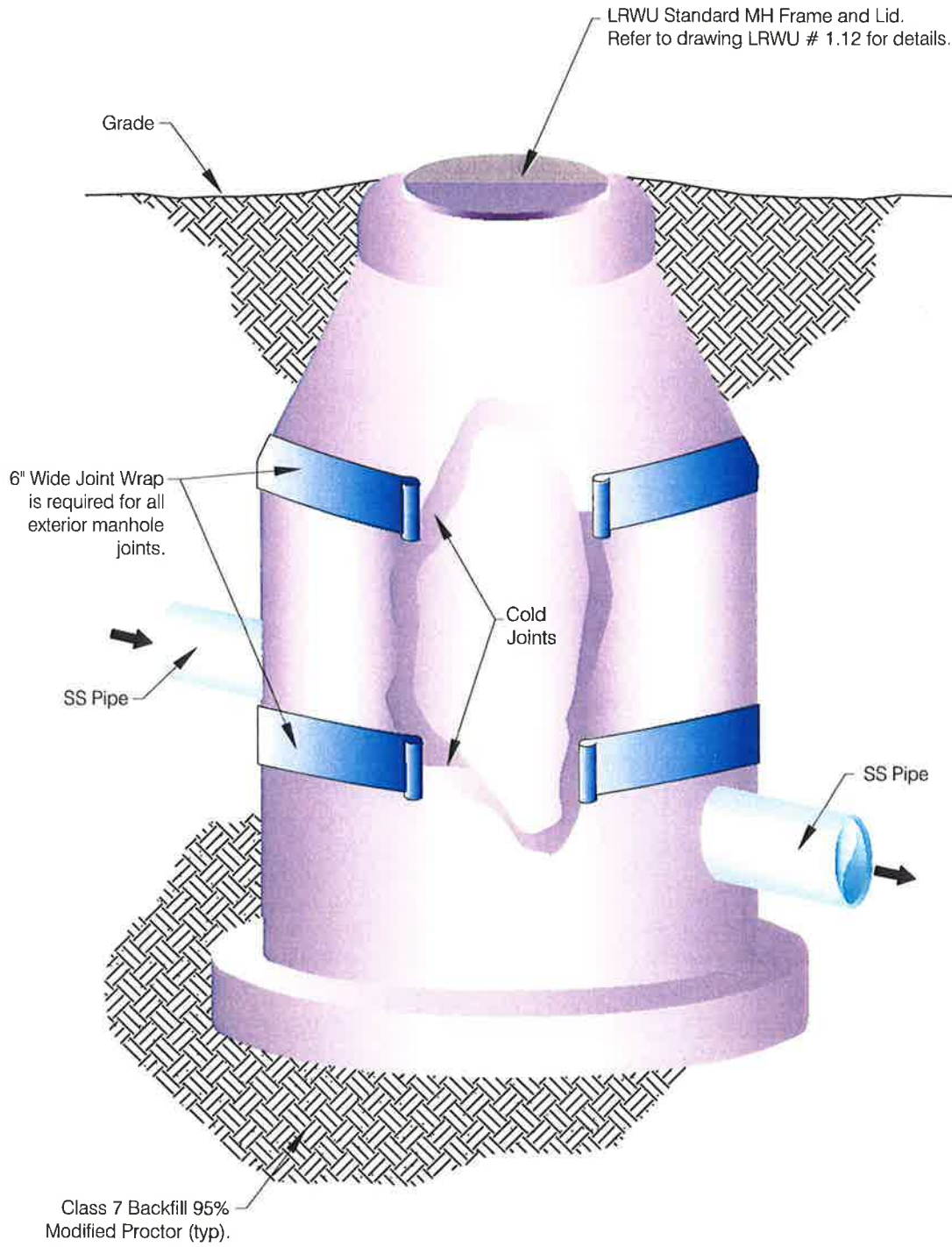
1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

LRWU

10' DIAMETER MANHOLE DETAILS

1.6

Notes



NOTE:

- JOINT WRAP TO BE USED:
- ON OUTSIDE OF COLD JOINTS
 - ON EXTERIOR OF ALL PRECAST MANHOLE JOINTS



**MANHOLE JOINT WRAP
DETAIL**

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

TYPICAL MANHOLE ADJUST TO GRADE DETAIL

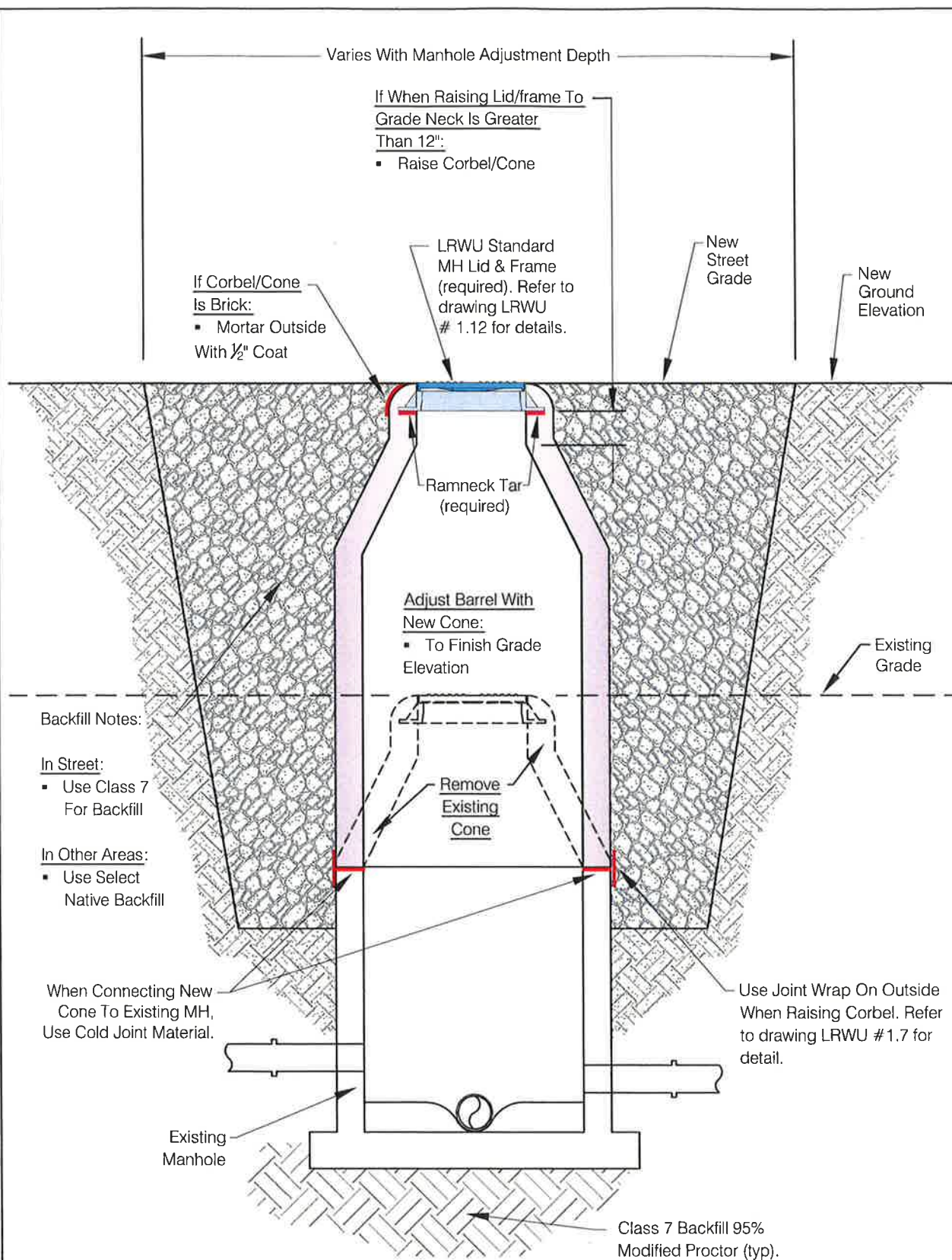
Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:23:29 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.8 - ADJUST MH TO GRADE.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



When a manhole adjustment occurs in the street:

- Use the appropriate street repair technique, as noted on LRWU drawings:
 - LRWU # 1.32 City & County Street Repair
 - LRWU # 1.33 Alley Repair
 - LRWU # 1.34 Asphalt/Concrete Drive & Parking Area Repair
 - LRWU # 1.35 Gravel Alley/Street Repair
 - LRWU # 1.36 Curb and Gutter

EXISTING MANHOLE ABANDONMENT DETAILS

Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:26:42 AM
Drawing Status:

APPROVED

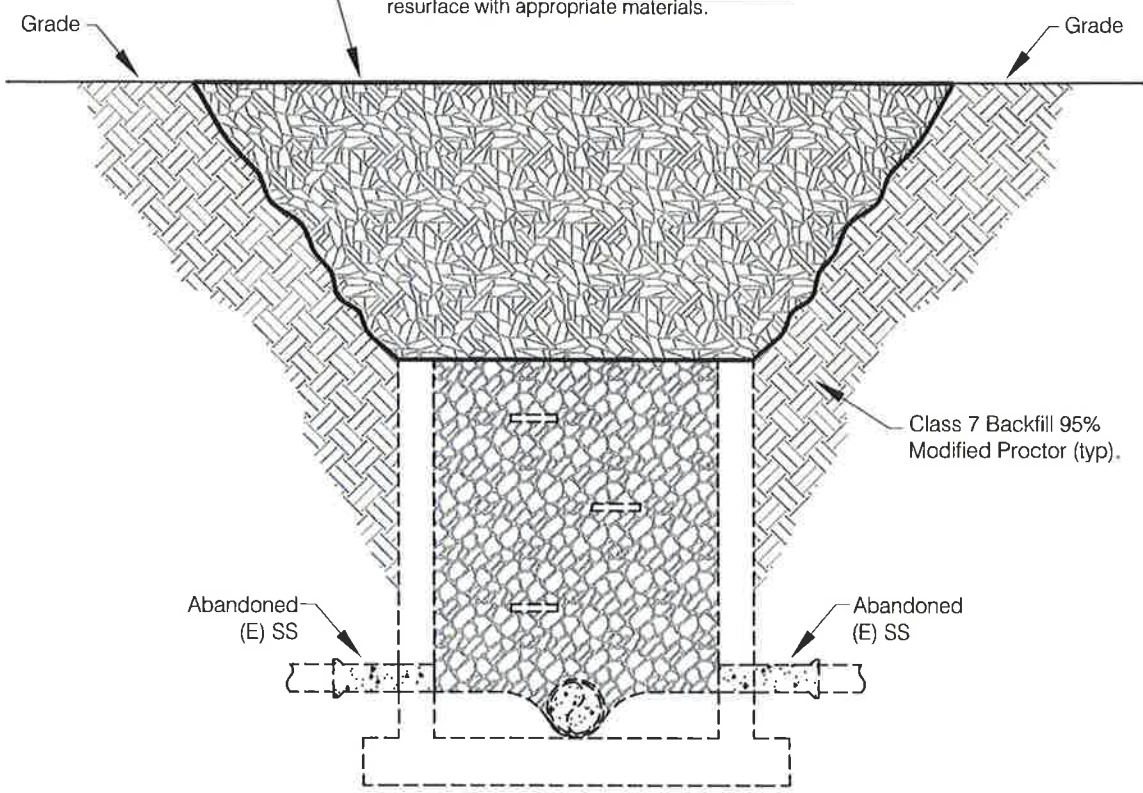
Filename: LRWU 1.9 - MH
ABANDONMENT.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

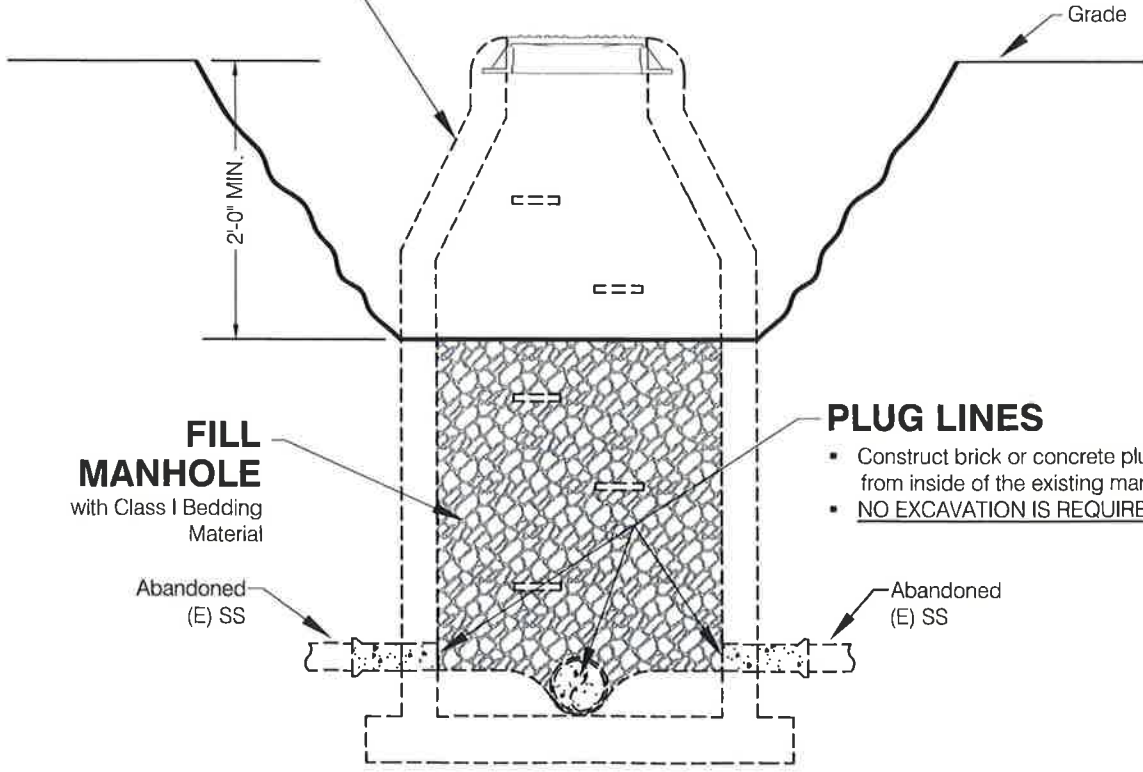
Notes

BACKFILL, REPAVE or RESURFACE

- Backfill Abandonments in PAVED AREAS, and perform pavement repair as per LRWU Specifications appropriate detail.
- Backfill Abandonments in NONPAVED AREAS with select native material, and resurface with appropriate materials.

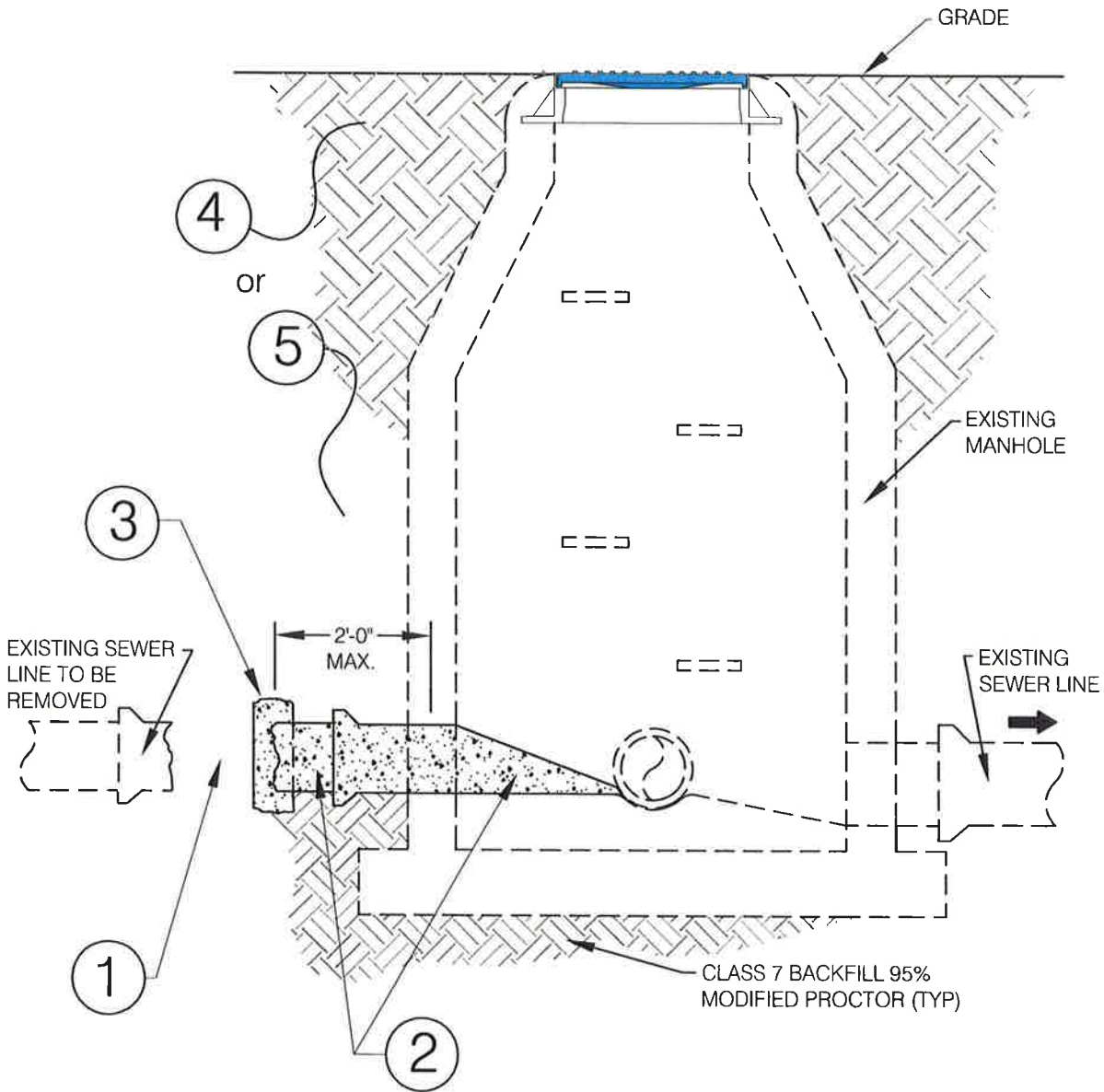


REMOVE
MH Lid & Frame, Cone and/or Barrel to a min. of 2'-0" below existing grade elevation.



PLUG LINES

- Construct brick or concrete plug from inside of the existing manhole.
- NO EXCAVATION IS REQUIRED.



- ①. Expose existing line and PHYSICALLY DISCONNECT the line segment to be removed. (required)
- ②. Fill remaining Sewer Pipe to be sealed with Concrete and Reinforcement. (required)
- ③. Construct a concrete cap around pipe connected to existing manhole. (required)
- ④. If the manhole is located in a paved area, backfill the excavated area and perform pavement repair. (required)
- ⑤. If the manhole is located in a non-paved area, backfill the excavated area with select native material, and resurface with the appropriate materials. (required)

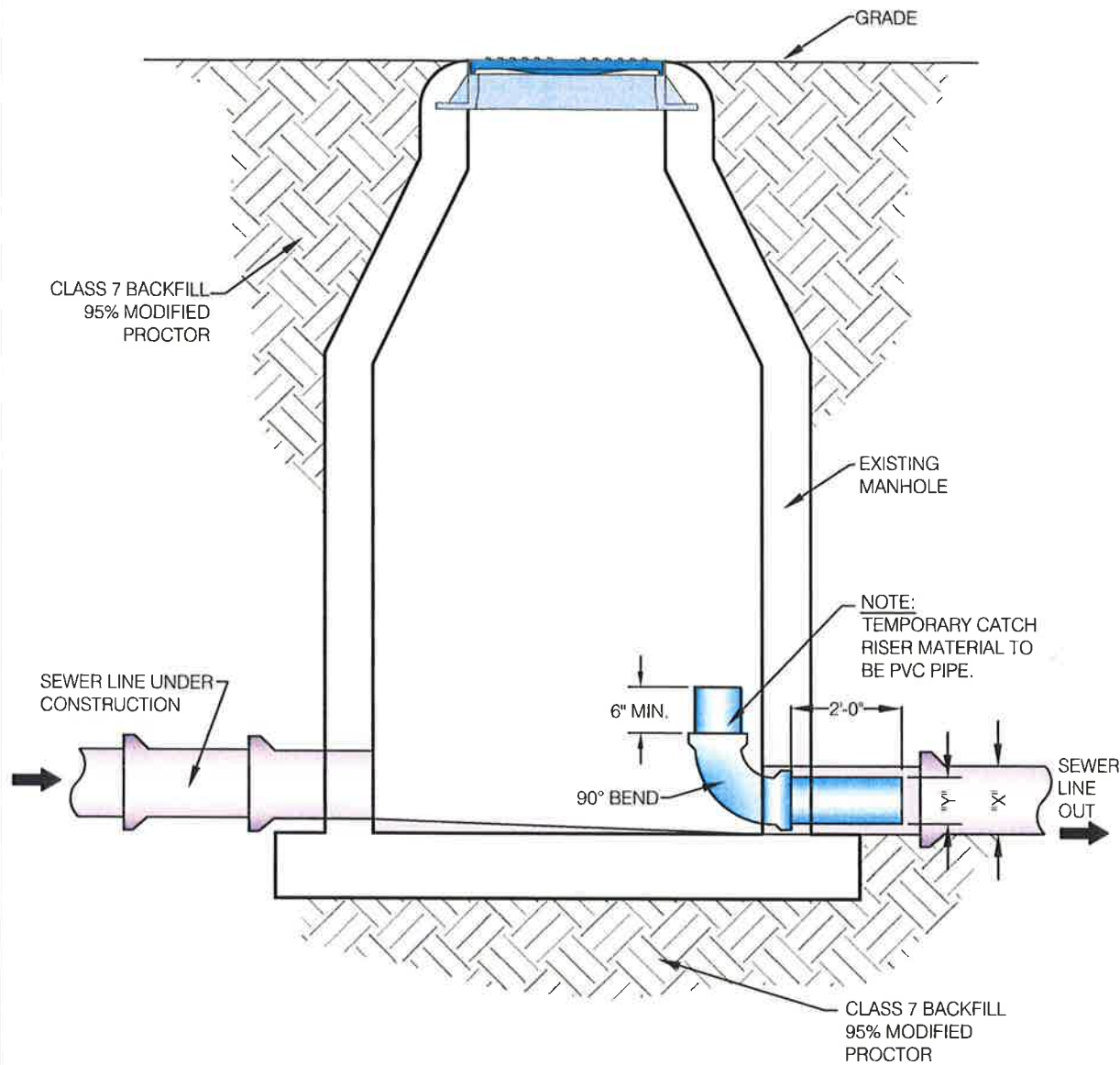
**MANHOLE
DISCONNECT & SEAL DETAIL**

Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:27:41 AM
Drawing Status: **APPROVED**
Filename: LRWU 1,10 - MH DISCONNECT & SEAL.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



"X"	"Y"
6"	4"
8"	6"
10"	8"
12"	10"
16"	15"

**TEMPORARY DEBRIS CATCH RISER
DETAIL & TABLE**

Little Rock Wastewater Utility
SPECIFICATIONS



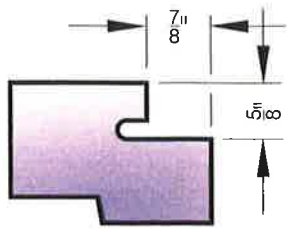
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:28:50 AM
Drawing Status:

APPROVED

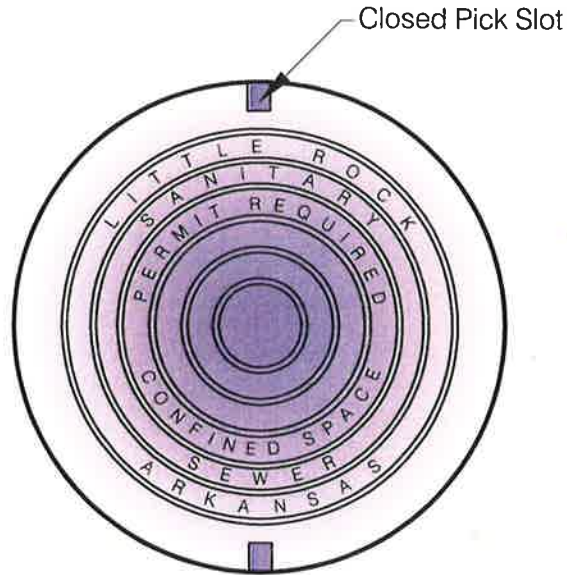
Filename: LRWU 1.11 - Temporary Debris Catch Riser & Table.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

NOTES

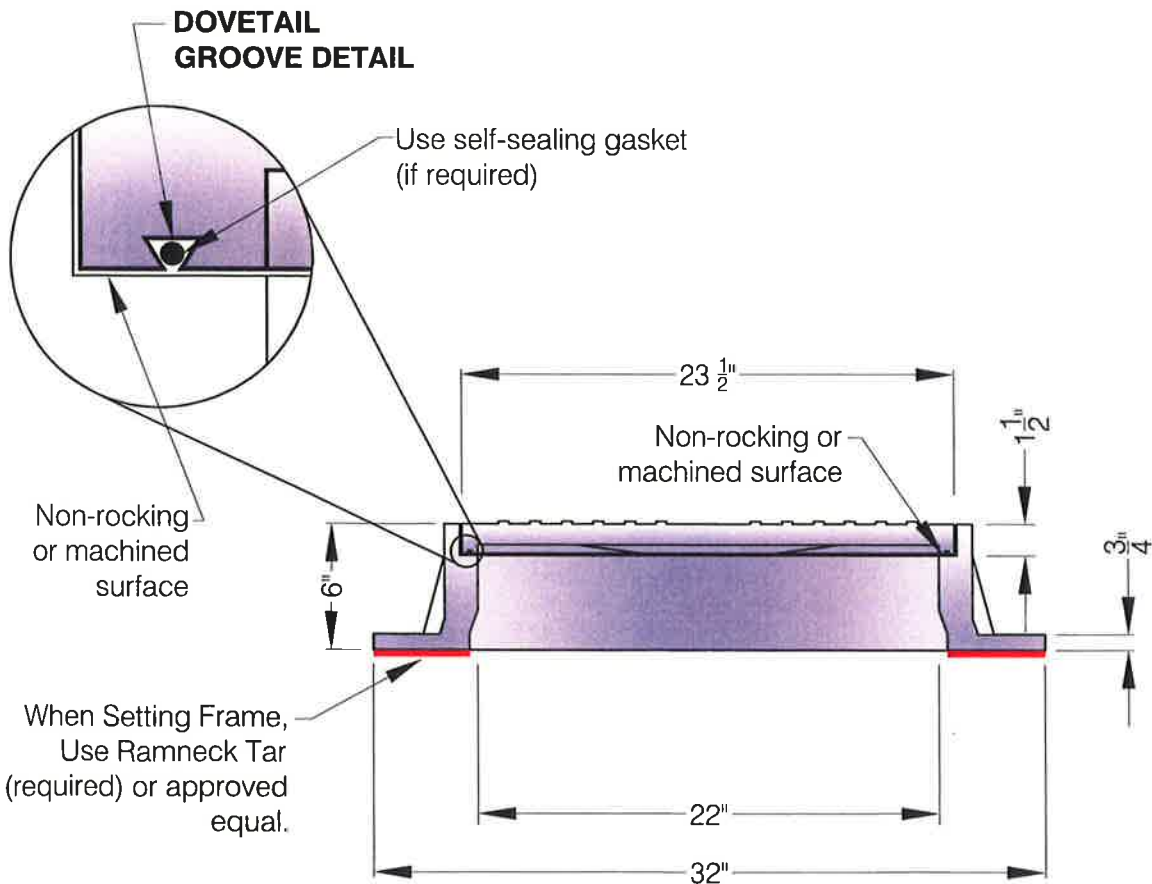


CLOSED PICK SLOT DETAIL



LID DETAIL

1. Minimum weight of ring: 125 pounds
2. Minimum weight of lid: 115 pounds
3. Lids are furnished with two closed pick slots.
4. Castings shall be "Made In USA"



RING DETAIL

Note:
Dimensions shown may vary by $\pm \frac{1}{2}$ " with the exception of the Lid dimension.

STANDARD RING & LID DETAILS
TO BE USED WITH
4' DIAMETER MANHOLES

Little Rock Wastewater Utility

SPECIFICATIONS



Prepared By: Evangeline O'Neal
2/14/2006 7:32:15 AM

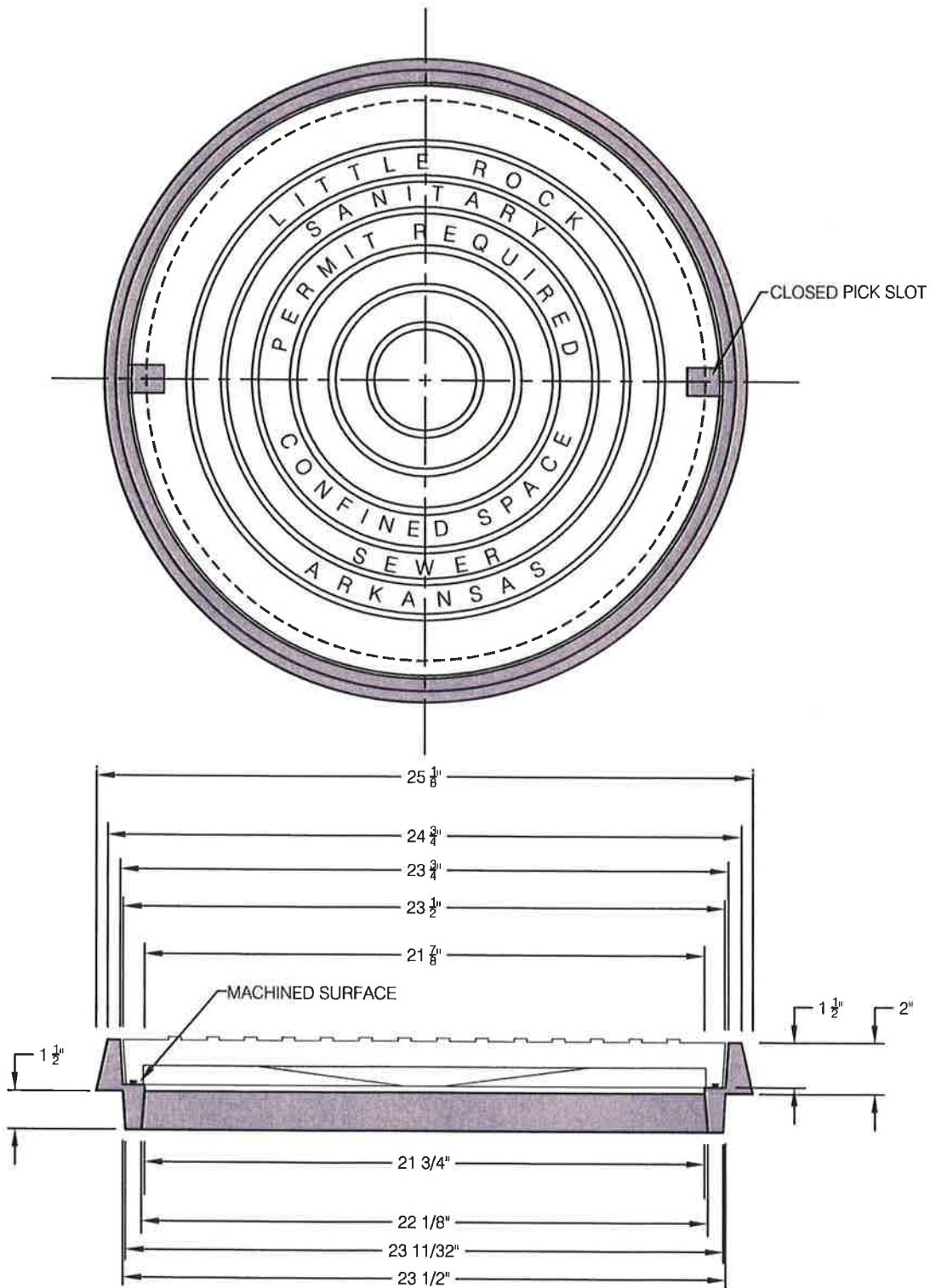
Drawing Status:

APPROVED

Filename: LRWU 1.12 - STANDARD MH RING & LID.dwg

1: ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



**CALCULATED WEIGHT OF 2" EXTENSION: 53 POUNDS
CASTING SHALL BE "MADE IN USA"**

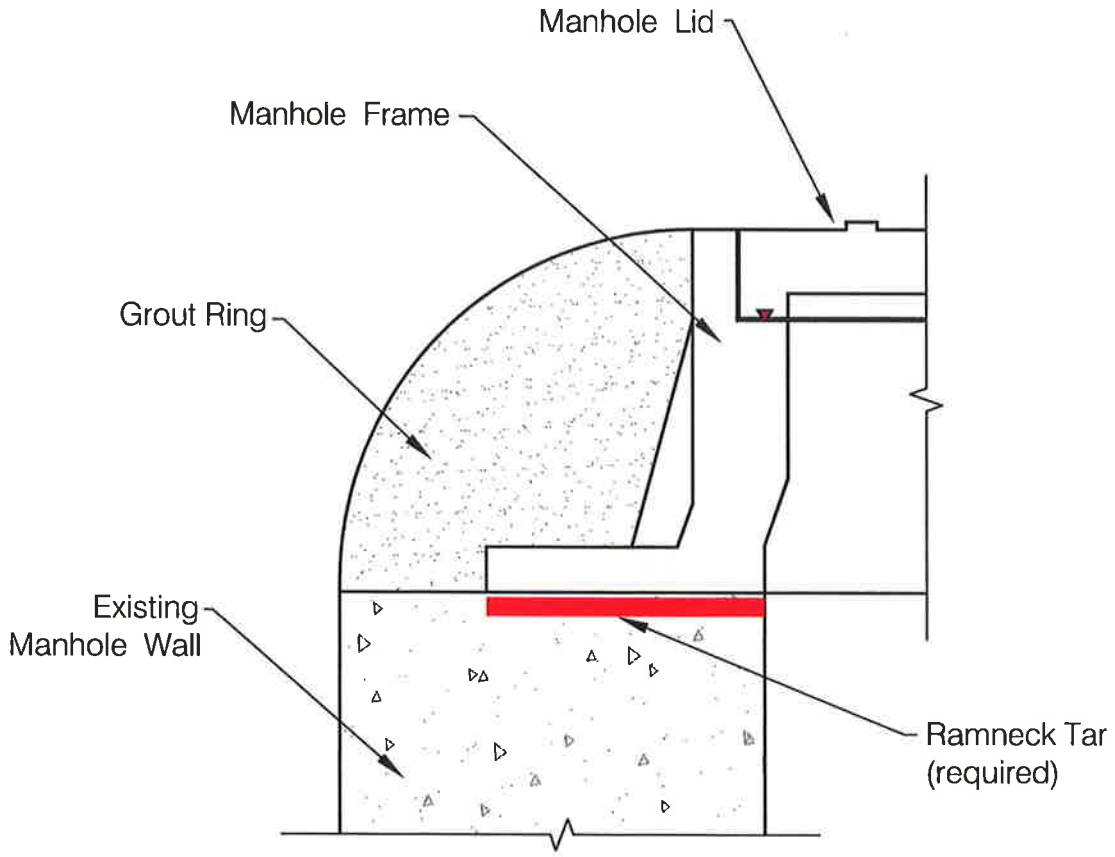
**2" RING EXTENSION
DETAILS**

Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal
Updated: 2/14/2008 8:29:45 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.13 - 2 INCH RING EXTENSION.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



**STANDARD MANHOLE
FRAME REPLACEMENT DETAIL**

Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:30:38 AM

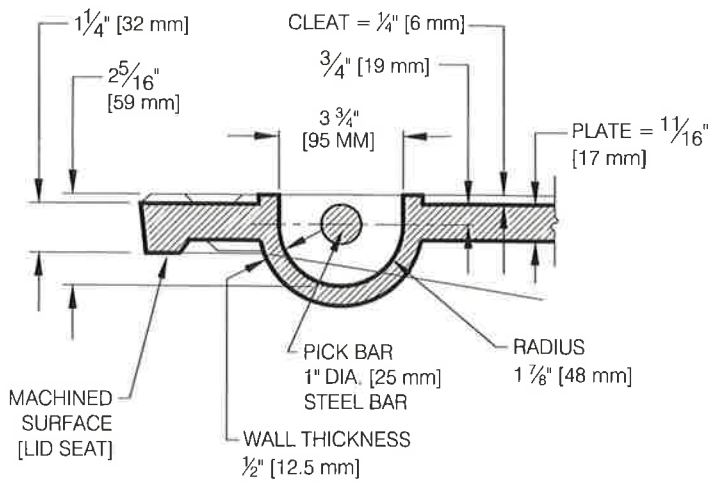
Drawing Status:

APPROVED

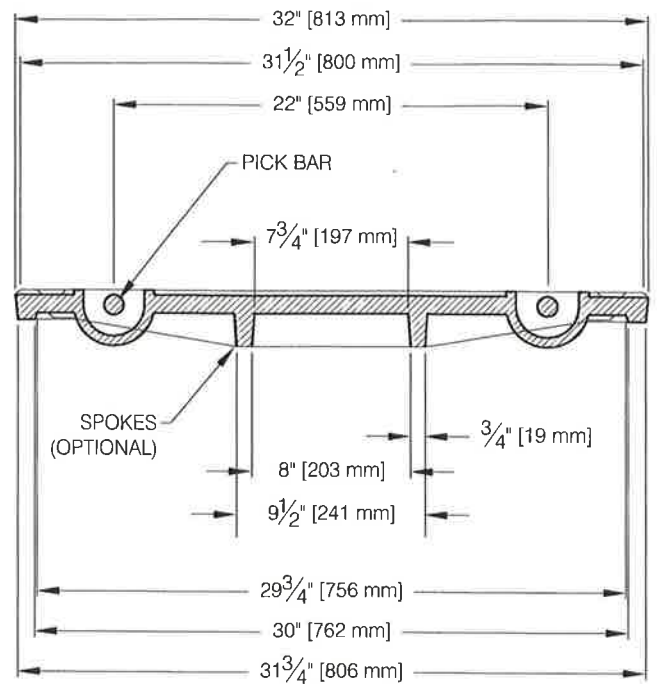
Filename: LRWU 1.14 - STANDARD MH FRAME
REPLACEMENT.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST
BE APPROVED BY THE LRWU
DIRECTOR OF ENGINEERING.

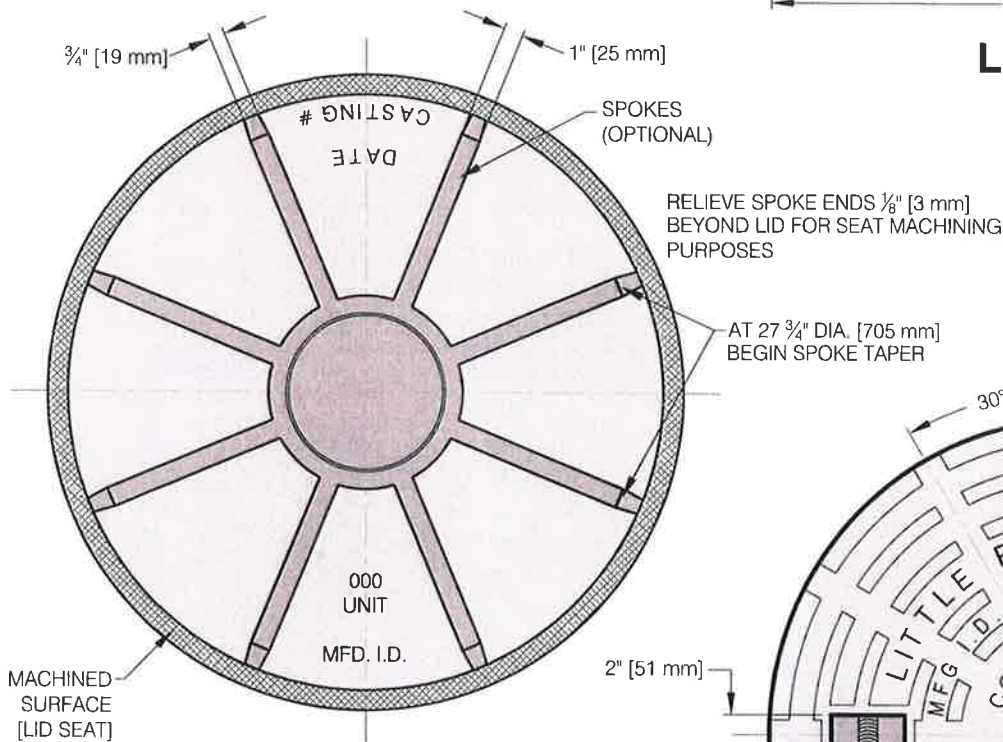
Notes



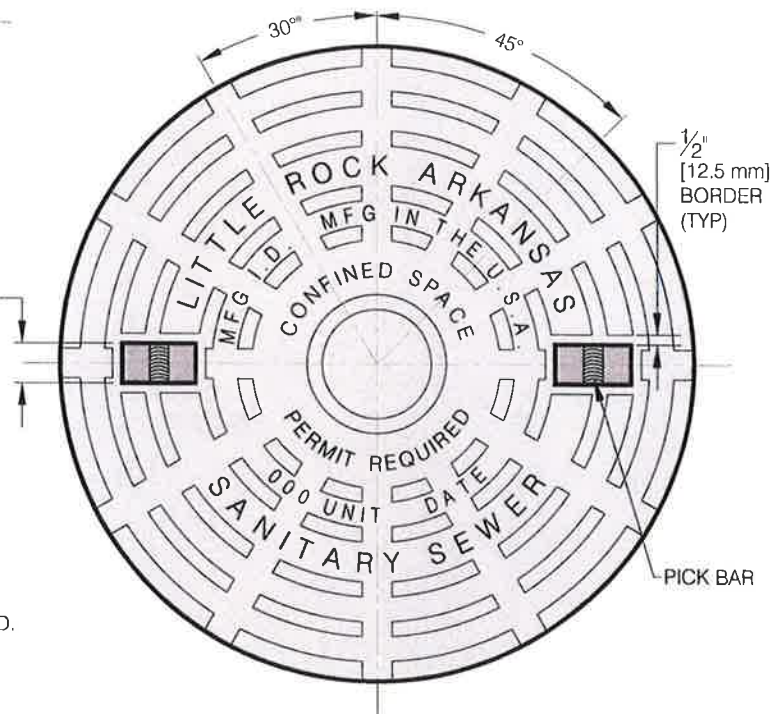
PICK BAR DETAIL



LID SECTION



LID BOTTOM VIEW



LID TOP VIEW

1. CASTINGS SHALL BE MADE IN THE U.S.A.
2. ALL CORNERS AND EDGES SHALL HAVE A 1" [25 mm] MIN. RADIUS.
3. LIDS SHALL BE CAST WITH TWO 1" [25 mm] DIA. STEEL PICK BARS.
4. LID WEIGHTS SHALL BE 210 LBS FOR CAST IRON OR 175 LBS. FOR DUCTILE IRON.
5. WEIGHT SHALL BE CAST ON BOTH THE TOP AND BOTTOM OF THE LID.
6. MANUFACTURER SHALL PROVIDE INDEPENDENT TESTING LABORATORY REPORT ON 40,000 POUND PROOF LOAD TEST CONDUCTED ACCORDING TO AASHTO M-306.
7. FILLETS SHALL BE 1/4" [6 mm] RADIUS UNLESS OTHERWISE SPECIFIED.
8. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.

Notes

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

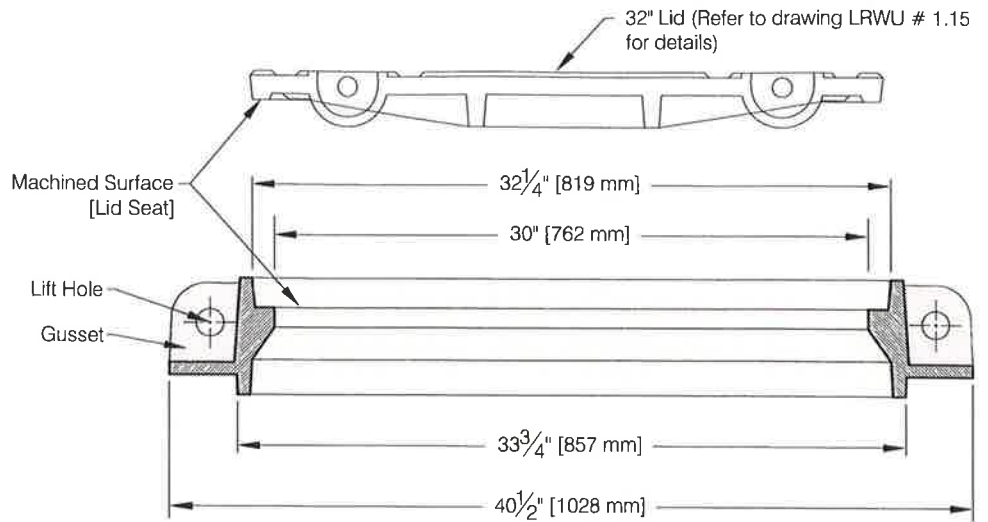
Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 9:21:05 AM
 Drawing Status:
DRAFT
 Filename: LRWU 1.15 - 32 INCH MH LID.dwg



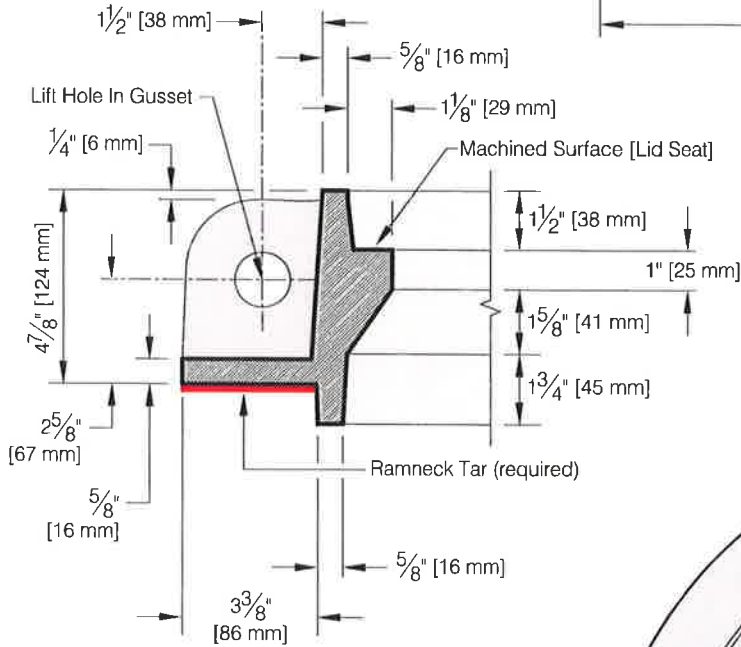
Little Rock Wastewater Utility
 SPECIFICATIONS

**32" MH LID
 DETAILS**

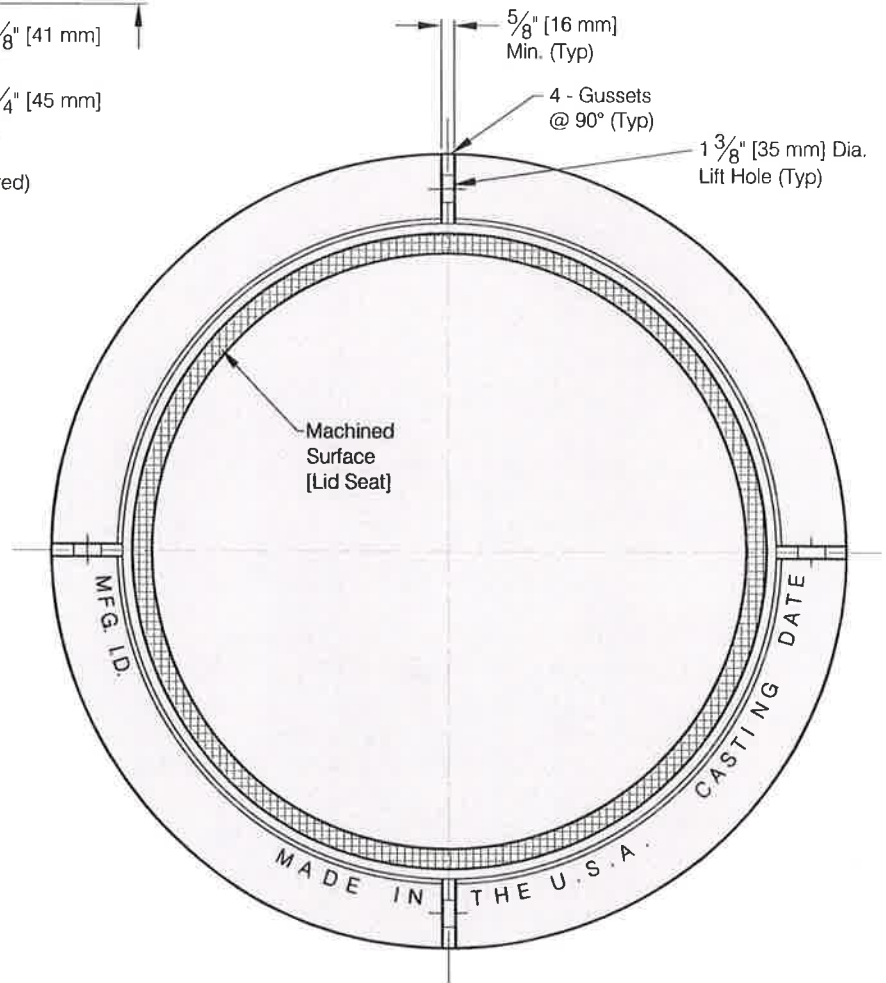
LRWU
1.15



RING SECTION



LIFT HOLE DETAIL



RING

Notes

- ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 8:31:26 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.16 - 32 INCH MH RING.dwg



Little Rock Wastewater Utility
 SPECIFICATIONS

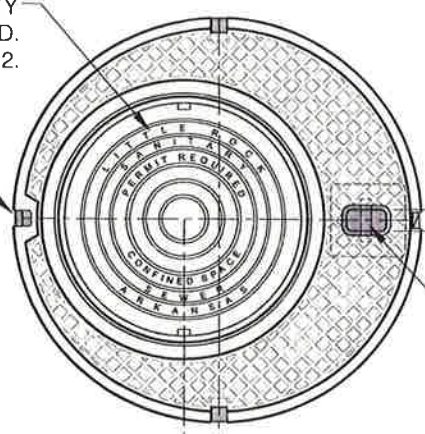
**32" MH RING
 DETAILS**

LRWU

1.16

LITTLE ROCK WASTEWATER UTILITY
STANDARD RING & LID.
REFER TO DRAWING LRWU # 1.12.

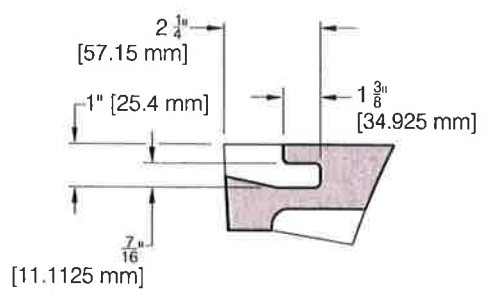
(4) CLOSED PICKHOLES



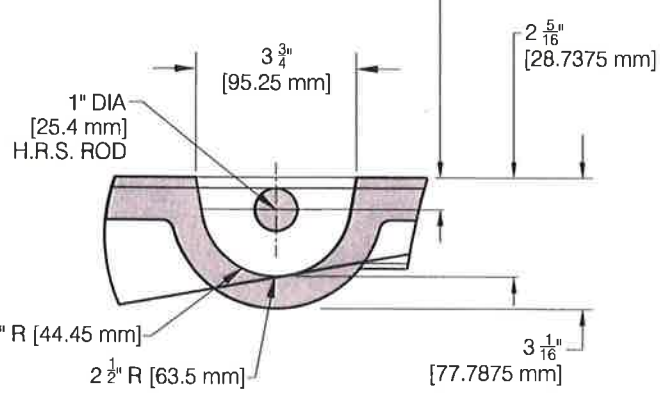
2" [50.8 mm]

(1) PICKBAR

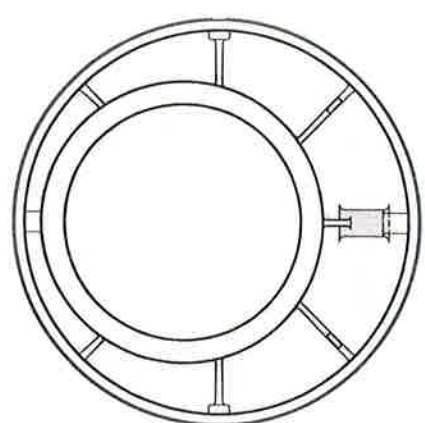
3 1/4" [82.55 mm]



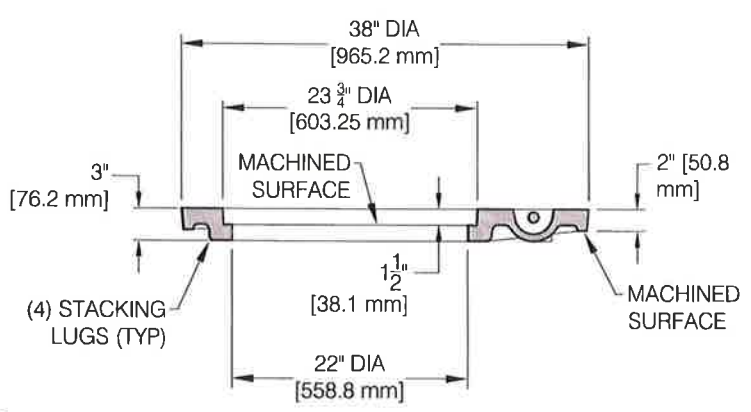
PICKHOLE DETAIL



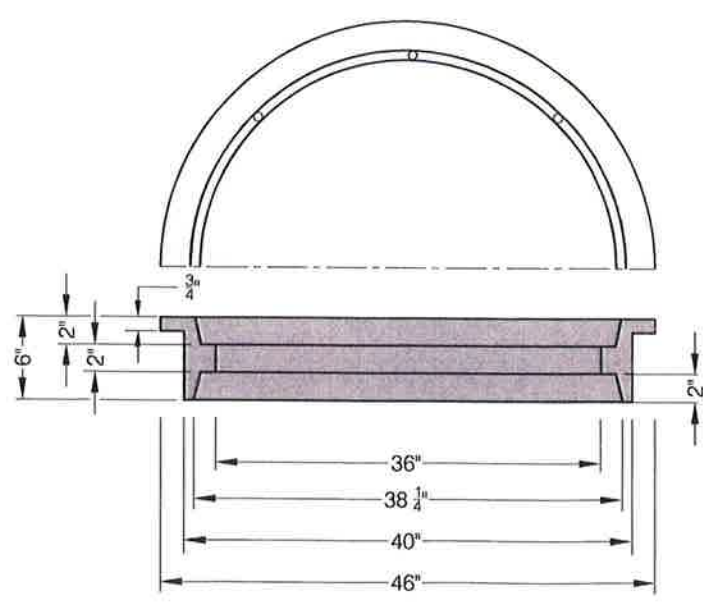
PICKBAR DETAIL



LID BACK



LID SECTION



**REVERSIBLE
FRAME**

EST. WEIGHT
360 POUNDS

NOTE:

All Castings Shall Be "Made In USA"

LRWU

1.17

**38" REVERSIBLE
FRAME & LID DETAILS**

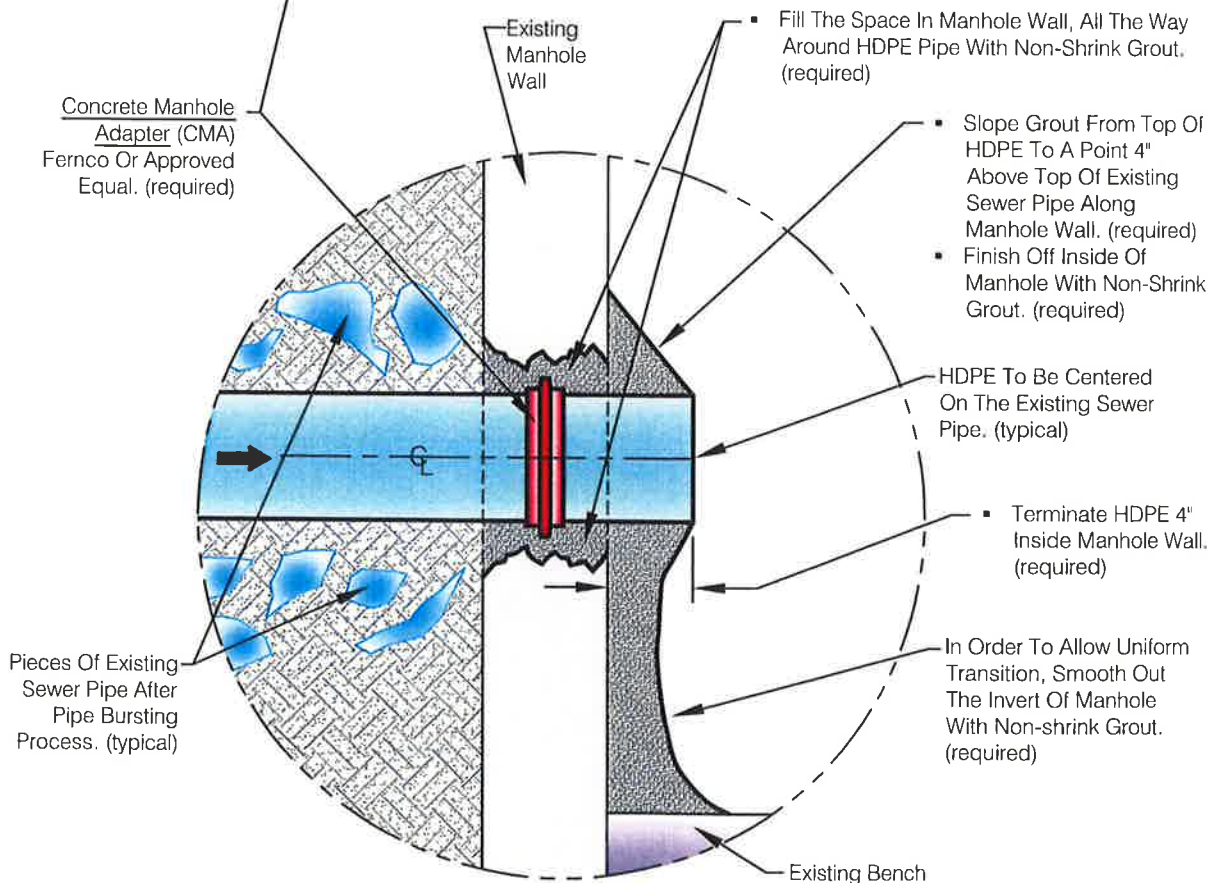
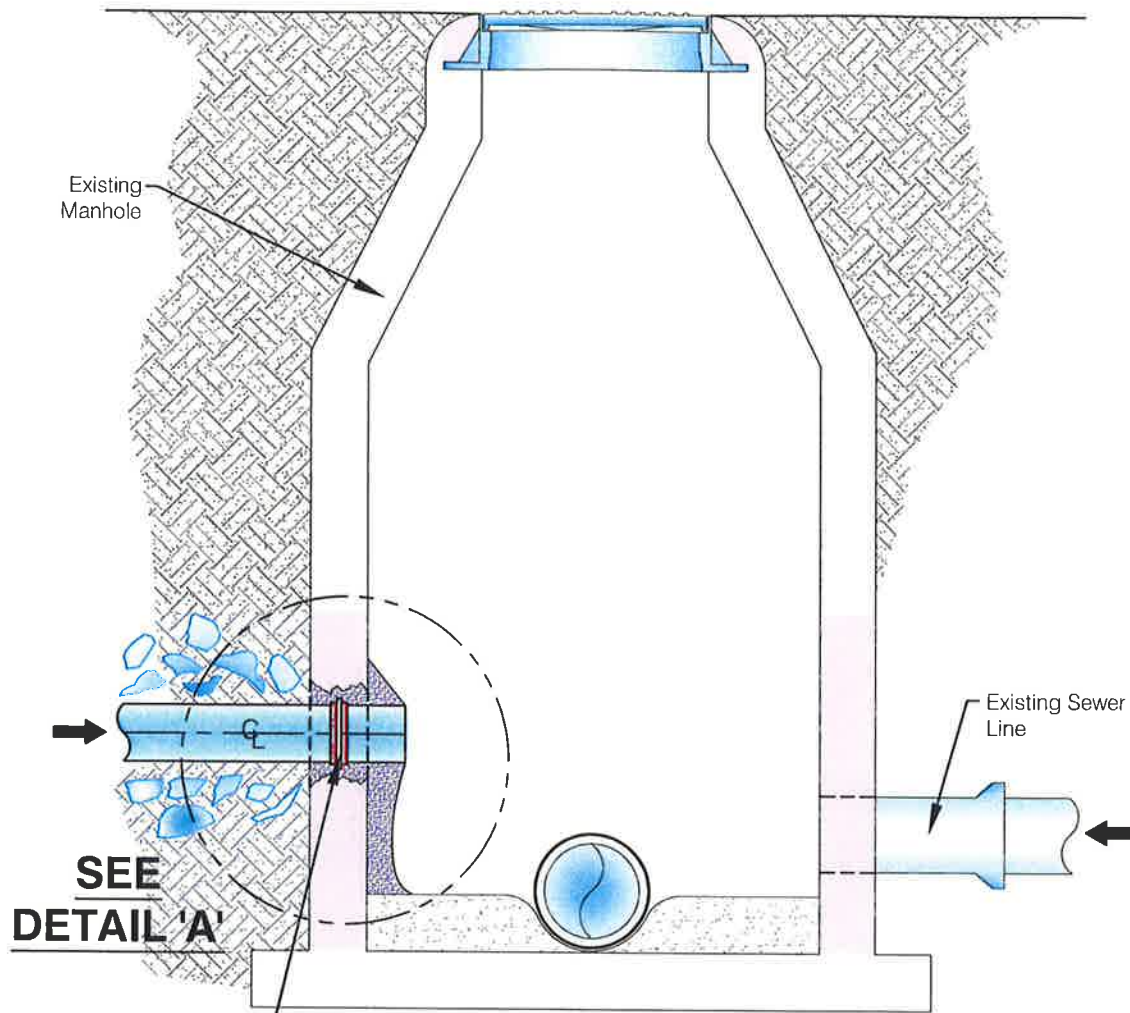
Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:32:51 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.17 - 38 INCH REVERSIBLE FRAME & LID.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



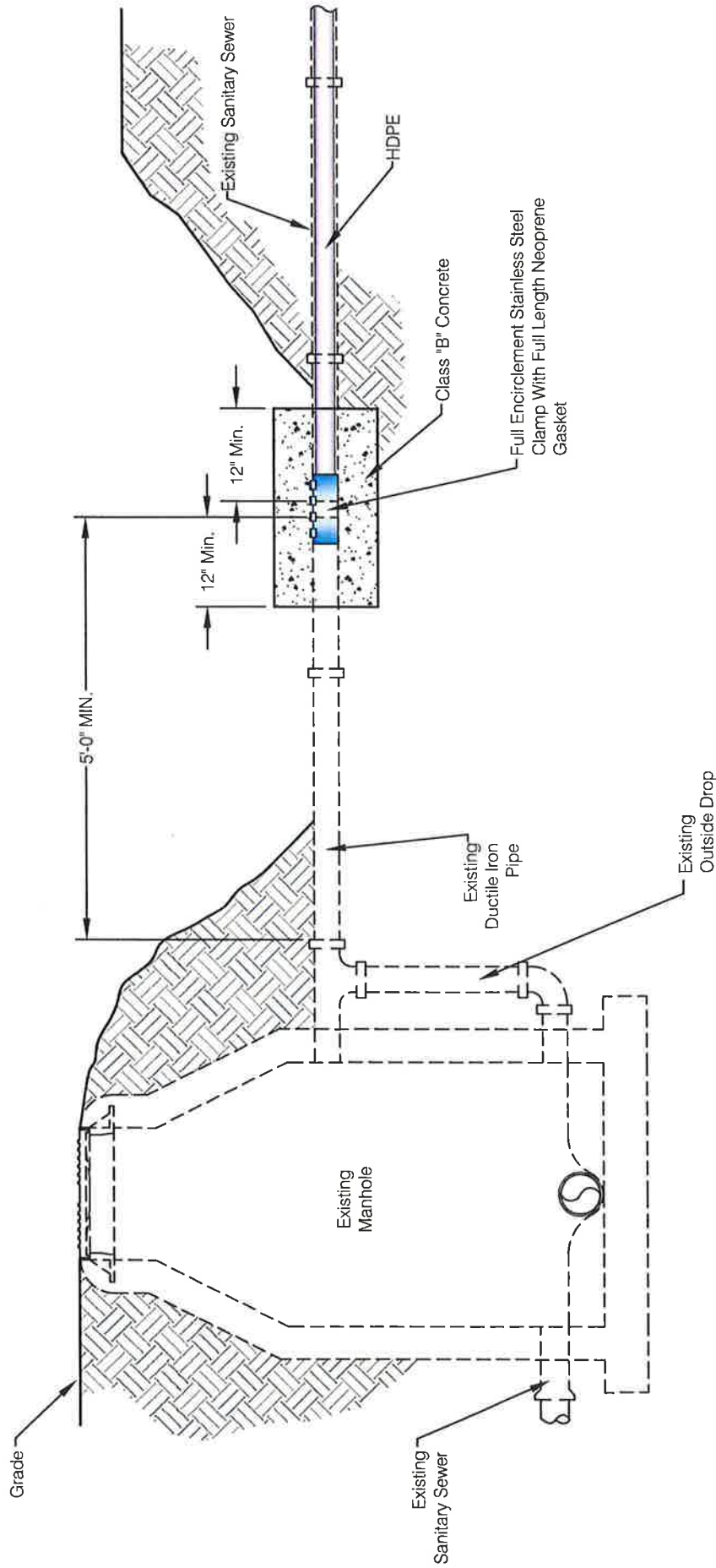
DETAIL 'A'



**SEAL HDPE AT MANHOLE
DETAILS**

Prepared By: Evangeline O'Neal
Updated: 2/14/2006 9:22:05 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.18 - SEAL HDPE AT MH DETAIL.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



SEALING HDPE AT OUTSIDE DROPS DETAIL

LRWU

1.19

Little Rock Wastewater Utility

SPECIFICATIONS



Prepared By: Evangeline O'Neal

Updated: 2/14/2006 8:33:53 AM

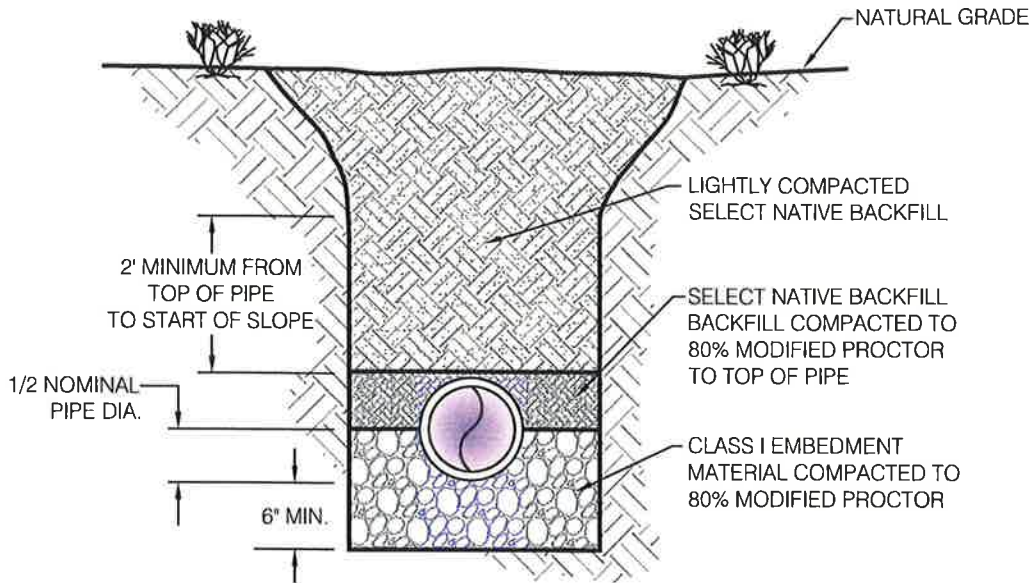
Drawing Status:

APPROVED

Filename: LRWU 1.19 - SEAL HDPE OS DROP.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

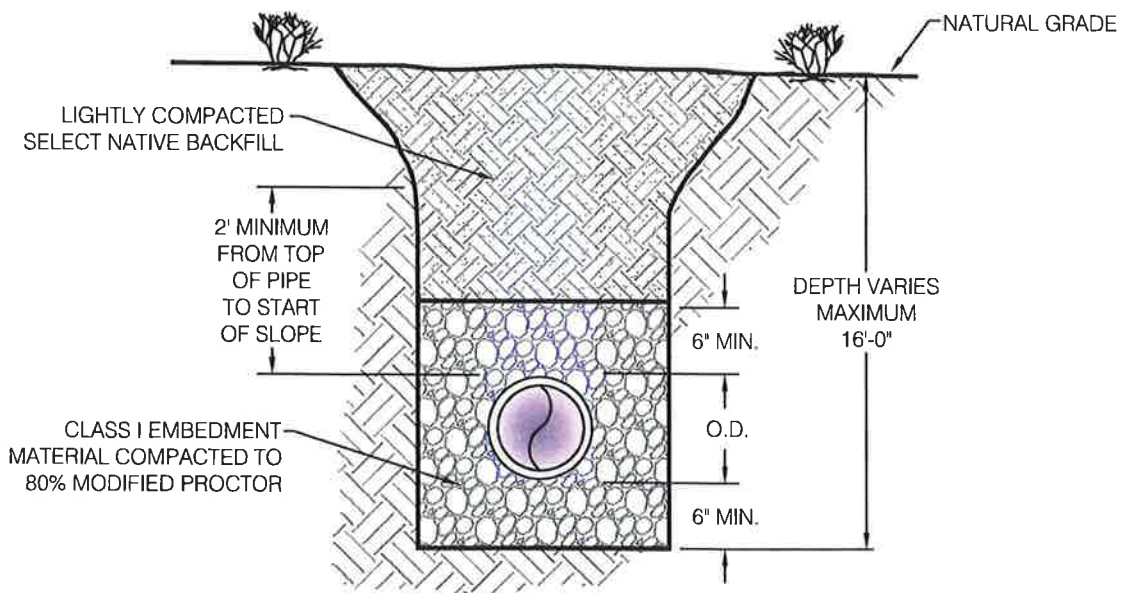
Notes



TYPICAL TRENCH DETAIL RIGID / SEMI-RIGID PIPE BEDDING

MAXIMUM WIDTH OF EXCAVATION FOR PIPE TRENCHES TABLE

NOMINAL PIPE DIAMETER (INCHES)	MAX. WIDTH OF TRENCH FROM TOP OF PIPE TO 2' ABOVE TOP OF PIPE
6, 8, 10,	2'-6"
12, 14, 15, 16,	3'-0"
18, 21,	3'-6"
24, 30	4'-0"
36	4'-6"



TYPICAL TRENCH DETAIL FLEXIBLE PIPE BEDDING

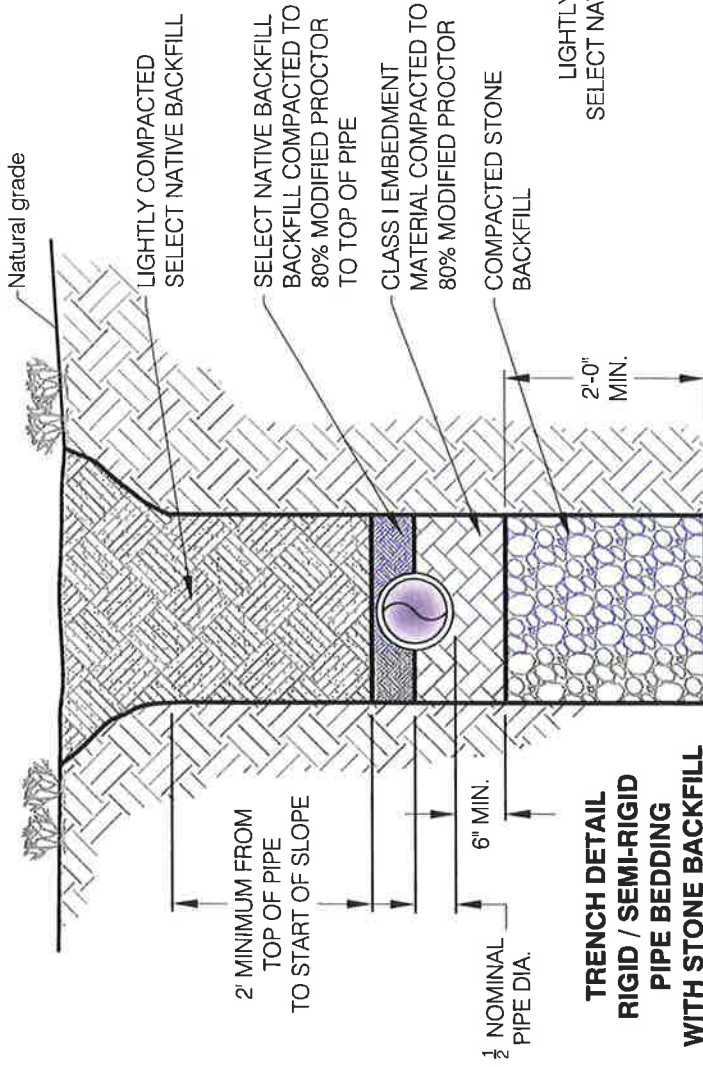
TYPICAL TRENCH BEDDING DETAILS FOR FLEXIBLE & RIGID PIPE

Little Rock Wastewater Utility SPECIFICATIONS

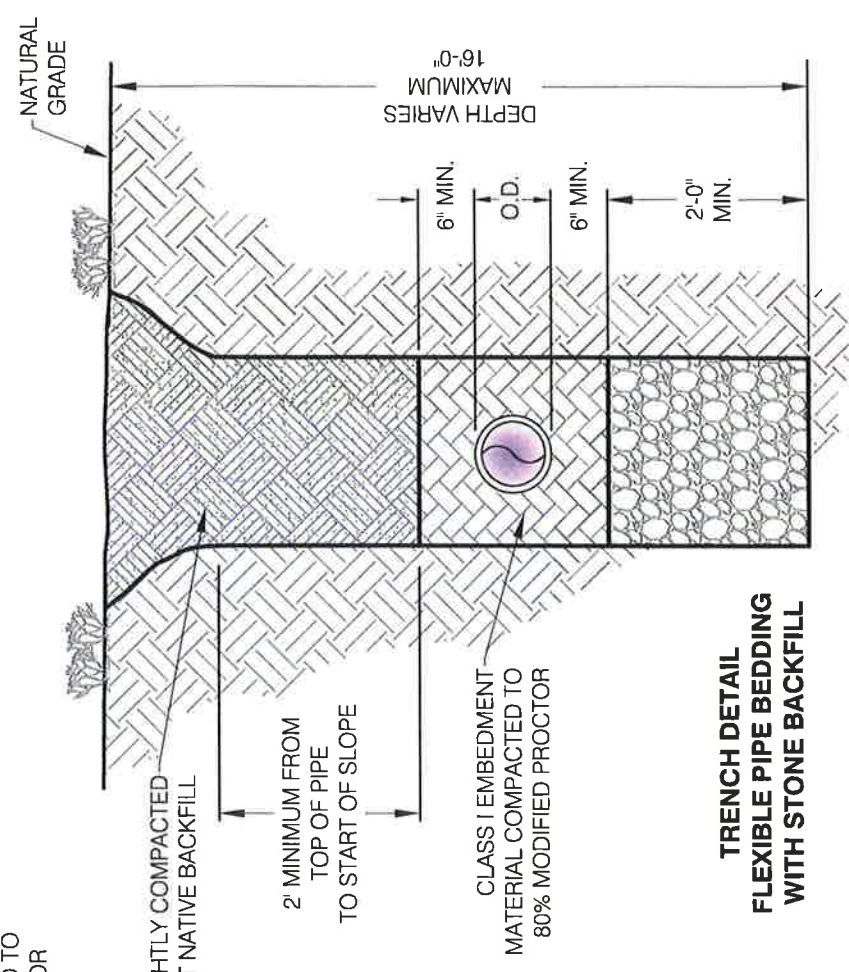


Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 9:24:07 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.21 - TYPICAL TRENCH BEDDING DETAILS FOR FLEXIBLE & RIGID PIPE.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



NOTE:
FOR MATERIAL REQUIREMENTS, SEE
SECTION 2220, PART 2.02.B IN THE
PROJECT MANUAL.



MAXIMUM WIDTH OF EXCAVATION FOR PIPE TRENCHES TABLE	
NOMINAL PIPE DIAMETER (INCHES)	MAX. WIDTH OF TRENCH FROM TOP OF PIPE TO 2' ABOVE TOP OF PIPE
6, 8, 10,	2'-6"
12, 14, 15, 16,	3'-0"
18, 21,	3'-6"
24, 30	4'-0"
36	4'-6"

1. ALL CHANGES/REVISIONS/ETC.
MUST BE APPROVED BY THE LRWU
MANAGER OF ENGINEERING.

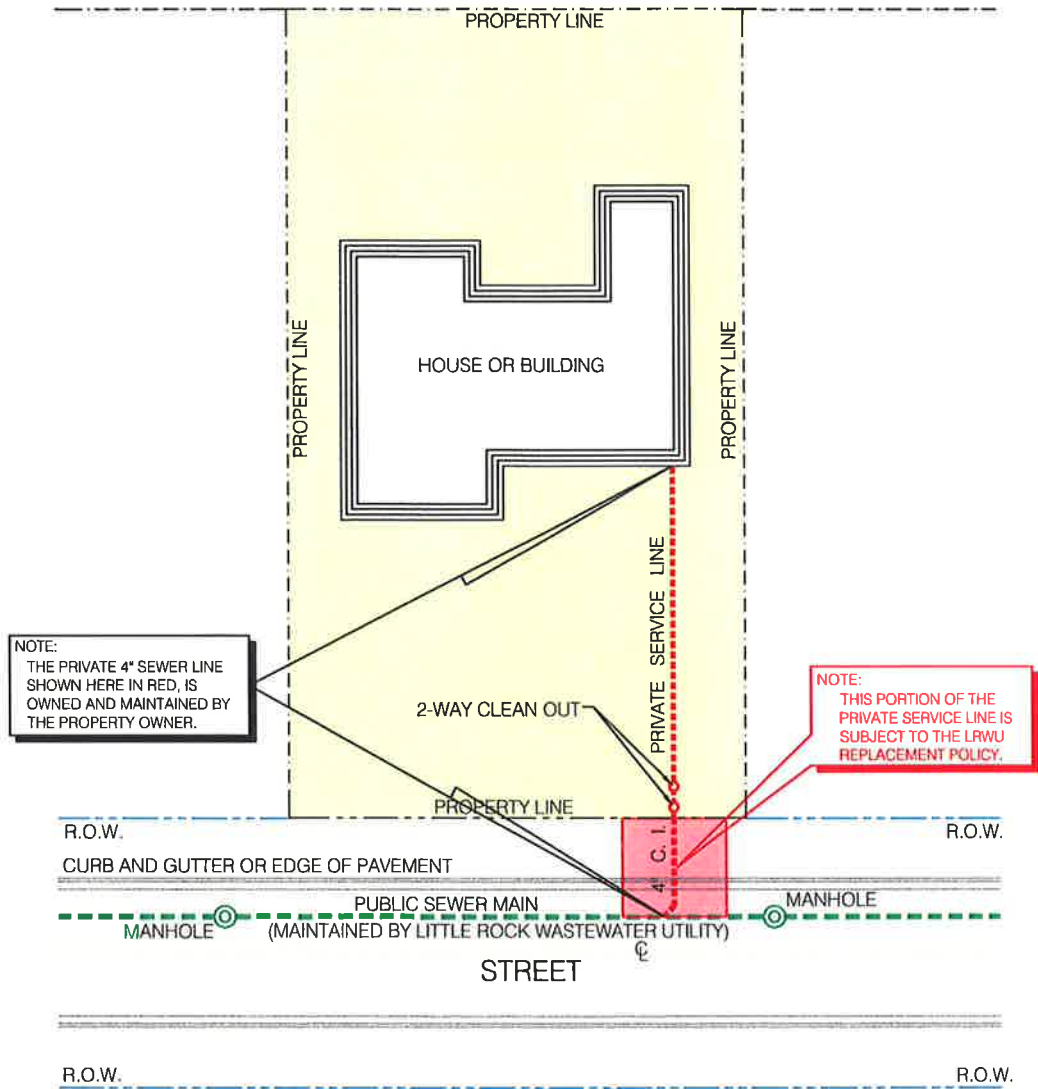
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:36:06 AM
Drawing Status: **APPROVED**
Filename:LRWU 1.22 - TRENCH BEDDING FOR
FLEXIBLE & RIGID PIPE WITH STONE BACKFILL.dwg

Little Rock Wastewater Utility
SPECIFICATIONS



**TRENCH BEDDING DETAILS
- FLEXIBLE & RIGID PIPE -
WITH STONE BACKFILL**

LRWU



Little Rock Wastewater Utility "Standard Policy for Replacement of Eligible Four (4) inch Building Sewer Lines Located within a Street, Alley, drainage, or Utility Right-of-Way".

Notes

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 8:36:56 AM
 Drawing Status:
APPROVED
 Filename: LRWU 1.23 - SERVICE LINE
 REPLACEMENT IN ROW.dwg

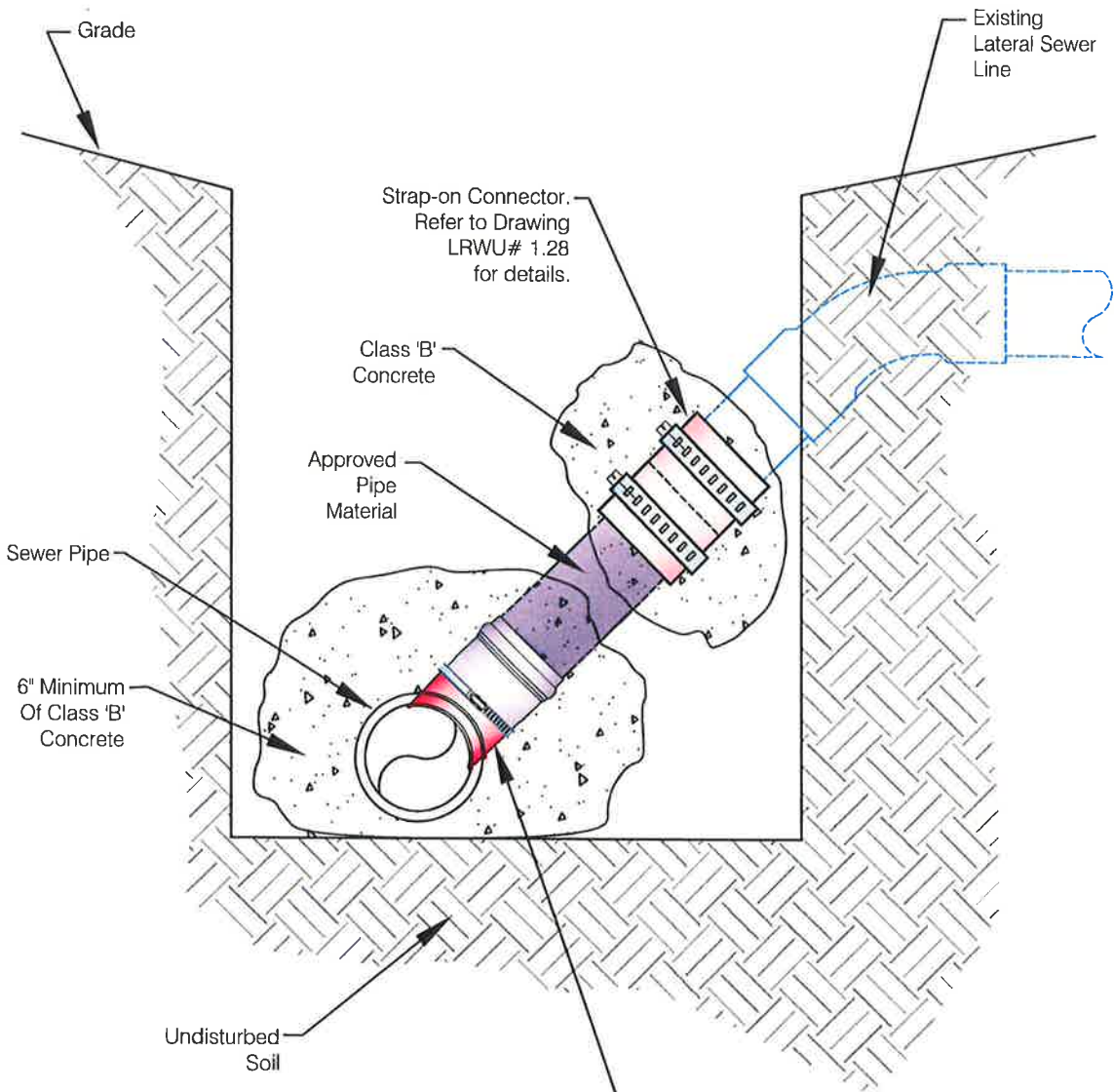


Little Rock Wastewater Utility
 SPECIFICATIONS

**SERVICE LINE
 REPLACEMENT
 IN R.O.W.**

LRWU

1.23



Strap-on Connector.
Refer to Drawing
LRWU# 1.28
for details.

Class 'B'
Concrete

Approved
Pipe
Material

Sewer Pipe

6" Minimum
Of Class 'B'
Concrete

Undisturbed
Soil

Existing
Lateral Sewer
Line

Inserta Tee 3-piece Compression Fit Service
Connection (or Approved Equal) Consists Of:

- PVC Hub
- Rubber Sleeve
- Stainless Steel Band

Refer to drawing LRWU #1.29 for details.

**NEW CONSTRUCTION
CONNECTION TO HOUSE SERVICE
DETAIL**

Little Rock Wastewater Utility
SPECIFICATIONS



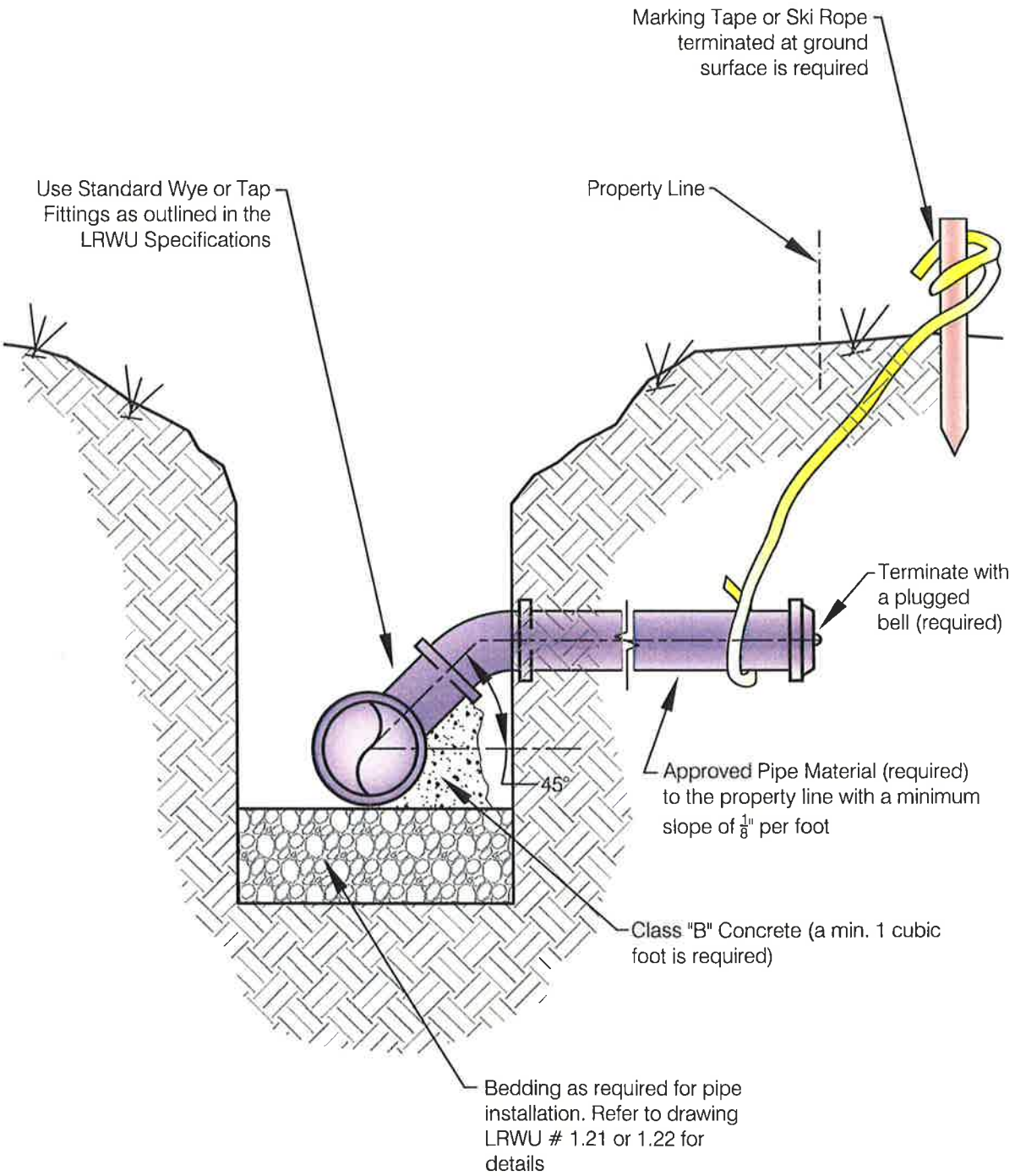
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:43:02 AM
Drawing Status:

APPROVED

Filename: LRWU 1.24 - New Construction Service
Connection.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE
APPROVED BY THE LRWU DIRECTOR OF
ENGINEERING.

Notes



NEW CONSTRUCTION SERVICE WYE DETAIL

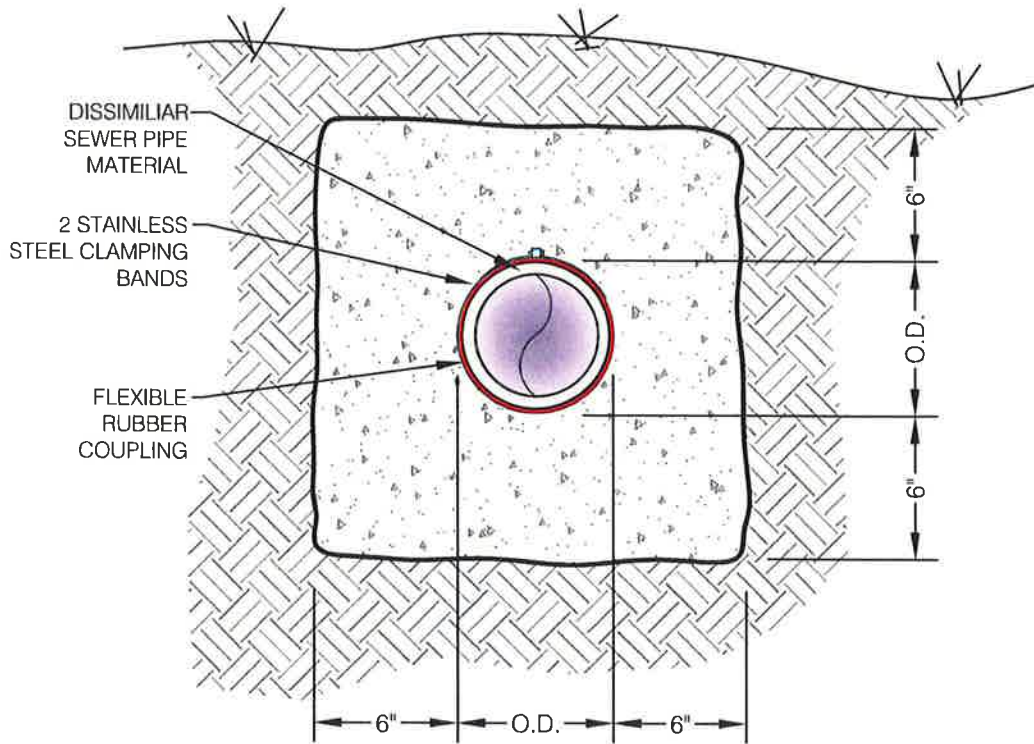
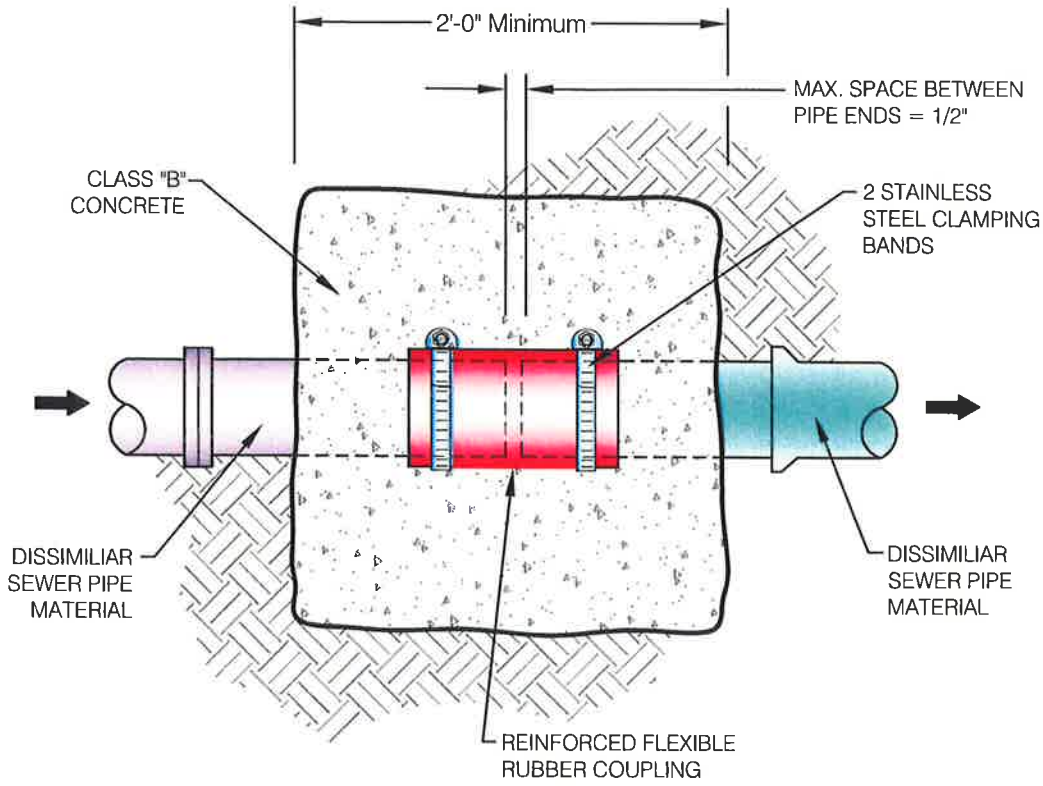
Little Rock Wastewater Utility

SPECIFICATIONS



Prepared By: Evangeline O'Neal
 Update: 2/14/2006 8:37:47 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.25 - NEW CONSTRUCTION SERVICE
 WYE.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



Little Rock Wastewater Utility
SPECIFICATIONS



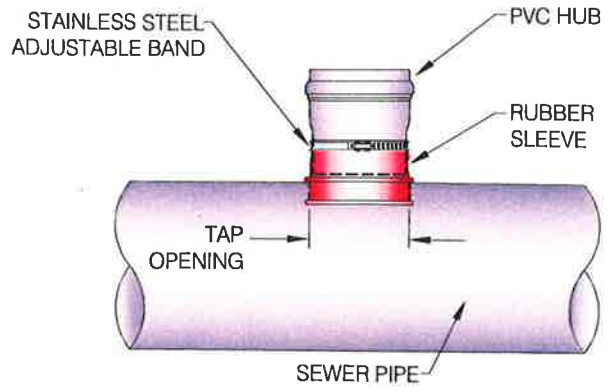
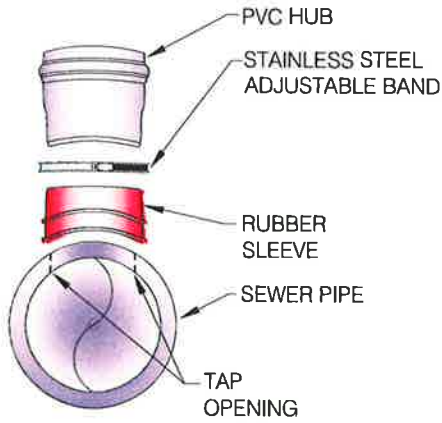
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 9:25:19 AM
Drawing Status:

APPROVED

Filename: LRWU 1.26 - FLEXIBLE COUPLING.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

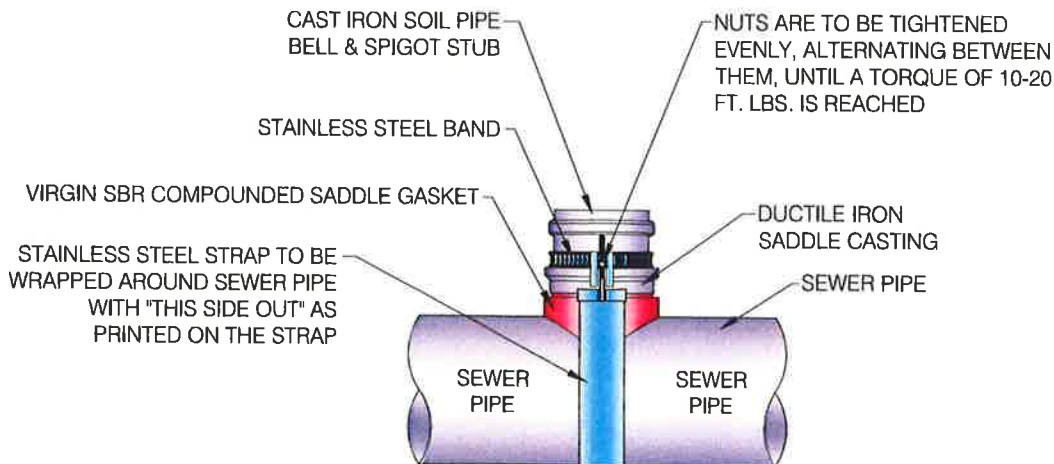
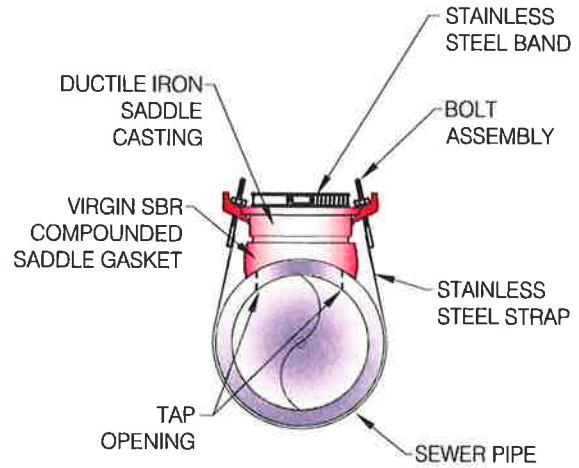
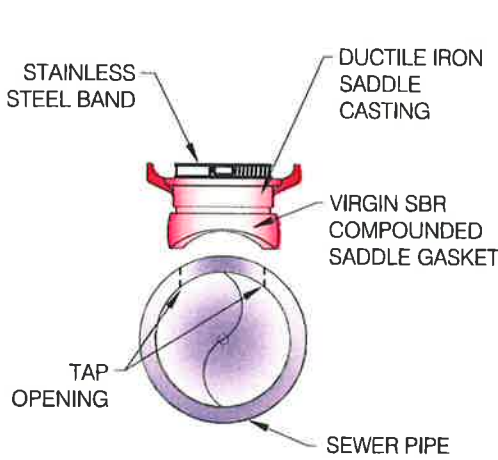


INSERTA TEE 3-PIECE
COMPRESSION FIT
SERVICE CONNECTION
(OR APPROVED EQUAL)
CONSISTS OF:

- PVC HUB
- RUBBER SLEEVE
- STAINLESS STEEL BAND

COMPRESSION FIT 3-PIECE SERVICE CONNECTION

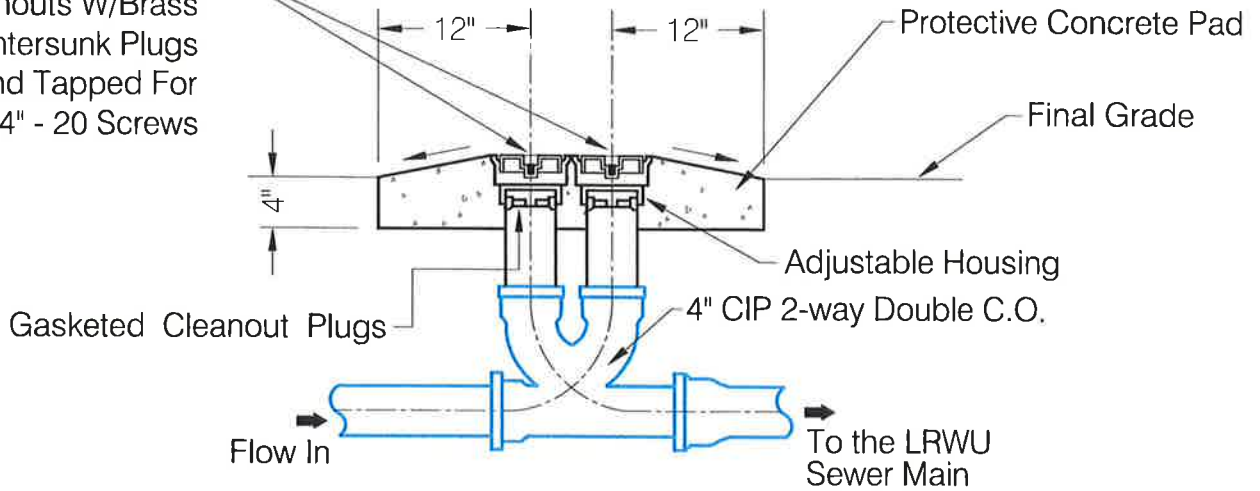
(FOR 12" & LARGER DIAMETER PIPE ONLY)



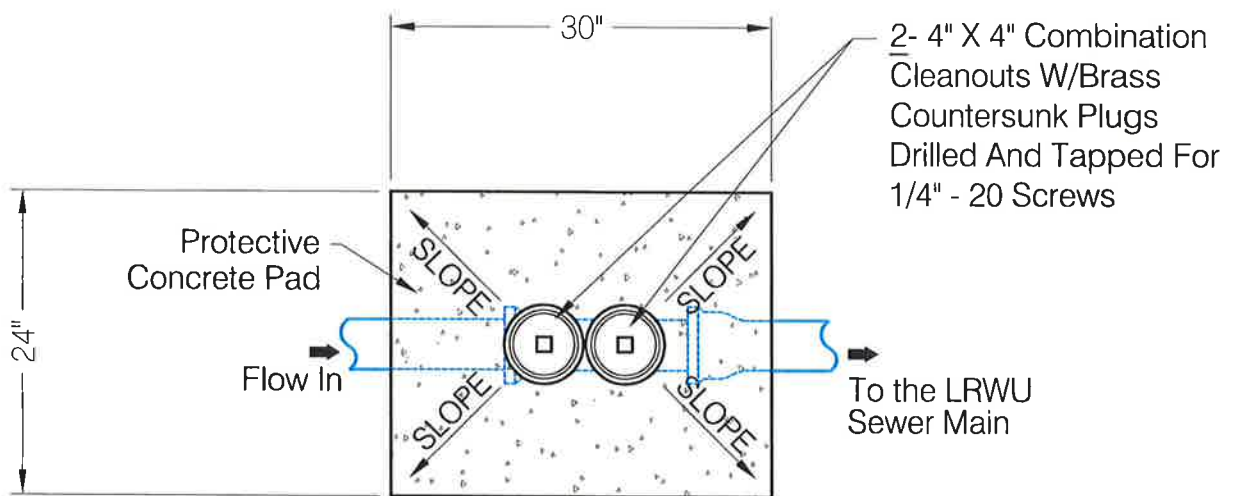
COMPOSITE SADDLE



2- 4" X 4" Combination
Cleanouts W/Brass
Countersunk Plugs
Drilled And Tapped For
1/4" - 20 Screws



SECTION



PLAN VIEW

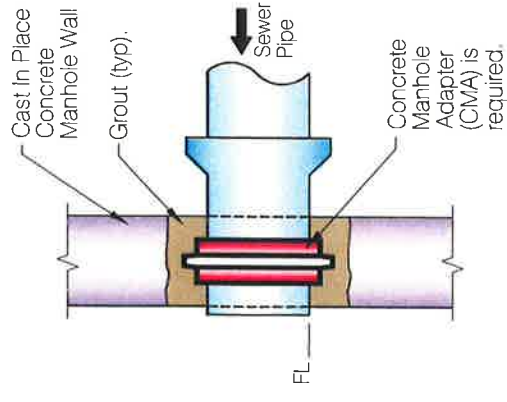
Notes
1. ALL CHANGES/REVISIONS/ETC.
MUST BE APPROVED BY THE
LRWU MANAGER OF ENGINEERING.

Prepared By: Evangeline O'Neal
Revised: 2/14/2006 8:49:24 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.28 - 2 WAY
DOUBLE CLEANOUT DETAIL.dwg

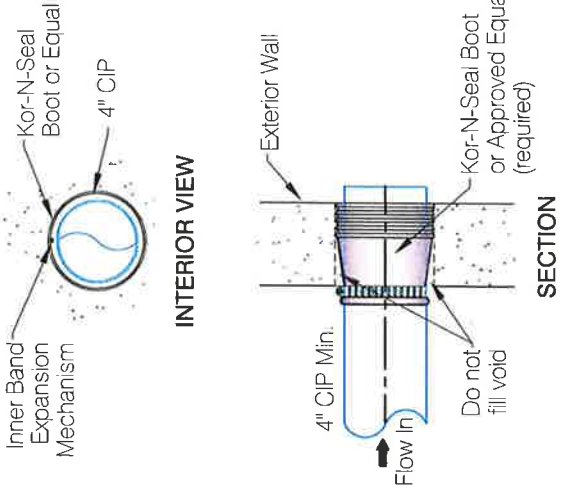
Little Rock Wastewater Utility
SPECIFICATIONS

**TWO-WAY
DOUBLE CLEANOUT
DETAILS**

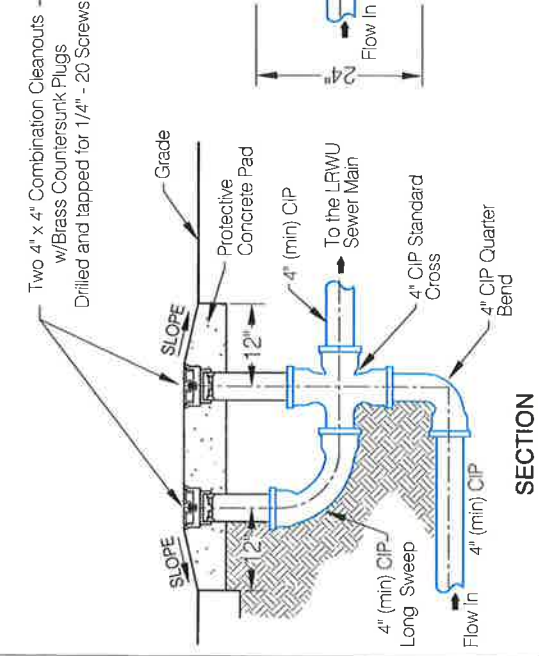
LRWU
1.28



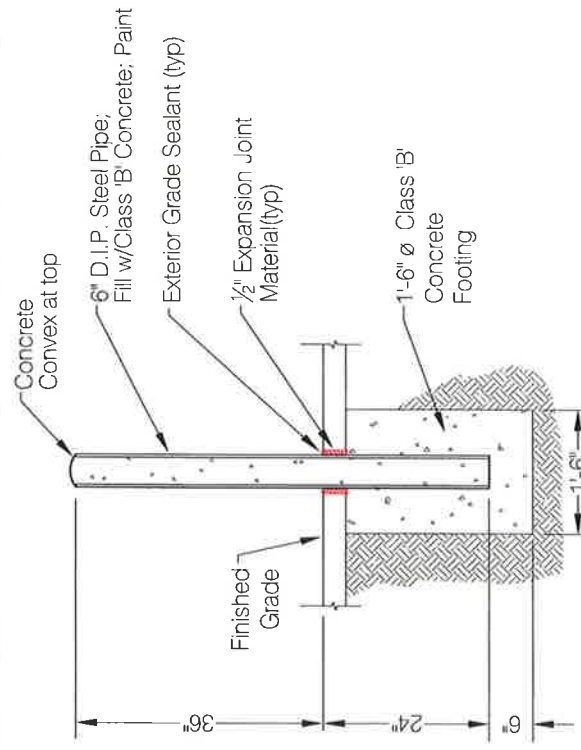
CONCRETE MANHOLE ADAPTER (CMA)



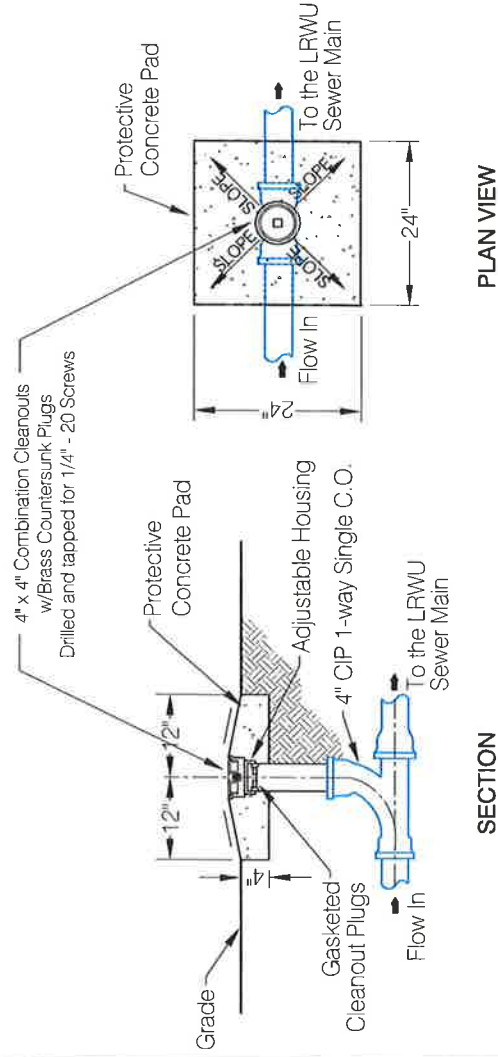
BOOT



LONG SWEEP CLEANOUT



TYPICAL BOLLARD



ONE-WAY CLEANOUT

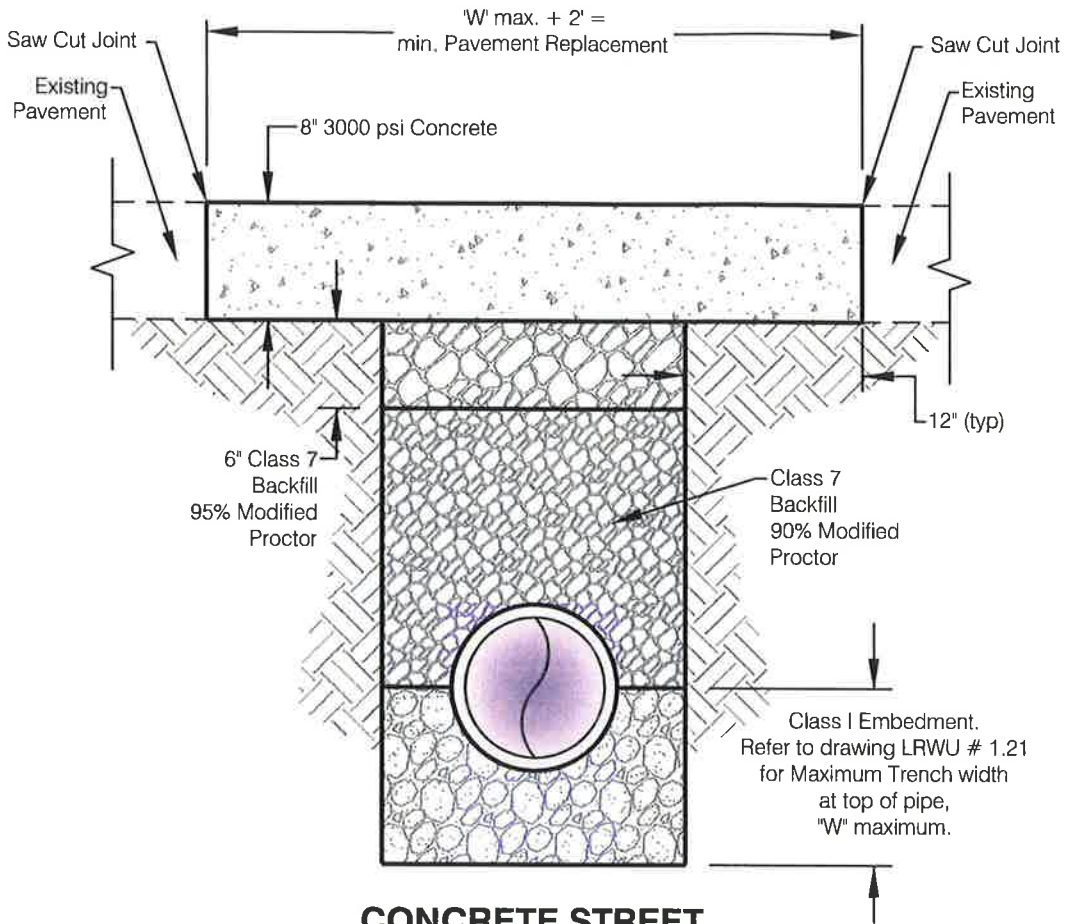
NOTES
 1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU MANAGER OF ENGINEERING.

Prepared By: Evangeline Oneal
 Revised: 2/14/2006 8:50:21 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.29 - MISCELLANEOUS DETAILS.dwg



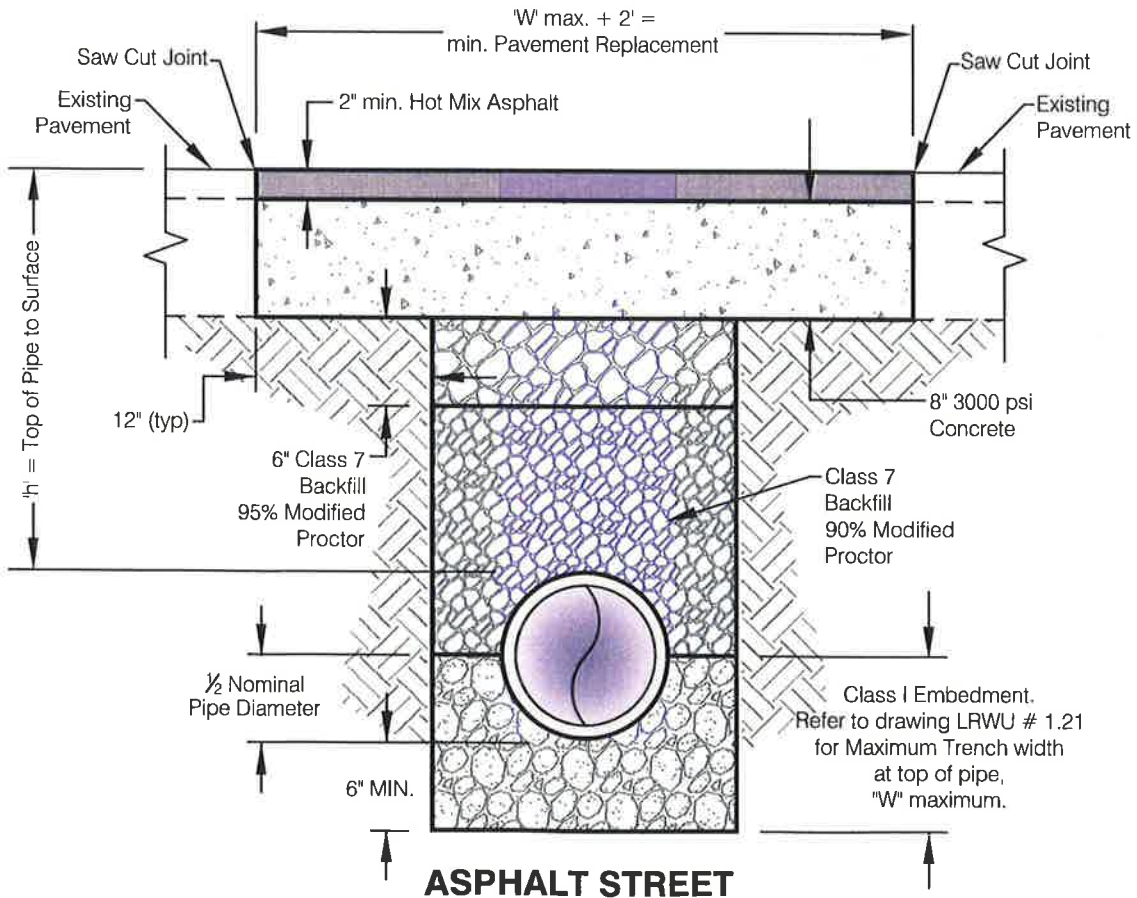
MISCELLANEOUS DETAILS

LRWU



CONCRETE STREET

Note: Apply Tack Coat On Concrete Cap & Sides Of Cut Prior To Placing Hot Mix Asphalt



ASPHALT STREET

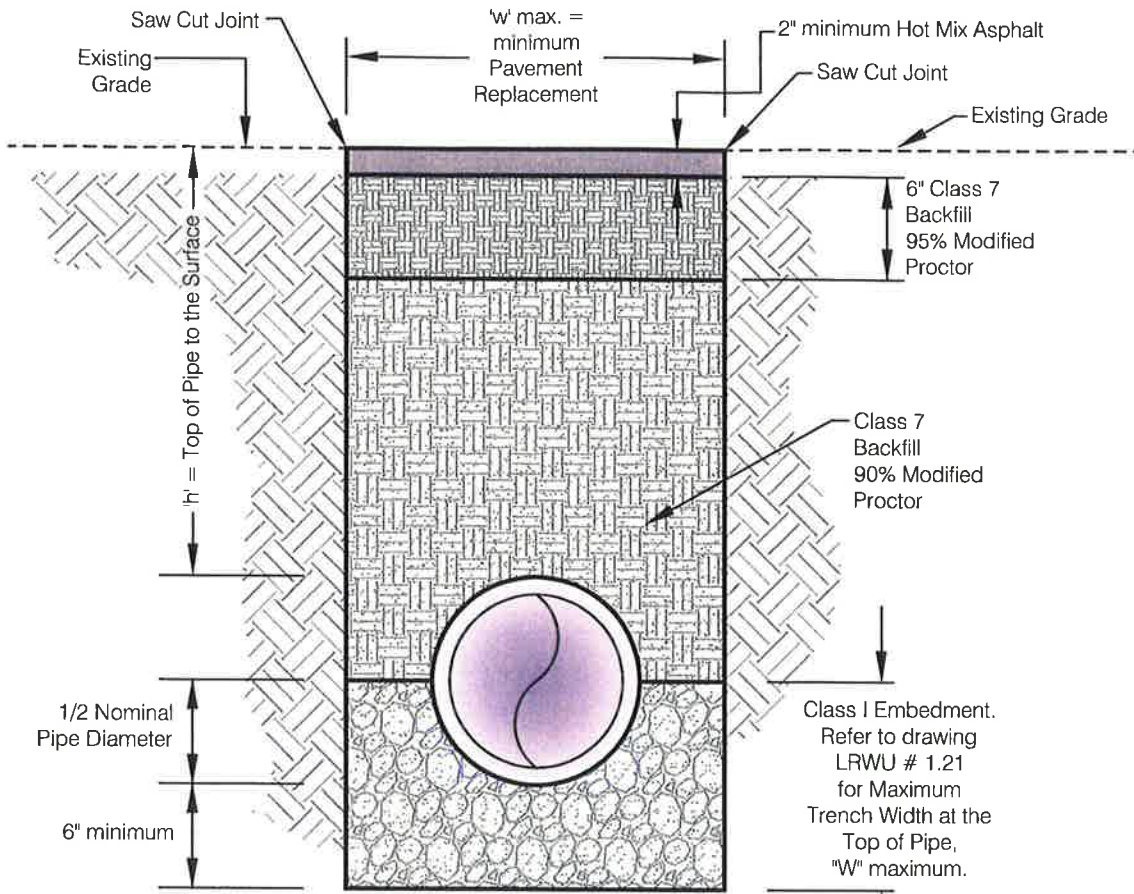
Note: Maximum Pavement Replacement Payment width = 2' + "h" + "w" max

CITY & COUNTY STREET REPAIR DETAILS



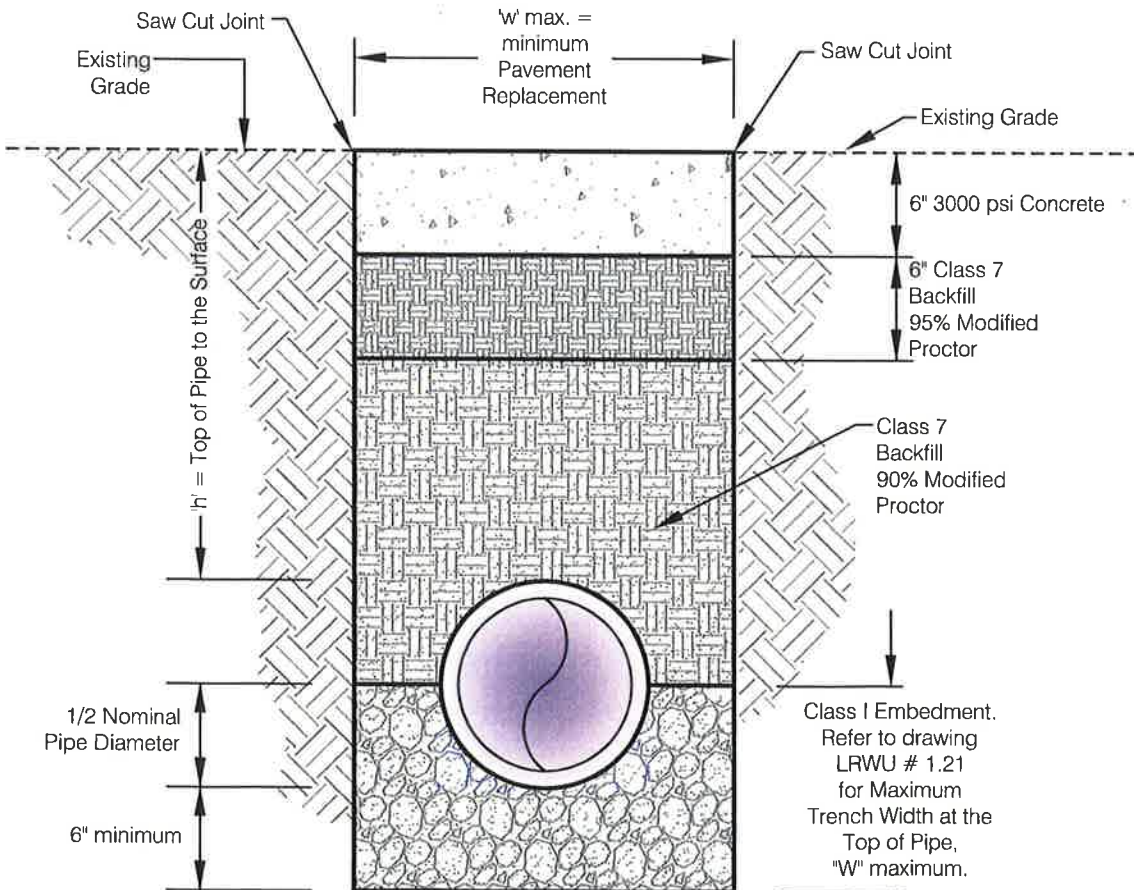
Prepared By: Evangeline O'Neal
 Update: 2/14/2006 8:52:56 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.30 - CITY & CTY ST REPAIR.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



ASPHALT ALLEY REPAIR

NOTE: Maximum Pavement Replacement Payment width = "w" max + "h"



CONCRETE ALLEY REPAIR

ALLEY REPAIR DETAILS

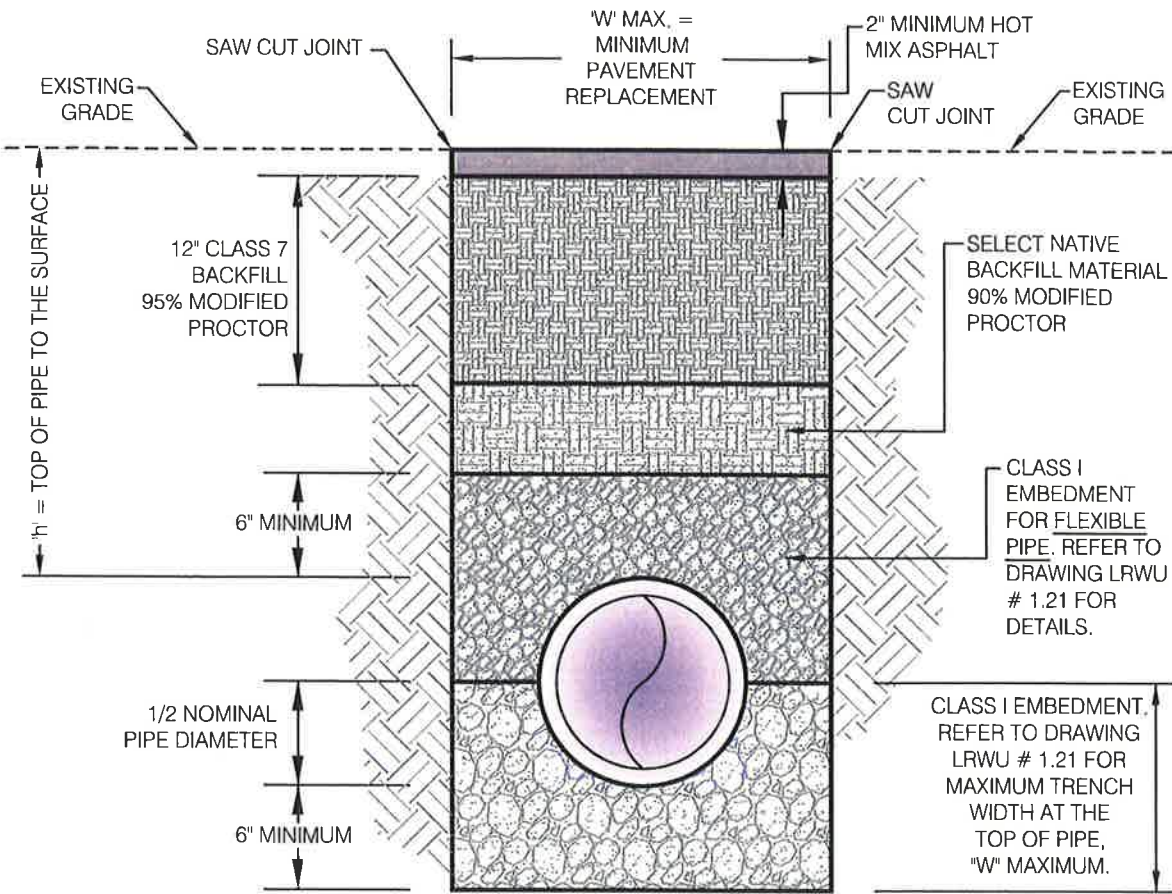
Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal
Updated: 2/14/2006 9:26:39 AM
Drawing Status: **APPROVED**

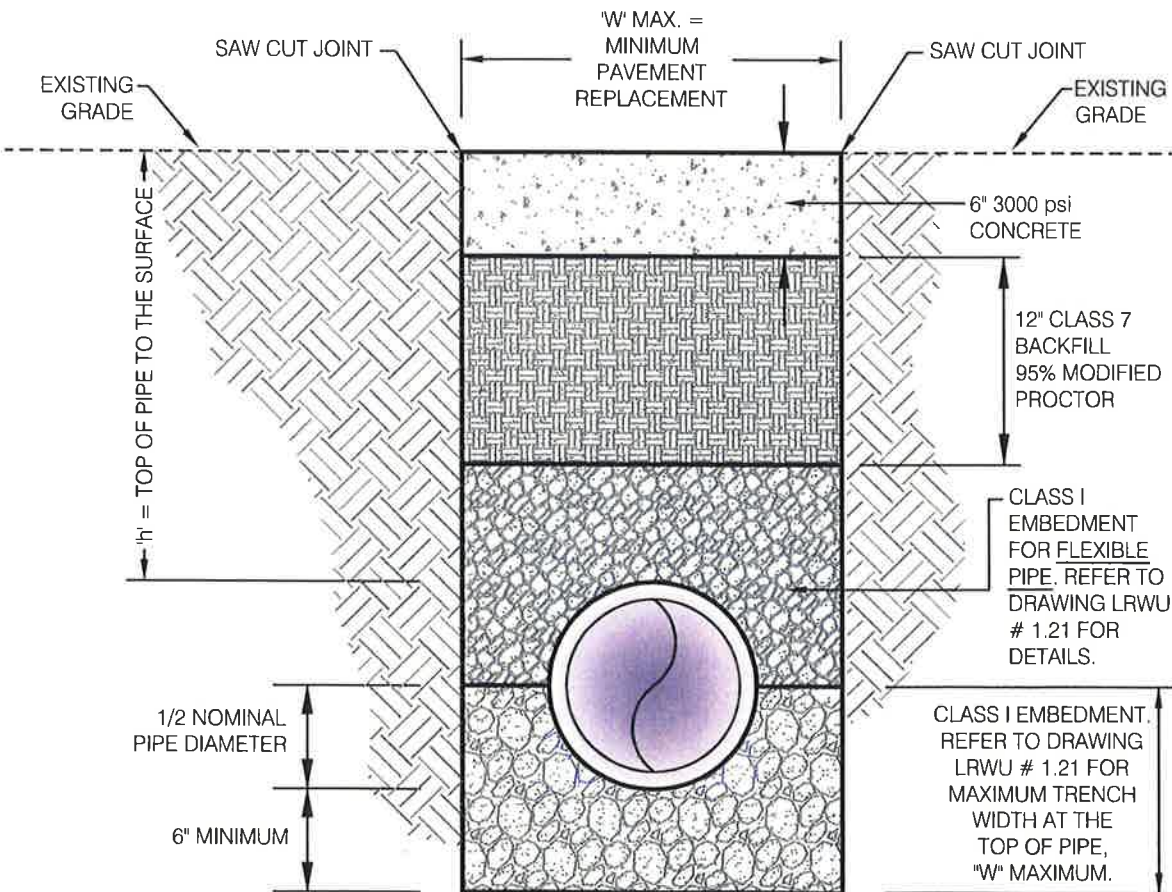
Filename: LRWU 1.31 - ALLEY REPAIR.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



ASPHALT DRIVE/PARKING AREA REPAIR

NOTE: MAXIMUM PAVEMENT REPLACEMENT PAYMENT WIDTH = "W" MAX + "h"



CONCRETE DRIVE/PARKING AREA REPAIR

LRWU

1.32

ASPHALT/CONCRETE DRIVE & PARKING AREA REPAIR DETAILS

Little Rock Wastewater Utility

SPECIFICATIONS



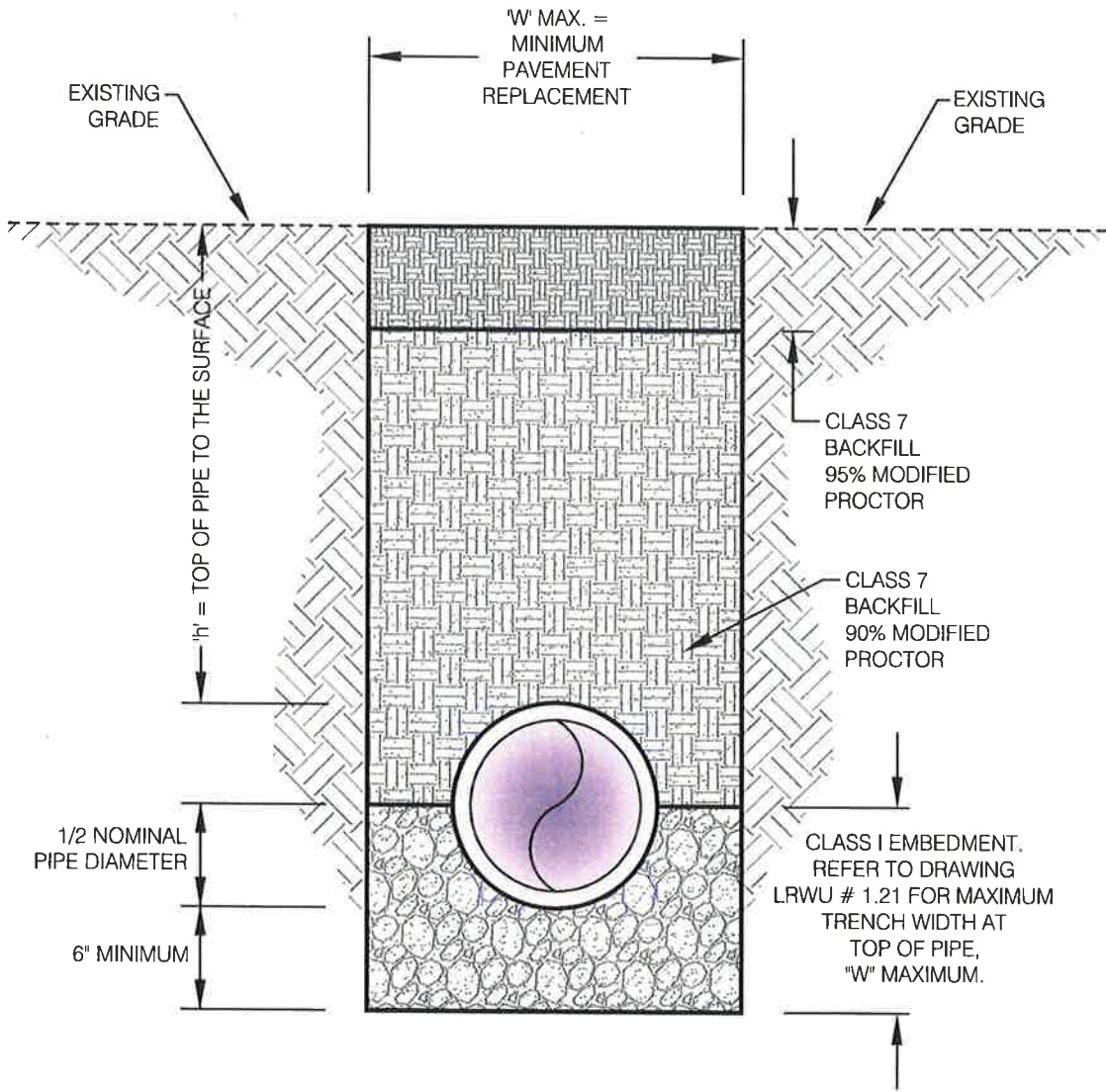
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 8:53:46 AM

Drawing Status: **APPROVED**

Filename: LRWU 1.32 - ASPHALT
CONC DR & PKG AREA REPAIR.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes



NOTE: MAXIMUM PAVEMENT REPLACEMENT
PAYMENT WIDTH = "W" MAX. + "h"

**GRAVEL ALLEY & STREET
REPAIR DETAILS**

Little Rock Wastewater Utility
SPECIFICATIONS



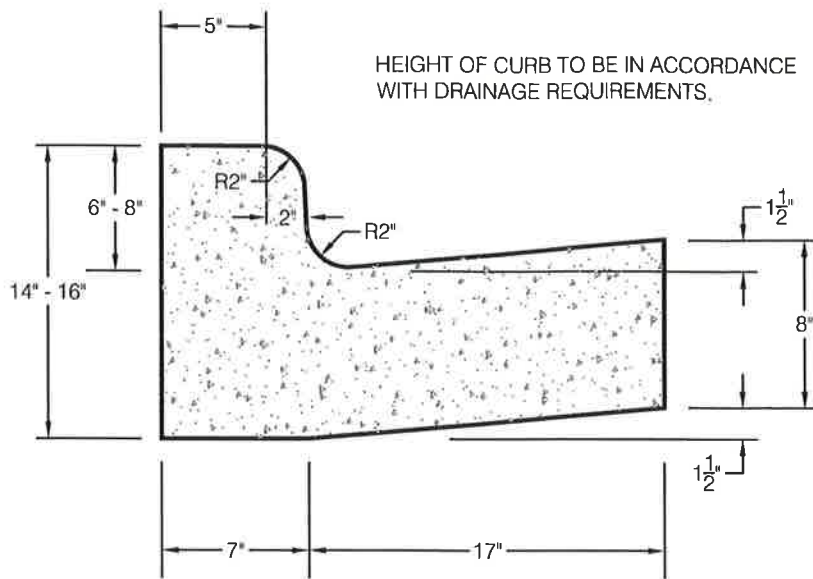
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 9:27:46 AM
Drawing Status:

APPROVED

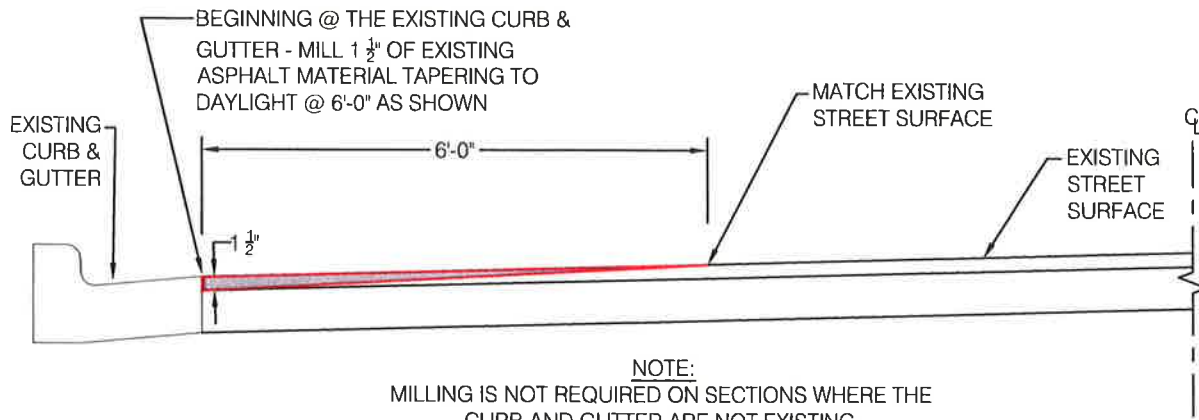
Filename: LRWU 1.33 - GRAVEL
ALLEY OR ST REPAIR.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

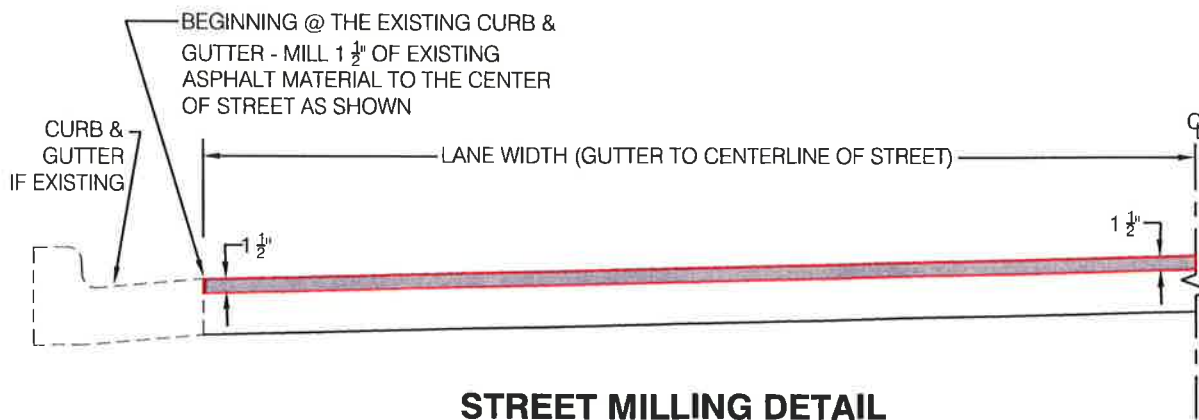


**CLASS 1 & 2 UPRIGHT
CURB AND GUTTER DETAIL**



NOTE:
MILLING IS NOT REQUIRED ON SECTIONS WHERE THE CURB AND GUTTER ARE NOT EXISTING.

**STREET MILLING DETAIL
FOR EXISTING CURB AND GUTTER
TWO LANE REPLACEMENT**



**STREET MILLING DETAIL
FOR
SINGLE LANE REPLACEMENT**

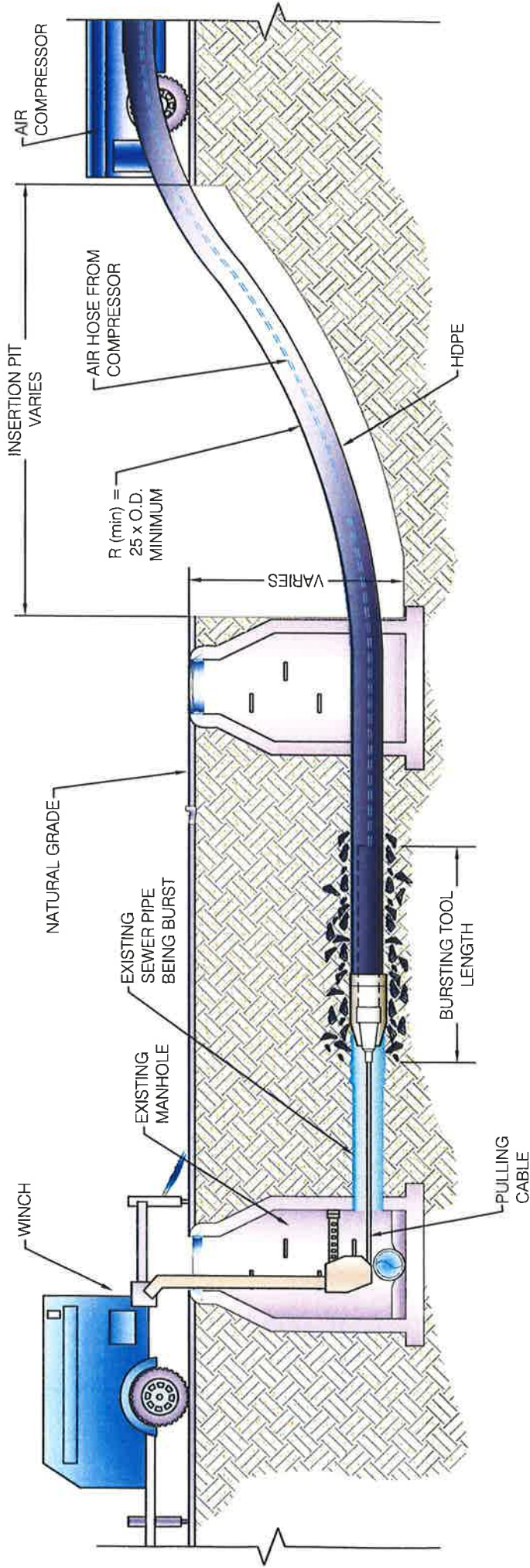
**CURB & GUTTER
INCLUDING STREET MILLING DETAILS
FOR EXISTING CURB & GUTTER**

Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal
Update: 2/14/2006 8:54:49 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.34 - CURB & GUTTER.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



TYPICAL PIPE BURSTING OPERATION LAYOUT

- THE TOOL MUST BE LAUNCHED LEVEL.
- THE BOTTOM LENGTH OF THE INSERTION PIT - BEFORE SLOPING UP TO THE NATURAL GRADE - SHALL BE 2 TIMES THE LENGTH OF THE BURSTING TOOL, OR 12 TIMES THE PIPE DIAMETER, WHICHEVER IS GREATER.

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 9:28:49 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.35 - PIPE BURSTING.dwg

Little Rock Wastewater Utility
 SPECIFICATIONS

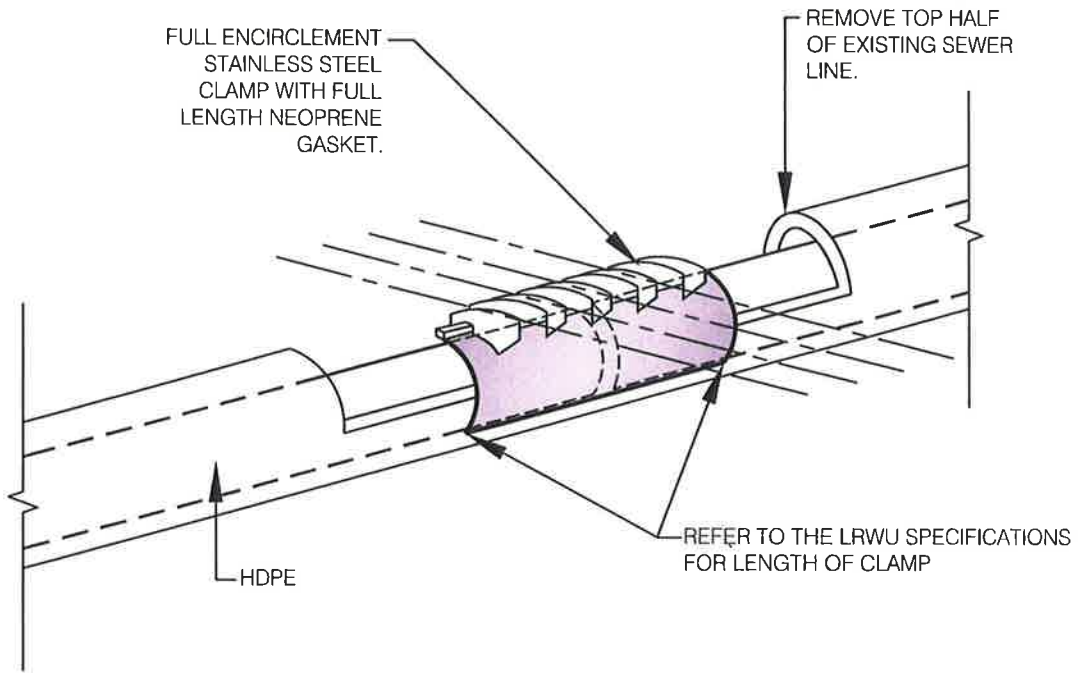


SEWER LINE REHABILITATION BY PIPE BURSTING WITH HDPE PIPE DETAILS

LRWU

1.35

Notes



NOTES:

- EXPOSED HDPE AND CLAMP TO BE ENCASED WITH A 6" MINIMUM OF CLASS 'B' CONCRETE.
- JOINING THE TERMINAL ENDS OF THE HDPE TOGETHER IN THE TWO DIRECTION INSERTION PIT WITH MAXIMUM 1/2" GAP.

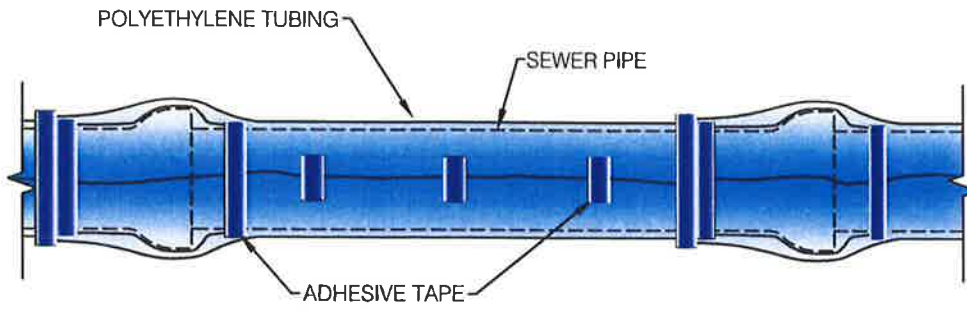
**HDPE SPLICE
DETAIL**

Little Rock Wastewater Utility
SPECIFICATIONS



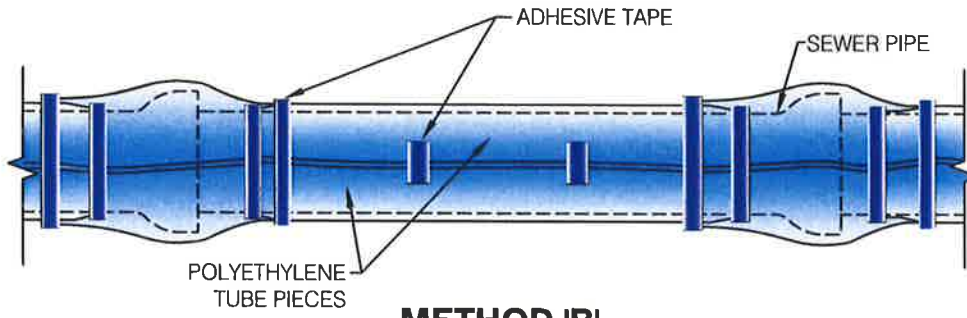
Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 8:55:38 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.36 - HDPE SPLICE.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



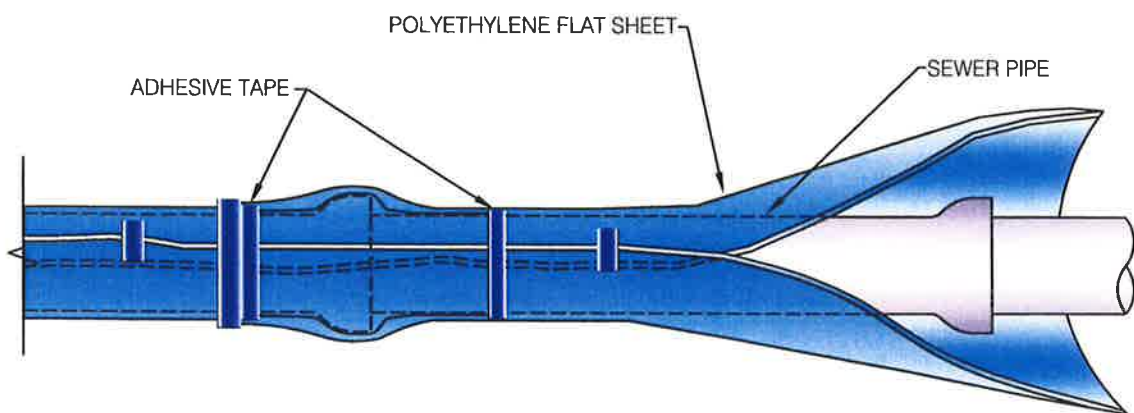
METHOD 'A'

METHOD 'A' USES ONE LENGTH OF POLYETHYLENE TUBE, OVERLAPPED AT THE JOINTS.



METHOD 'B'

METHOD 'B' USES SEPARATE PIECES OF POLYETHYLENE TUBE FOR THE BARREL OF THE PIPE AND THE JOINTS. THIS METHOD IS NOT RECOMMENDED FOR BOLTED-TYPE JOINTS UNLESS AN ADDITIONAL LAYER OF POLYETHYLENE IS PROVIDED OVER THE JOINT AREA AS IN METHODS 'A' AND 'C'.



METHOD 'C'

METHOD 'C' - EACH SECTION IS WRAPPED WITH A FLAT POLYETHYLENE SHEET.

THE ANSI/AWWA C105/A21.5 STANDARD OUTLINES THREE METHODS OF INSTALLING POLYETHYLENE ENCASEMENT/ SLEEVING.

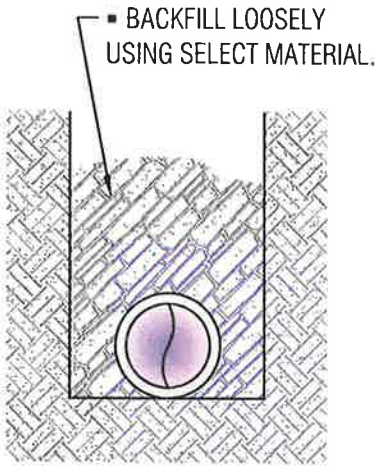
**INSTALLATION OF
POLYETHYLENE ENCASEMENT
DETAILS**



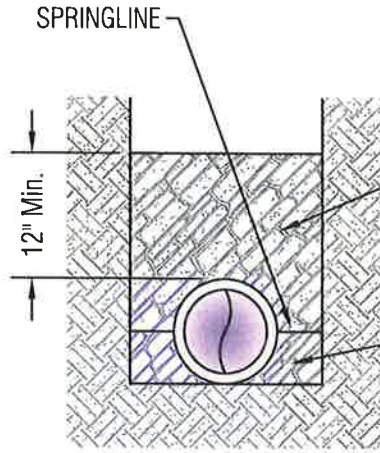
Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 8:56:29 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.37 - INSTALLATION OF HDPE ENCASEMENT.dwg

NOTES
 1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

TYPE 1

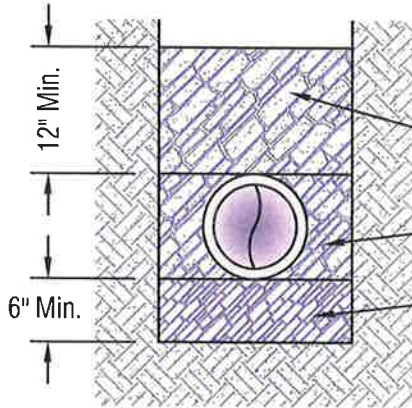


TYPE 2



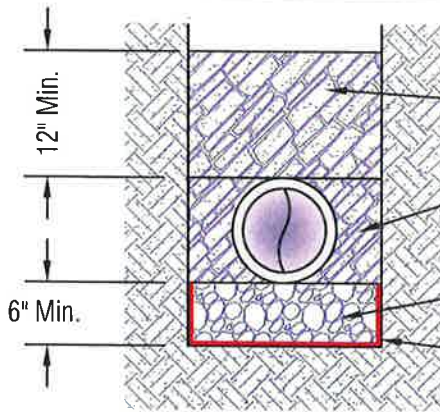
- BACKFILL USING SELECT MATERIAL LIGHTLY COMPACTED TO THE SPRINGLINE OF THE PIPE.
- BACKFILL LOOSELY TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE, USING SELECT MATERIAL.

TYPE 3



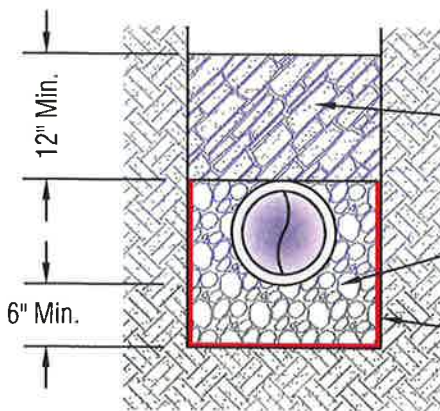
- BACKFILL LOOSELY TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE, USING SELECT MATERIAL.
- BACKFILL USING SELECT MATERIAL LIGHTLY COMPACTED TO THE TOP OF THE PIPE.
- BED PIPE USING SELECT MATERIAL A MINIMUM OF 6".

TYPE 4



- BACKFILL LOOSELY TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE USING SELECT MATERIAL.
- BACKFILL USING SELECT MATERIAL COMPACTED TO 80% STANDARD PROCTOR, AASHTO T99 TO THE TOP OF THE PIPE.
- BED PIPE USING CLASS I EMBEDMENT MATERIAL TO A DEPTH OF $\frac{1}{8}$ THE PIPE DIAMETER A MINIMUM OF 6".
- USE FILTER FABRIC AS SHOWN HERE AS A BOLD RED LINE.

TYPE 5



- BACKFILL USING SELECT MATERIAL LOOSELY TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE.
- BACKFILL USING CLASS I EMBEDMENT COMPACTED 90% STANDARD PROCTOR, AASHTO T99 TO TOP OF PIPE.
- BED PIPE USING CLASS I EMBEDMENT MATERIAL TO A DEPTH OF $\frac{1}{8}$ PIPE DIAMETER A MINIMUM OF 6".
- USE FILTER FABRIC, AS SHOWN HERE WITH A BOLD RED LINE.



**CONCRETE THRUST BLOCK
& COLLAR BEARING TABLES**

Little Rock Wastewater Utility
SPECIFICATIONS



FITTING	THRUST PER 100 psi PRESSURE THRUST (tons)									
	6"	8"	12"	16"	20"	24"	30"	36"	42"	48"
11 1/4"	0.3	0.5	1.1	2.0	3.1	4.4	6.9	10.0	13.6	17.7
15"	0.4	0.7	1.5	2.6	4.1	5.9	9.2	13.3	18.1	23.6
22 1/2"	0.6	1.0	2.2	3.9	6.1	8.8	13.8	19.9	27.0	35.3
30"	0.7	1.3	2.9	5.2	8.1	11.7	18.3	26.3	35.3	46.8
45"	1.1	1.9	4.3	7.7	12.0	17.3	27.1	39.0	53.0	69.2
90"	2.0	3.6	8.0	14.2	22.2	32.0	50.0	72.0	98.0	128.0
PLUG (DEAD END)	1.4	2.5	5.7	10.1	15.7	22.6	35.3	50.3	69.3	90.5

TYPE OF SOIL	SUGGESTED SAFE BEARING VALUES (TONS/SQ. FT.)
SOLID ROCK	25
HARD SLATE	6
MEDIUM SHALE	4
SOFT SHALE	2
DRY CLAY GRAVEL	4
SOFT CLAY	1.5
DRY SAND OR LOAM	2.5
WET CLAY	0.75

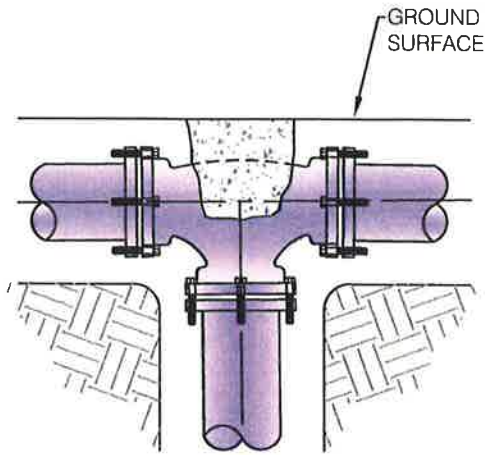
Prepared By: Evangeline O'Neal
Updated: 2/14/2006 9:02:50 AM
Drawing Status:

APPROVED

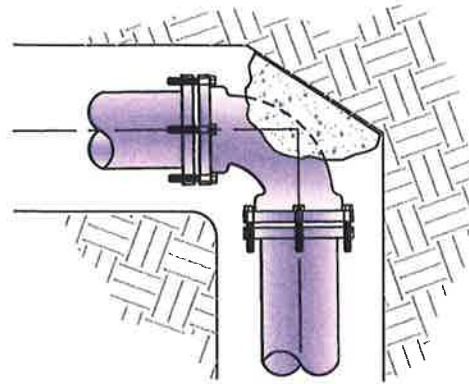
Filename: LRWU 1.39 - CONCRETE THRUST BLOCK & COLLAR BEARING TABLES.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

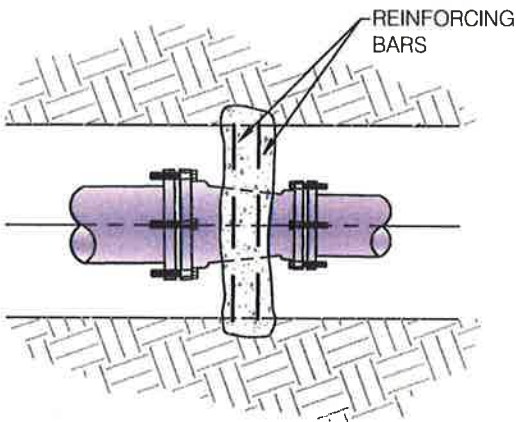
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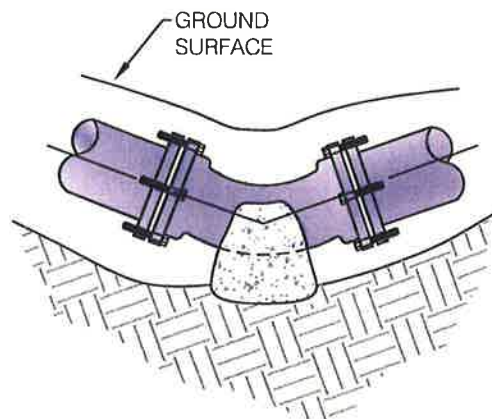
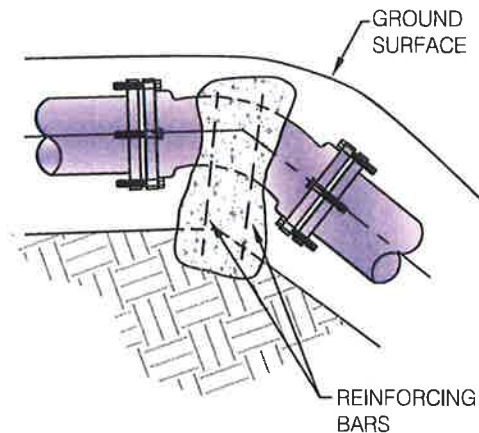
BLOCKING FOR TEE



HORIZONTAL BENDS



THRUST SUPPORT FOR REDUCER CONNECTION



VERTICAL BENDS

THRUST BLOCKING NOTES:

- ALL BLOCKING SHALL BE AGAINST UNDISTURBED HAND DUG SOIL.
- WHERE SOIL CONDITIONS MAKE IT NECESSARY TO POUR CONCRETE BLOCKING OVER JOINTS, THE ENDS OF THE ADJACENT PIPES MUST HAVE A KICKER BLOCK TO RESIST ANY MOVEMENT OF THESE JOINTS.

Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal
Updated: 2/14/2006 9:35:54 AM
Drawing Status:

APPROVED

Filename: LRWU 1.40 - BLOCKING.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

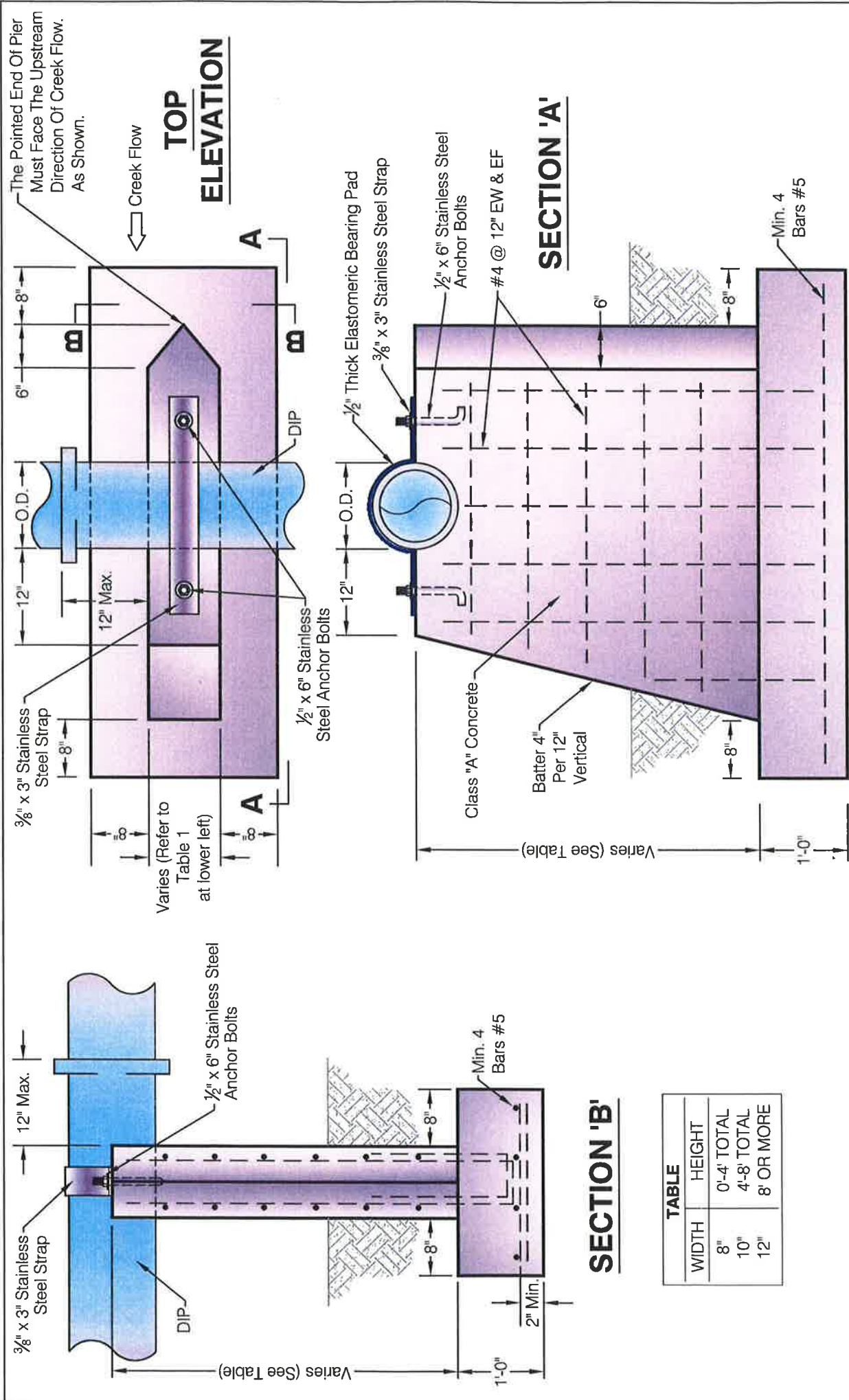


TABLE	WIDTH	HEIGHT
	8"	0'-4" TOTAL
	10"	4'-8" TOTAL
	12"	8' OR MORE

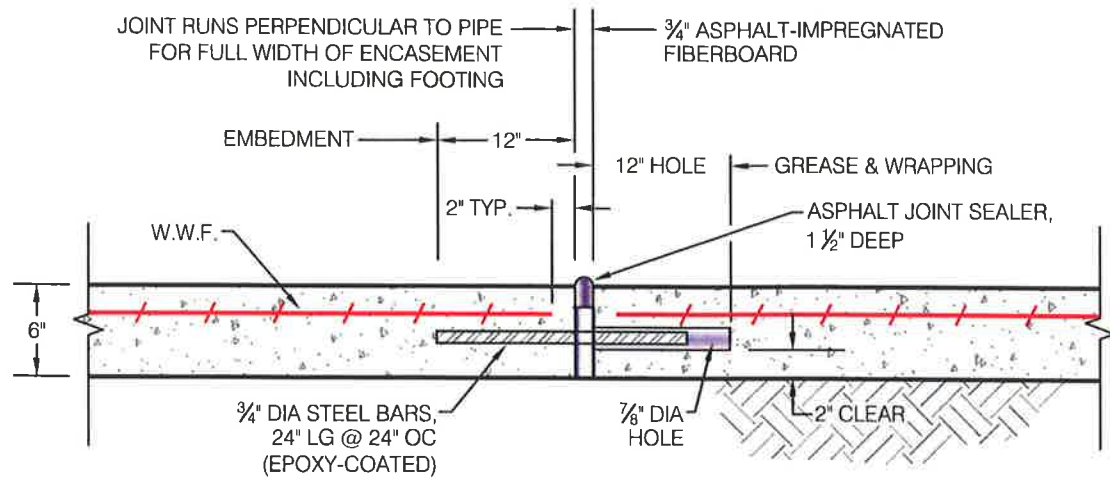
PIER DETAILS

Little Rock Wastewater Utility
SPECIFICATIONS

Prepared By: Evangeline O'Neal
Updated: 2/14/2006 9:05:24 AM
Drawing Status: **APPROVED**
Filename: LRWU 1.41 - PIER DETAILS.dwg

Notes
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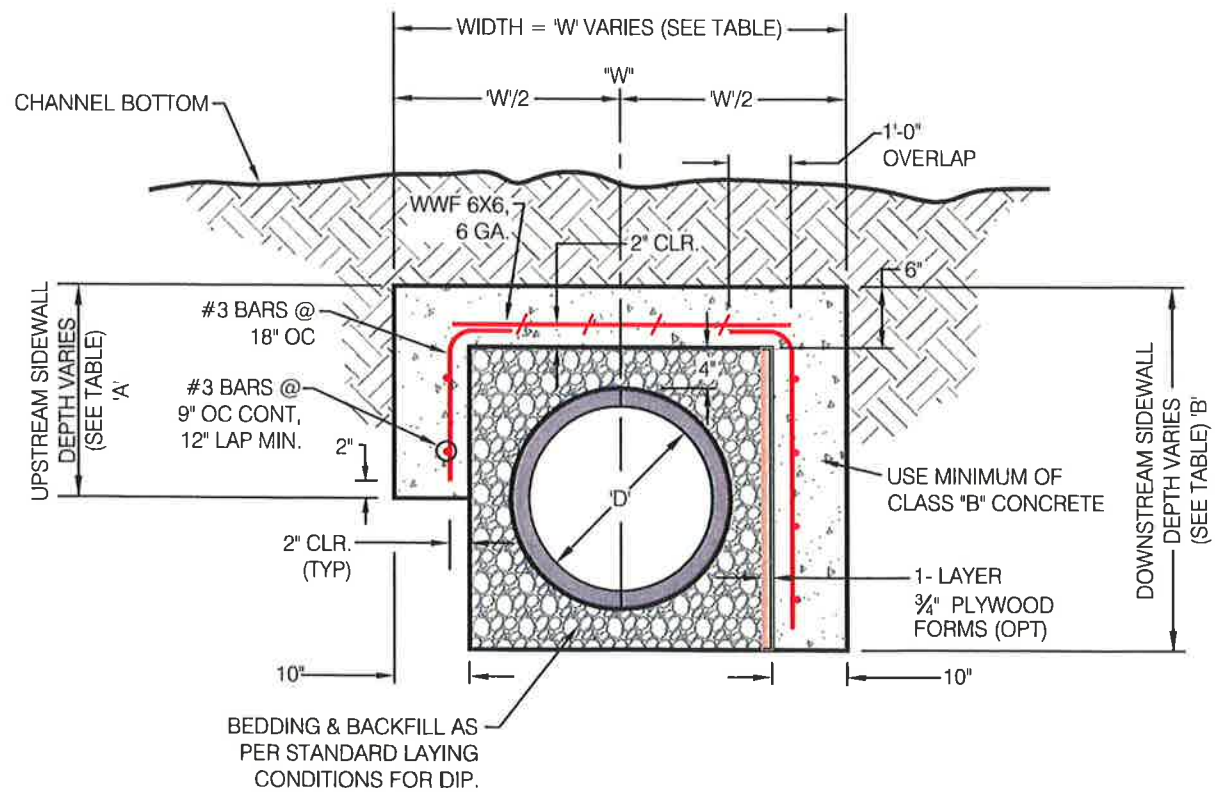
TYPE D ENCASUREMENT DETAILS



DOWELED EXPANSION JOINT FOR CONCRETE ENCASUREMENT

ENCASUREMENT WIDTH TABLE							
"D"	"W"	"A"	"B"	"D"	"W"	"A"	"B"
6" TO 10"	4'-2"	1'-5"	2'-4"	30"	6'-2"	2'-6"	4'-0"
12" TO 16"	4'-8"	1'-5"	2'-10"	36"	6'-8"	3'-0"	4'-7"
18" TO 21"	5'-2"	2'-0"	3'-3"	42"	7'-2"	3'-0"	5'-6"
24"	5'-8"	2'-0"	3'-6"				

- NOTES:**
- PROVIDE DOWELED EXPANSION JOINTS AT 25' O.C., SEE DETAIL ABOVE.
 - PREVENT BONDING OF CONCRETE TO PIPE BELLS WITH POLYWRAP.



Little Rock Wastewater Utility

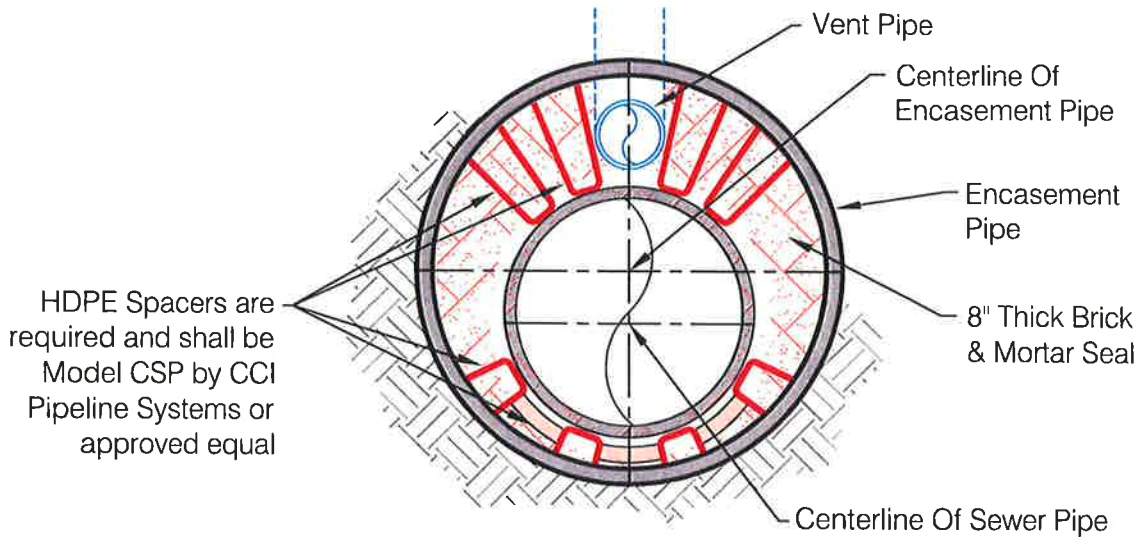


SPECIFICATIONS

Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 9:39:16 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.42 - Type D ENCASUREMENT
 DETAIL & TABLES.dwg

Notes

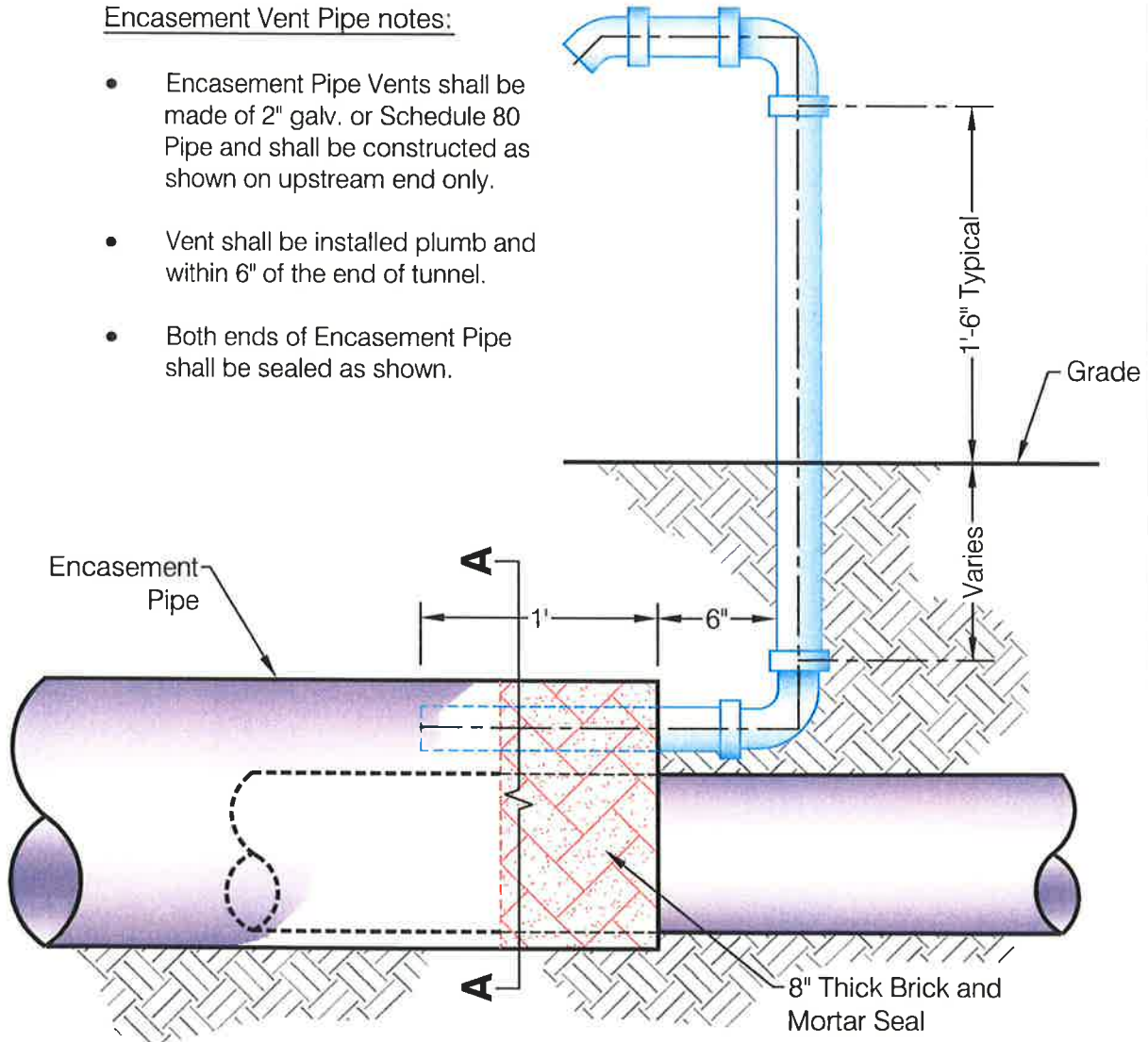
1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.



SECTION A-A
(Enlarged to show detail)

Encasement Vent Pipe notes:

- Encasement Pipe Vents shall be made of 2" galv. or Schedule 80 Pipe and shall be constructed as shown on upstream end only.
- Vent shall be installed plumb and within 6" of the end of tunnel.
- Both ends of Encasement Pipe shall be sealed as shown.



VENT PIPE DETAIL

**ENCASEMENT PIPE
DETAILS**

Little Rock Wastewater Utility

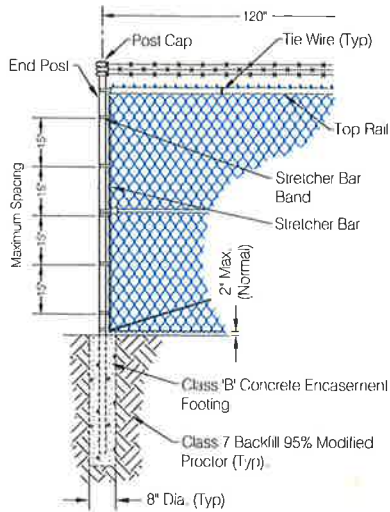


Prepared By: Evangeline O'Neal
 Updated: 2/14/2006 9:10:41 AM
 Drawing Status: **APPROVED**
 Filename: LRWU 1.43 - ENCASEMENT PIPE DETAILS.dwg

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Notes

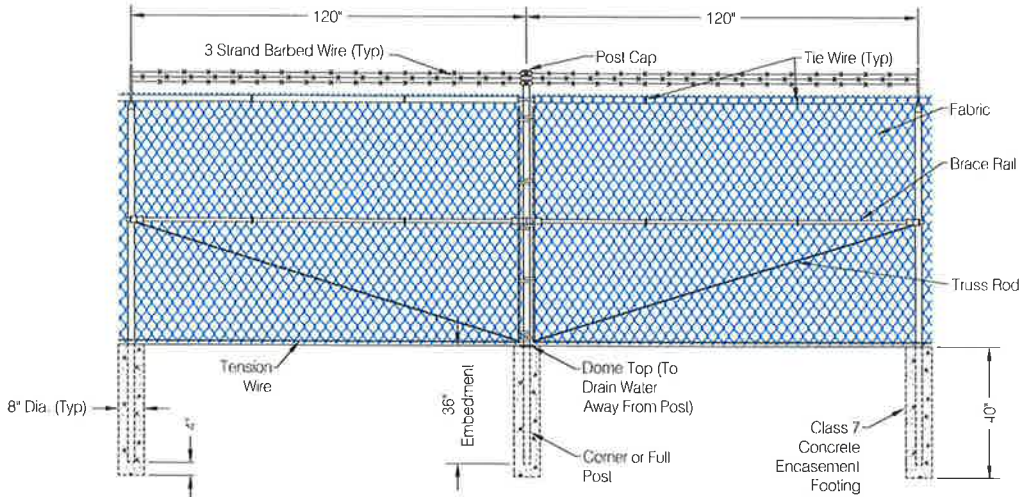
CHAIN LINK FENCE NOTES



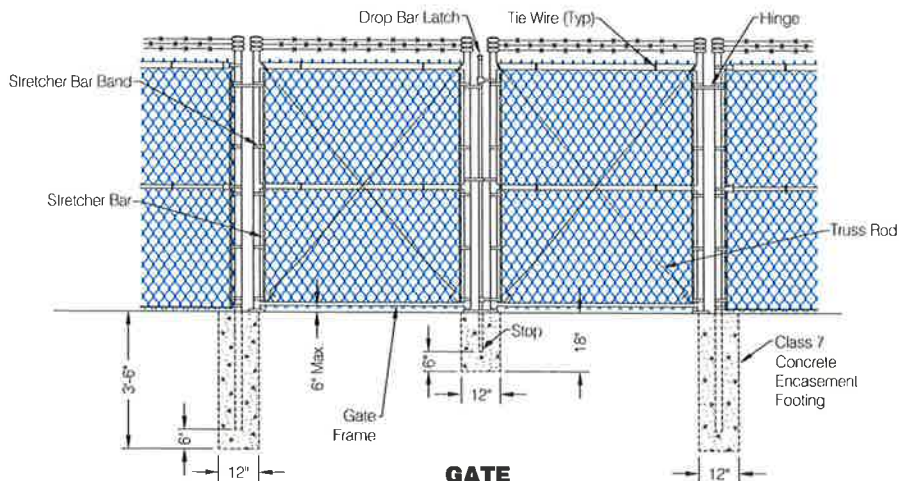
END PANEL

- Tension wires: Shall be secured to all terminal, pull, or corner posts with stretcher bar bands.
- Brace rail: Shall be provided at all terminal, pull, or corner posts halfway between the top rail and ground level, and shall extend from such post to the first adjacent line post.
- Fabric: All chain link fence fabric shall consist of woven wire in the form of approximately uniform square mesh, having parallel sides and horizontal and vertical diagonals of approximately uniform dimensions.
- Gate Frame: Shall be constructed of tubular members assembled by use of malleable fittings or by welding. All gates shall have one horizontal support extending the width of the gate at the midpoints of vertical frame members. The complete frame shall be rigid and have ample strength to be free from sag and twist.

- Hinges: Shall be of heavy pattern, of adequate strength for gate, with large bearing surfaces for clamping in position. The hinge shall be of the proper type to allow for 180 degree of swing. The hinge shall not twist or turn under the action of the gate. The gate shall be capable of being opened and closed easily by one person.
- Latches and stops: Shall be provided for all gates. Gates shall have a drop bar latch. Latches shall be set in concrete and engage the plunger of the bar latch.
- Expansion Sleeve: Shall be the outside type, minimum 6" in length and self centering. Minimum thickness of material from which sleeves shall be made will be .042".
- Class "B" Concrete: Shall be required for the embedment of all posts and shall have a 28 day compressive strength of at least 2500 P.S.I.
- Posts: Shall be spaced equidistant on a maximum of 10'0" centers.



POST SPACING



GATE
12"

Notes

1. ALL CHANGES/REVISIONS/ETC. MUST BE APPROVED BY THE LRWU DIRECTOR OF ENGINEERING.

Prepared By: Evangeline O'Neal
Updated: 2/14/2006 9:13:29 AM
Drawing Status:

APPROVED

Filename: LRWU 1.44 - CHAIN LINK FENCE DETAILS.dwg

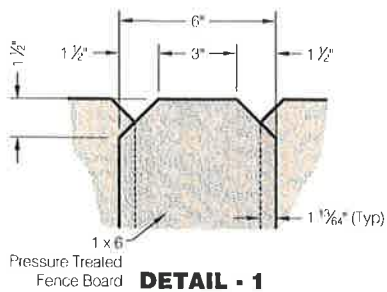


Little Rock Wastewater Utility
SPECIFICATIONS

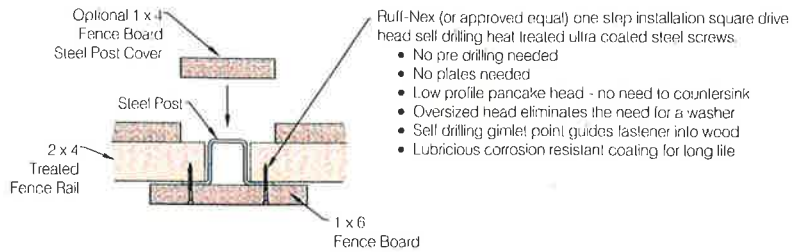
CHAIN LINK FENCE DETAILS

LRWU

1.44



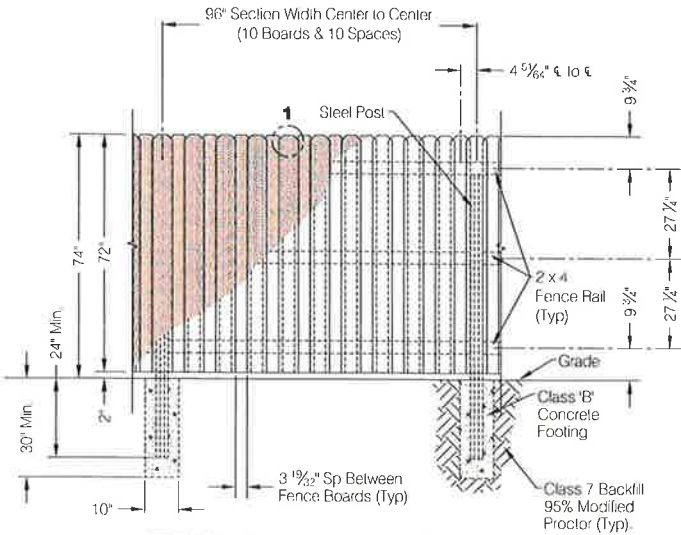
DETAIL - 1



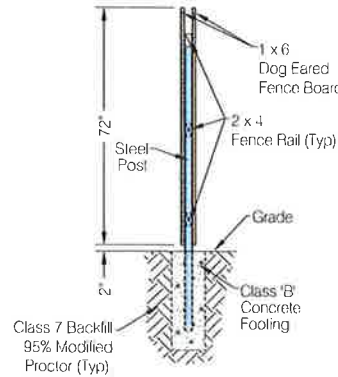
DETAIL - 2

FENCE NOTES

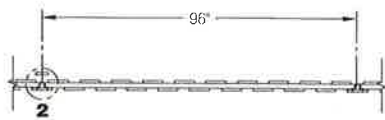
1. Use three back rails (6' fence), two back rails (4', 5' fence), or 4 back rails (8' fence) for more hold-down points.
2. Use only hot-dipped galvanized, or stainless steel fasteners with a ring or spiral shank to minimize warp and rust stains.
3. Treat the surfaces of fence boards with a water-repellent solution to reduce the rate that moisture is absorbed and released. This solution should also have a good UV inhibitor if you don't want the fence to gray.
4. Follow a regular maintenance program of cleaning and refinishing every few years with a "clear" or "toner" water repellent containing UV inhibitors. This will revitalize a dingy appearance caused by dirt, mildew or graying.



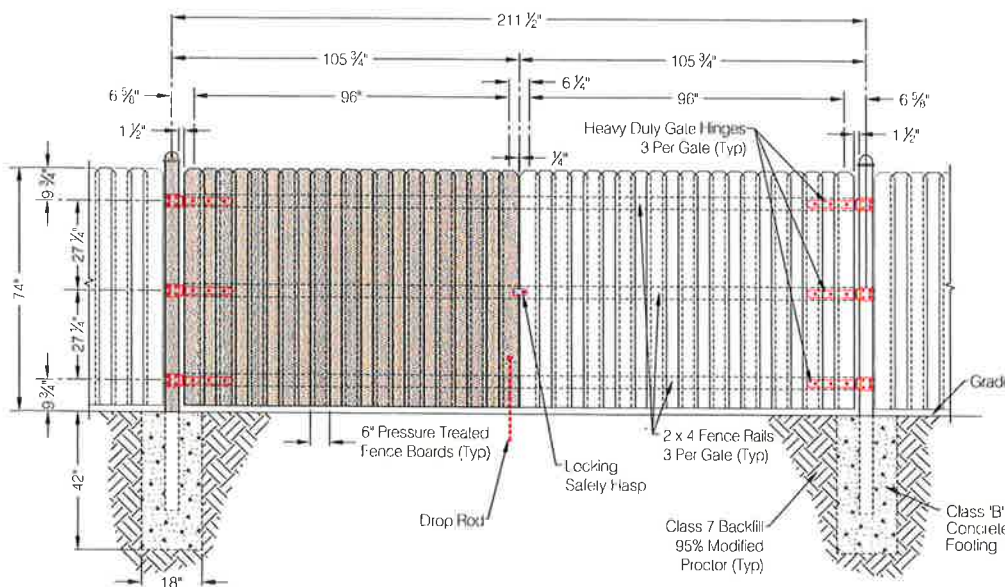
FENCE SECTION ELEVATION



FENCE END VIEW



FENCE PLAN VIEW



WOOD SHADOWBOX DOG EARED PRIVACY FENCE DETAILS

GATE NOTES

1. Drive gates are to be made from full fence panels.
2. For security, drive gate hardware (hinges and drop rod) are to be installed on the inside of gate section per manufacturers instructions.
3. The Safety Hasp shall be a Bright Zinc Steel Westward 4" Key Locking Hasp model 4PE49 or approved equal.
4. Drive gate posts are to be 4 x 4 pressure treated posts. The hinges are to be mounted on the post flush, as shown.

Notes

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Prepared By: Evangeline O'Neal

Updated: 2/14/2006 9:12:25 AM

Drawing Status:

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Filename: LRWU 1.45 - WOOD PRIVACY

FENCE DETAILS.dwg



Little Rock Wastewater Utility
SPECIFICATIONS

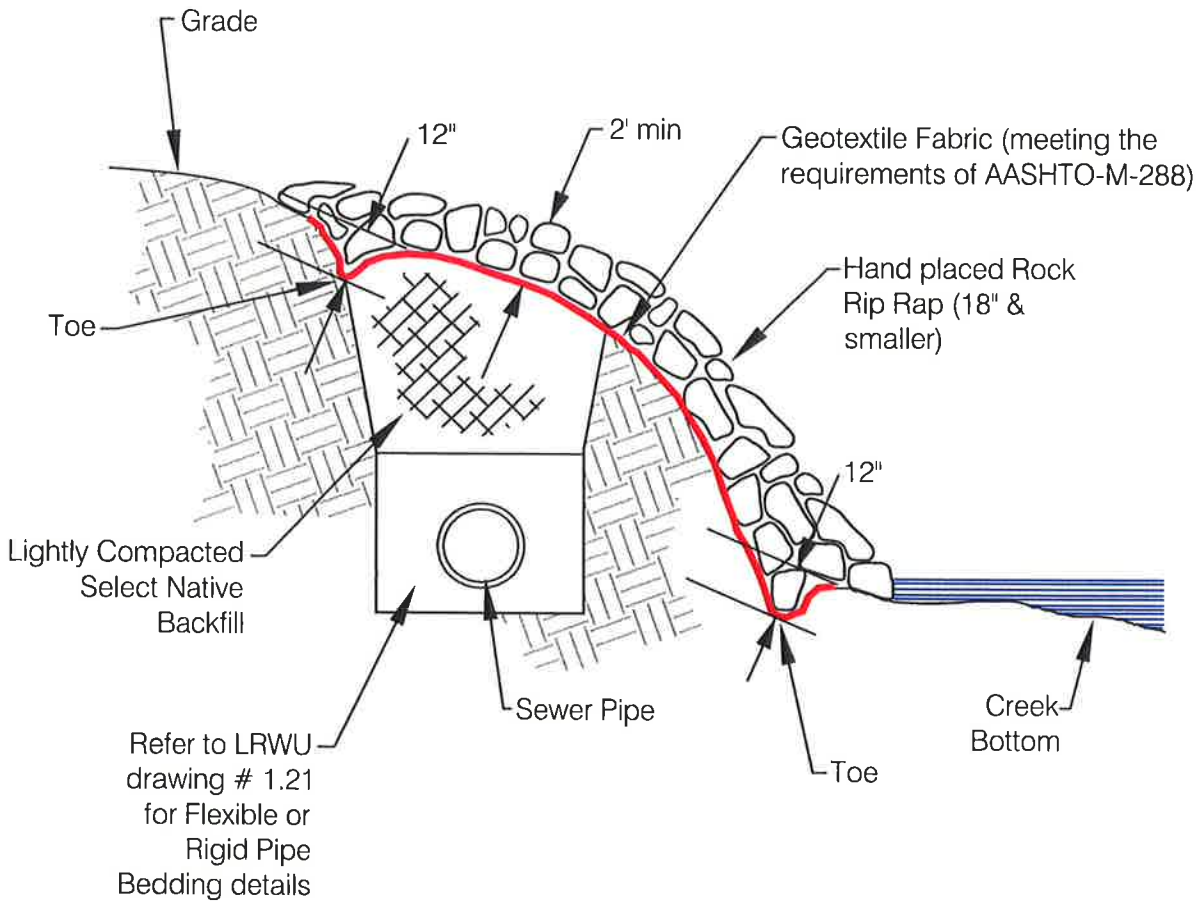
**WOOD
PRIVACY FENCE
DETAILS**

LRWU

1.45

STANDARD RIP RAP DETAIL

Little Rock Wastewater Utility
SPECIFICATIONS



Prepared By: Evangeline O'Neal

Updated: 2/14/2006 9:14:23 AM

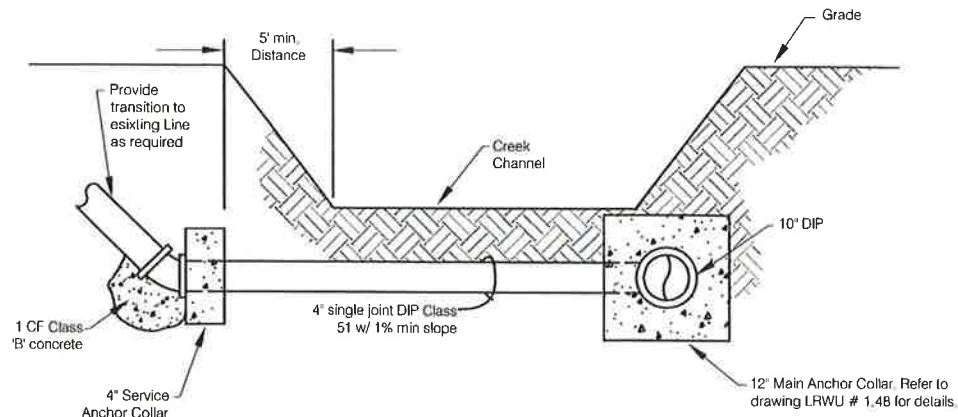
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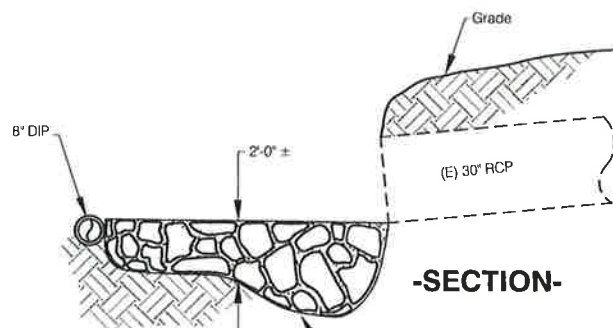
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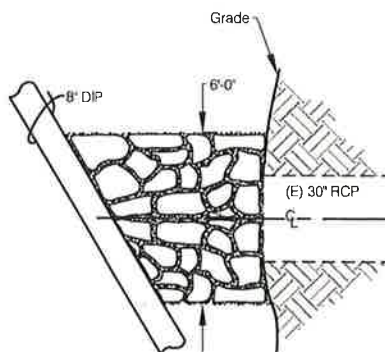
Notes



**TYPICAL SERVICE LINE
CREEK CROSSING**



- Excavate existing creek channel
- Backfill with Rip Rap
- Pour Concrete over Rip Rap
- Smooth Concrete to provide transition to creek flowline



NOTE-

- 4" Service Line Reinstatements crossing an existing creek channel shall be constructed using 4" Ductile Iron Pipe (DIP).
- 4" Anchor Collar installed on the 4" service & a 12" Anchor Collar constructed around the tap or wye connection on the new main as shown in the above detail.

**STANDARD SPLASH PAD
DETAILS**

Little Rock Wastewater Utility
SPECIFICATIONS



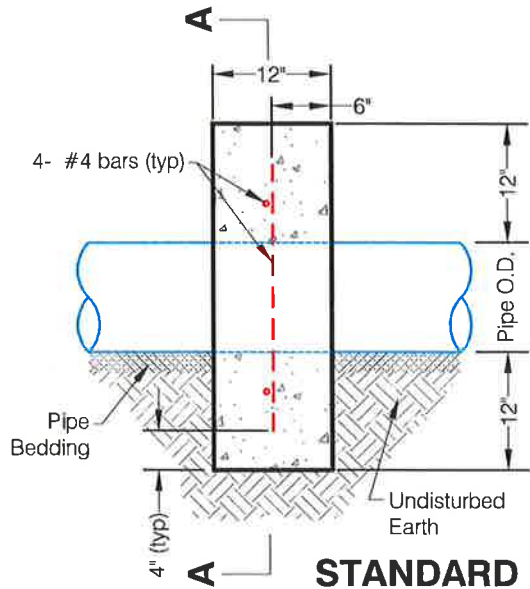
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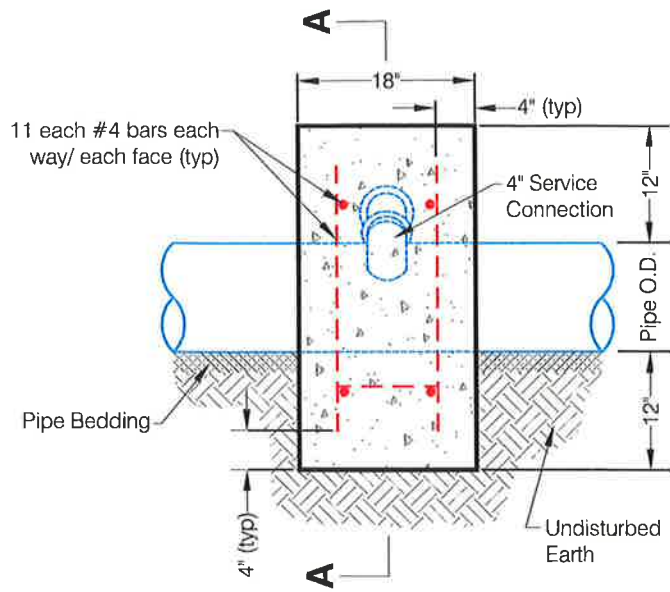
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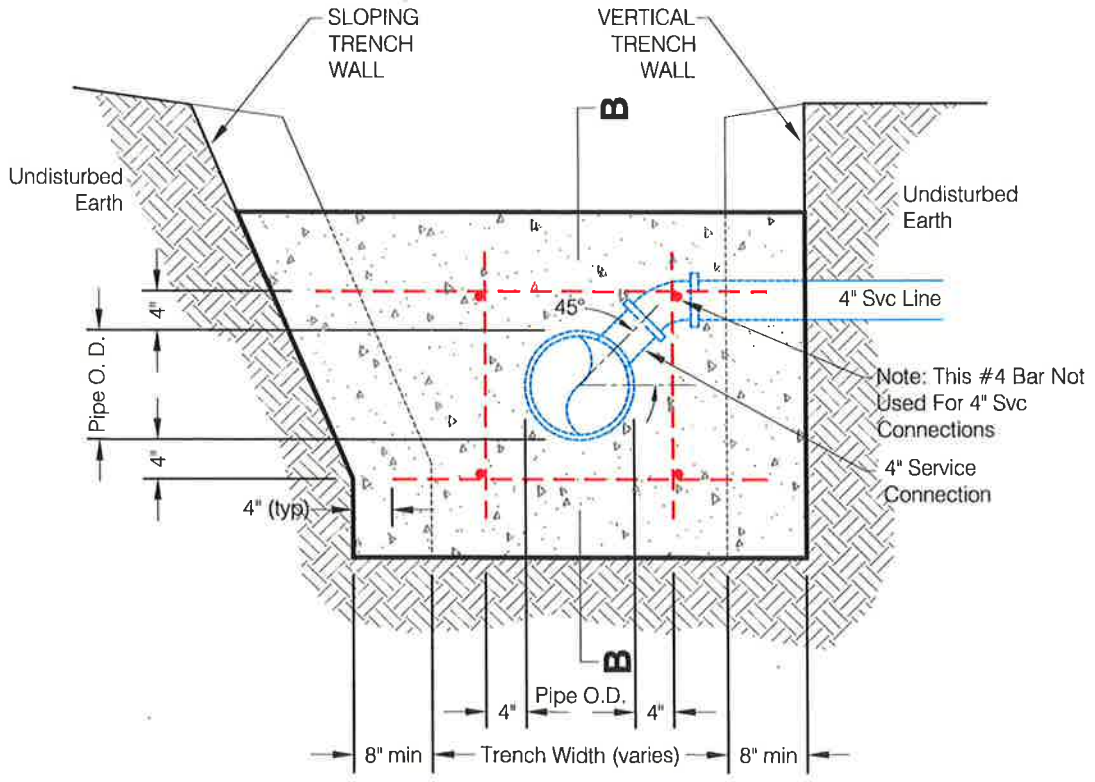
Notes



STANDARD SECTION 'B-B'

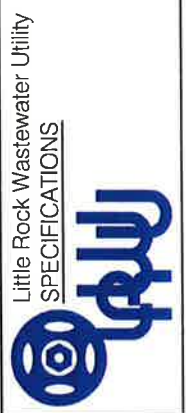


**MODIFIED SECTION 'B-B'
FOR 4" SERVICE
CONNECTION**



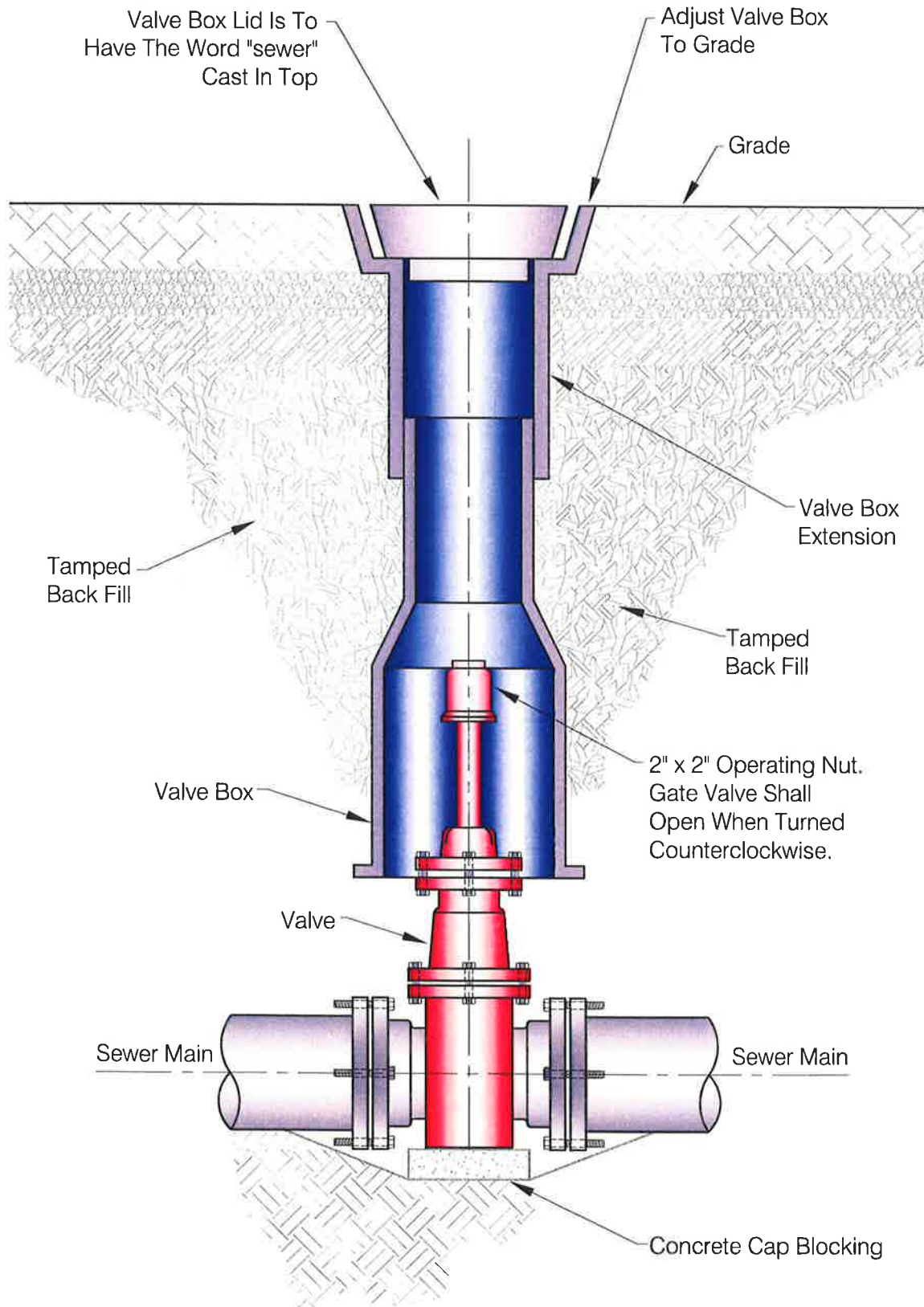
SECTION 'A-A'

**ANCHOR COLLAR
DETAILS**



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Filename: LRWU 1.48 - ANCHOR COLLAR.dwg

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**GATE VALVE
DETAIL**

Little Rock Wastewater Utility
SPECIFICATIONS



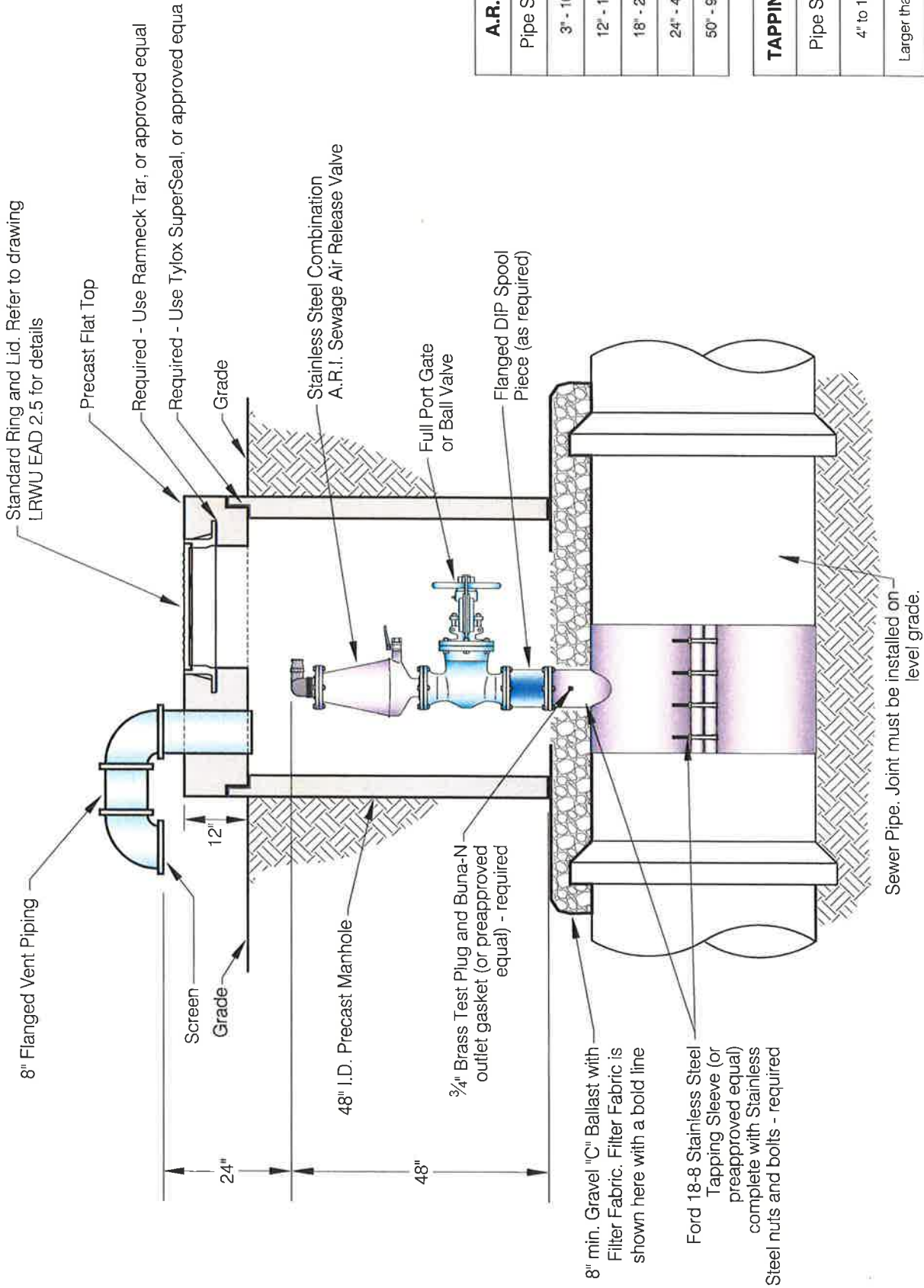
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Drawing Status:

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Filename: LRWU 1.49 - GATE VALVE.dwg

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Notes



A.R.I. VALVE SIZING	
Pipe Size	Valve Size
3" - 10"	2"
12" - 16"	3"
18" - 22"	4"
24" - 48"	6"
50" - 96"	8"

TAPPING SLEEVE SIZING	
Pipe Size	Tapping Sleeve Size
4" to 12"	Pipe Size x 2
Larger than 12"	Pipe Size x 4



Little Rock Wastewater Utility
SPECIFICATIONS

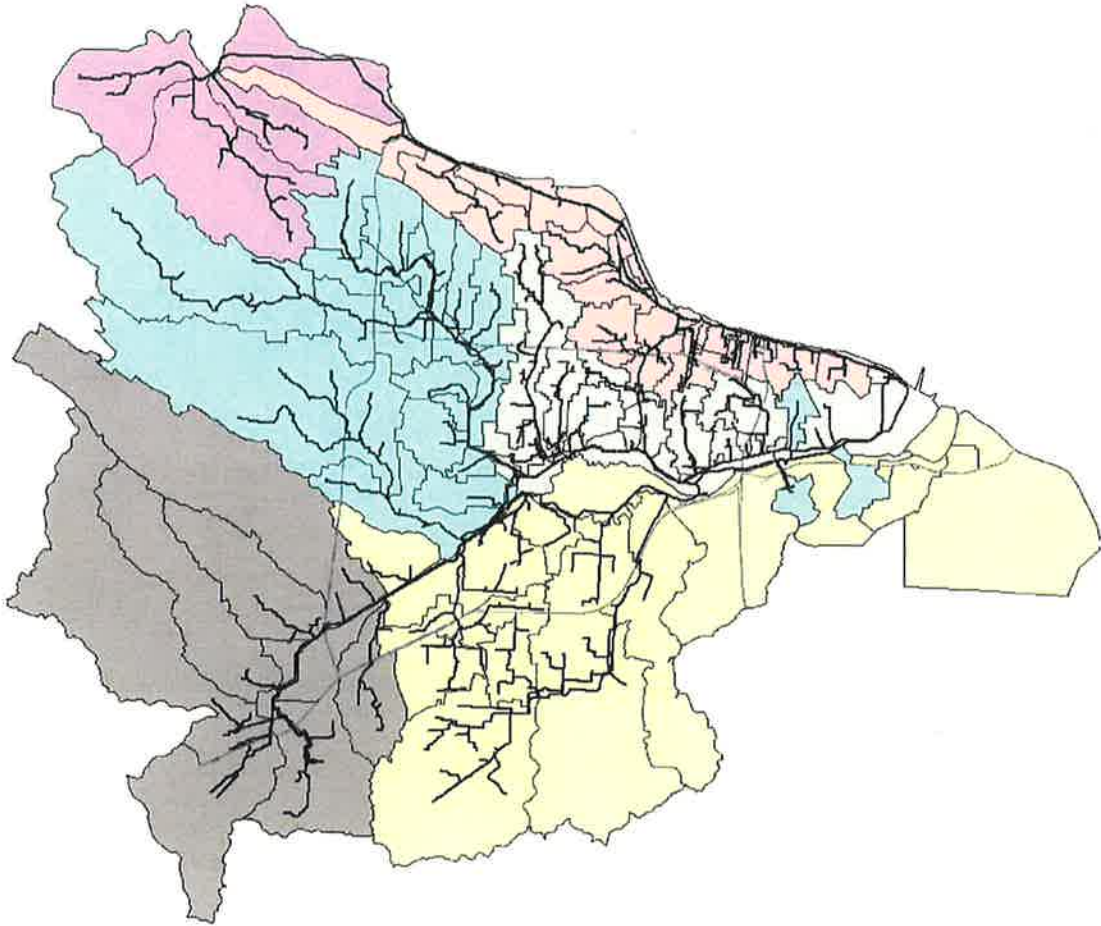
COMBINATION SEWAGE - AIR RELEASE VALVE DETAILS

LRWU
1.50

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Notes
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SECAP



SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN



MWH
MONTGOMERY WATSON HARZA



Little Rock
Wastewater Utility

FINAL DRAFT REPORT
MARCH 2002

Table of Contents

EXECUTIVE SUMMARY

Background and SECAP Objectives	1
LRWU Service Area and Collection System	1
Design Flows / Design Storm.....	1
Hydraulic Modeling and Capacity Analysis	4
Alternative Analysis.....	5
Implementation Recommendations.....	8
Infiltration / Inflow Abatement	8
Citizen Participation	10
Other Recommendations	10

SECTION 1 – INTRODUCTION

Background and Master Plan Objectives	1-1
LRWU Service Area	1-1
LRWU Wastewater Collection System.....	1-1
Scope of Master Plan Update	1-3
Report Organization	1-4

SECTION 2 – EXISTING AND FUTURE FLOWS

Flow Monitoring Summary.....	2-1
Flow Monitoring Data.....	2-1
Observed Rainfall Data	2-2
Exiting Model Inflows	2-2
Residential and Employment Wastewater Inflows	2-3
Wastewater Diurnal Profiles	2-4
Groundwater Infiltration	2-4
Wet Weather Infiltration / Inflow.....	2-5
Design Flows.....	2-6
Residential / Employment Flow Projections.....	2-6
Groundwater Infiltration Projections	2-6
Design Flow Condition	2-7
Design Rainfall Event	2-7
Design Wet Weather I/I.....	2-9

SECTION 3 – MODELING AND CAPACITY ANALYSIS

Hydraulic Model Description.....	3-1
Sewer Network.....	3-1
Collection Systems Areas.....	3-2
Pump Stations.....	3-2
Wastewater Treatment Plants.....	3-5

Interstate Gate Park Facility	3-5
Model Calibration	3-5
Model Calibration Process	3-5
Design Storm Calibration	3-6
Hydraulic Analysis	3-9
Hydraulic Model Assumptions.....	3-9
Model Inflows	3-9
Hydraulic Model Results.....	3-9
Hydraulic Analysis – Description Problems	3-10

SECTION 4 - ALTERNATIVE IMPROVEMENT PROJECTS

Background	4-1
Identification of Wastewater System Alternatives.....	4-2
Increased Conveyance Capacity.....	4-2
Wet Weather Storage Capabilities	4-7
Additional Treatment Plant	4-7
Alternative Improvement Projects	4-7
Costs	4-7
Alternatives	4-7
City and Public Participation.....	4-17
Selected Alternative	4-18

SECTION 5 – RECOMMENDED IMPROVEMENT PLAN

Project Costs.....	5-1
Project Prioritization and Schedule.....	5-1
Implementation Recommendations.....	5-4

SECTION 6 – INFILTRATION / INFLOW ABATEMENT

Infiltration/Inflow Reduction Plan	6-1
Sources of Infiltration and Inflow	6-2
Challenge of Effective I/I Abatement	6-2
Flow Targeted I/I Reduction	6-4
Emergency, Corrective, and Preventive Maintenance	6-5
Private Property Programs	6-10
Potential I/I Reduction Methods	6-10
Recommendations	6-11

SECTION 7 – CITIZEN PARTICIPATION

Citizens Advisory Group Overview	7-1
Review of Alternatives.....	7-1
Recommendations	7-2

SECTION 8 – OTHER RECOMMENDATIONS

Additional Options 8-1
 Background for North Little Rock WWTP Option..... 8-1
 Description of North Little Rock WWTP Option 8-1
 White Oak Bayou WWTP..... 8-2
 Additional Option Improvements..... 8-2
 Benefits of North Little Rock Option..... 8-2
Storage Detention Facility..... 8-2
 Landfill Site Storage Option 8-2
 Storage Facility Operation 8-4
 Benefits of Landfill Storage Option 8-4
Recommendations for Options..... 8-4

APPENDICES

Appendix A - Model Calibration Data

Appendix B - Model Data for Alternatives, Books I & II

Appendix C - Project Cost Estimates

Appendix D - Citizens Advisory Workbook

Appendix E - Adams Field Wastewater Treatment Plant, Capital Improvement Plan Options

Appendix F - Technical Memorandum 4, Preliminary Evaluation of the Fourche Creek WWTP

Appendix G - Engineering and Cost Report for Little Maumelle River Subbasin Sewerage Study

TECHNICAL MEMORANDA (bound separately)

Appendix H - Data Inventory / Validation

Appendix I - Flow Monitoring

Appendix J - Model Building

Appendix K - Model Inflows

Appendix L - Model Calibration

Appendix M - Pump Station Evaluation

Appendix N - Large Diameter Sewer Investigation

ADDITIONAL INFORMATION

Appendix O - Adams Field WWTP:
Discharge Monitoring Reports, Nov. 2000 thru Sept. 2001
Response to Comments Final Permit Decision, July 2001

Appendix P - Fourche Creek WWTP:
Discharge Monitoring Reports, Nov. 2000 thru Sept. 2001
NPDES Permit, March 1997

Appendix Q - Ordinance Establishing a Schedule of Sewer Rates for Little Rock, April 2000

Appendix R - 2001 Budget Spread Sheets for Cash and Income

LIST OF TABLES

Table No.	Title	Page
1	Capitol Costs for Alternative A1.....	6
2.1	Dry and Wet Weather Event Summary.....	2-1
2.2	Average Building Footprint Areas.....	2-3
2.3	Design Rainfall Event Details.....	2-8
3.1	Event Information.....	3-6
4.1	Proposed Trunk Upgrades.....	4-4
4.2	Estimated Capital Costs for Alternative A1.....	4-10
4.3	Estimated Capital Costs for Alternative B1.....	4-12
4.4	Estimated Capital Costs for Alternative B2.....	4-12
4.5	Estimated Capital Costs for Alternative C1.....	4-14
4.6	Estimated Capital Costs for Alternative C2.....	4-17
4.7	Evaluation Criteria.....	4-19
4.8	Evaluation Matrix.....	4-20
5.1	Schedule for Trunk Line Improvements.....	5-2
5.2	Schedule for Pump Station Improvements.....	5-3
5.3	Schedule for Treatment Plant Improvements.....	5-4
5.4	System Evaluation and Capacity Assurance Plan..... 15-Year Implementation Schedule and Costs	5-5
6.1	Estimated Sewer Pipe Service Life.....	6-9
7.1	Summary of Options Presented to the Citizens Advisory Group.....	7-3 & 7-4

LIST OF FIGURES

Figure No.	Title	Page
1	Little Rock Wastewater Service Area	2
2	Alternative A1	7
3	Annual Expenditures for Capacity Assurance Plan Improvements	9
4	Annual Expenditures by Type of Construction.....	9
1.1	Little Rock Wastewater Service Area	1-2
2.1	Total Rain Depths (in) from 03/15/2000 to 04/28/2000	2-2
2.2	Wastewater Diurnal Profiles	2-4
2.3	Rainfall Hyetograph for Design Rainfall Event (Event E)	2-8
2.4	Total Rain Depths (in) for Design Rainfall Event (Event E).....	2-9
3.1	Modeled Network.....	3-3
3.2	Service Areas and Sub-Basins.....	3-4
3.3	Historical Flooding Due to Rainfall.....	3-7
3.4	Modeled Overflows, Design Event	3-8
3.5	Depth to Diameter Ratios, DWF Event X.....	3-11
3.6	Depth to Diameter Ratios, Design Event	3-12
4.1	Proposed System Upgrades.....	4-3
4.2	Alternative A-1	4-9
4.3	Alternative B-1	4-11
4.4	Alternative B-2.....	4-13
4.5	Alternative C-1	4-15
4.6	Alternative C-2.....	4-16
5.1	Annual Expenditures for Capacity Assurance Plan Improvements	5-6
5.2	Annual Expenditures by Type of Construction.....	5-6
5.3	SECAP Projects, Key Location Map	5-8
6.1	PWWF to DWF Analysis	6-4
6.2	Ratio of Peak WWF to Average DWF.....	6-6
6.3	High WWF/DWF Ratio Compared to Proposed System Upgrades.....	6-7
8.1	Location Map for Additional Options.....	8-3

Executive Summary

This report presents the results and recommendations of the System Evaluation and Capacity Assurance Plan (SECAP), for Little Rock's wastewater collection system. The report prepared by MWH under an agreement with the Little Rock Sewer Committee dated June 28, 2000.

BACKGROUND AND SECAP OBJECTIVES

This report incorporates information from previous engineering studies for the Adams Field and Fourche Creek Wastewater Treatment Plants (WWTP), analysis for Little Maumelle Sewer Basin, and provides a comprehensive evaluation of the current and future needs of the entire Little Rock Wastewater Utility (LRWU) collection system. The overall objectives of the SECAP study are as follows:

- Develop a hydraulic model of the trunk sewer system.
- Use the model to identify existing capacity deficiencies and confirm capacity related sanitary sewer overflow locations
- Use the model to determine the capacity improvements required to eliminate capacity related sanitary sewer overflows for a selected design storm
- Develop a phased projects improvement plan and budgetary estimates for implementing the required capacity improvements to the wastewater collection system.
- Provide recommendations for potential infiltration/inflow reduction measures
- Outline a sewer system renewal and replacement plan

LWRU SERVICE AREA AND WASTEWATER COLLECTION SYSTEM

The LRWU wastewater service area, corresponding to the SECAP study area, is composed of six basins: Little Maumelle, Fourche, North and South 60, District 142 and Riverfront. The Utility provides service to over 60,000 customers and maintains over 1,100 miles of collection system lines ranging in size from 6 to 60-inches in diameter for the greater Little Rock area. This report addresses both the capacity-related system deficiencies found in the larger diameter lines and their supporting conveyance and treatment facilities. Specific facilities that are impacted by the results of this report are the Adams Field and Fourche Creek WWTPs, and the Cantrell, Little Maumelle and Arch Street Pump Stations (**Figure 1**).

DESIGN FLOWS / DESIGN STORM

A temporary flow-monitoring program was conducted to evaluate the dry weather and wet weather flows for the six (6) basins. The program lasted from March 15 to April 28, 2000. The following equipment was installed throughout the system for monitoring purposes:

- 63 gravity flow meters
- 4 force main flow meters
- 8 groundwater gauges
- 8 rain gauges

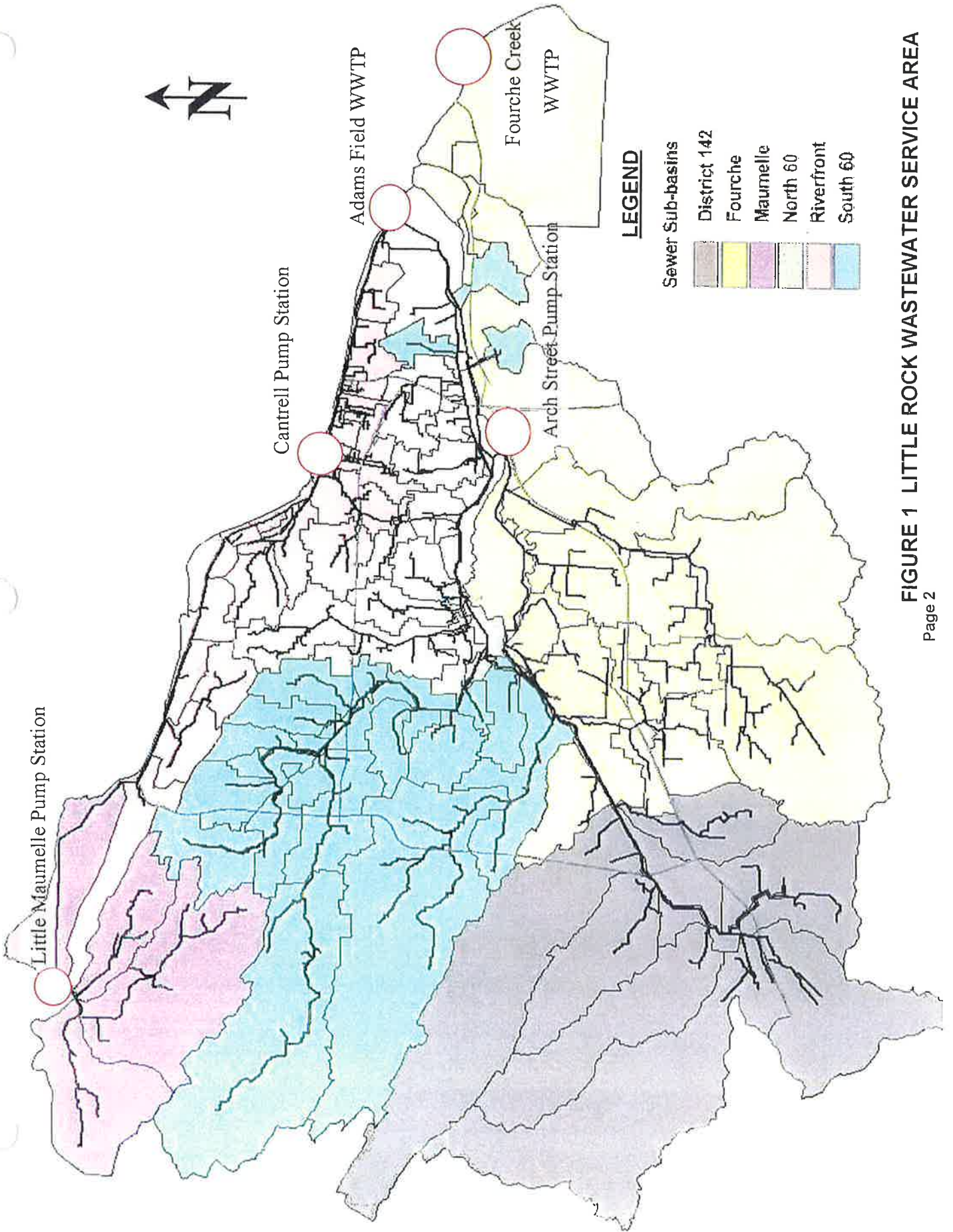


FIGURE 1 LITTLE ROCK WASTEWATER SERVICE AREA

Existing Flows. The hydraulic sewer model requires a determination of dry weather and wet-weather flows to assess the hydraulic impact on the existing sewer system.

Flows

Flows in the sewer system are comprised of wastewater from residential, commercial and industrial discharges, ground water infiltration and rainfall-related inflow/infiltration. The population based wastewater flows were derived from the building and land-use data provided by LRWU with the ground water and rainfall flows derived from the flow meter data.

Groundwater Infiltration

Groundwater infiltration (GWI) enters the sewer system via pipe joints, manholes, and pipe cracks, and are typically observed as a constant inflow, the GWI flow varies seasonally. The flow will fluctuate according to local rainfall patterns, soil, ground conditions, and increases after prolonged rainfall periods. The flow monitoring data collected for this study shows significant GWI throughout the sewer network and the basin.

Wet Weather Infiltration / Inflow

According to the flow meter data collected during the monitoring period, the Little Rock sewer basin exhibits a significant wet-weather flow response. Based on the flow meter data, the wet weather flow response in the Little Rock collection system appears to be due primarily to rapid infiltration into sewer defects rather than inflow from direct drainage connections like roof leaders or area drains. The meter data also indicated significant variation in wet weather flow response between different areas of the system.

Future Flows. The hydraulic sewer model requires forecasted dry weather and wet-weather inflows to assess the hydraulic impact on the future sewer system. The future dry weather flows represent increased flows caused by population growth, while future wet weather flows are based on a *design rainfall event*. The design rainfall event is generated to create a “worst-case” design scenario for predicting future problems and providing flow criteria for developing hydraulic improvements.

Model Assumptions

The model of future flows were based on the following assumptions:

- No net population growth in the six sewer basins
- No net reduction in I/I associated with the proposed sewer rehabilitation program or increase in I/I due to future sewer deterioration in unrehabilitated areas.

Design Rainfall Event

During November 2000, LRWU experienced a significant rainfall event following a prolonged month of antecedent rainfall producing high groundwater conditions. The rainfall duration exceeded 48 hours and generated over 5 inches of total rainfall. For this study, the November 2000 observed rainfall event was used as the “design event” to identify and develop solutions for the master plan.

The observed rainfall event was quantified in terms of *return period* by comparing the recorded depth and duration with historical rainfall intensity-duration-frequency (IDF) relationships for the Little Rock area. The November 2000 rainfall event equates to a storm event with a return period between 2 and 5 years and was selected as the design storm event because the storm:

- Exceeded LRWU design criteria, which is a 2-year event
- Provided a realistic spatial distribution of rainfall throughout the service area
- Coincided with reported hydraulic spills / flooding
- Provided model calibration confirmation since permanent meter data was available for this event
- Combined with an unusually long period of antecedent rainfall, provided “worst case” design condition

HYDRAULIC MODELING AND CAPACITY ANALYSIS

A fully dynamic hydraulic model was built to simulate operation of the LRWU wastewater collection system. The model was calibrated to both dry and wet weather flow conditions and was used to identify hydraulic capacity deficiencies in the system during the design wet weather event.

Hydraulic Model Description. The computerized hydraulic model includes pump stations, the force main system and gravity lines 10 inches in diameter and larger. Links and nodes represent pipes, manholes, controls and pump station wet-wells. Delineated sewer sub-basins represent flow in unmodeled pipes draining to specific modeled nodes. Population and land-use data determine the amount of flow entering the modeled system from these areas. Groundwater infiltration and I/I due to wet-weather runoff provide additional model inflows.

Little Maumelle, Cantrell, and Jamison Pump Stations were fully modeled, real time control was used to accurately model pump sequencing at Little Maumelle and Jamison Pump Stations; the Interstate Park Gate was also modeled using real time control. Adams WWTP and Arch Street Pump Station were represented in the model as limited discharge orifices, meaning that the influent flow to these facilities was limited based on their current maximum capacities.

Model Calibration. The model was calibrated for both dry and wet weather flow conditions based on data from 63 temporary flow meters. During the calibration process, model results were compared to meter data, and model parameters such as per capita flows, diurnal patterns, groundwater infiltration, runoff routing, and pump curves were adjusted to provide more accurate model and meter data fits.

Initial model results for the design storm indicated that hydrologic conditions were different during the design storm compared to the wet weather calibration event, using data from five permanent flow meters, model runoff parameters were slightly modified to more accurately model conditions during the design event. This calibration was verified by comparing reported historical overflows to model predicted overflows for this event.

Hydraulic Analysis. The calibrated model was used to evaluate the hydraulic performance of the trunk system during the design storm event. Areas with hydraulic problems such as overflows or surcharging were identified, and, where possible, the cause of the problem was determined. Causes of surcharging and overflows included localized limited capacity and backwater due to downstream capacity restrictions.

ALTERNATIVES ANALYSIS

The objective of the hydraulic model was to predict flow conditions during the design storm event and provide a tool to identify capacity improvements that would eliminate system deficiencies. From the modeled output data, potential alternatives were developed to address identified capacity problems. Alternatives included paralleling existing deficient sewers, replacement of undersized sewers with larger diameter pipes, upgrading capacity for existing pumping and treatment facilities, and providing additional system capacity by storing wet weather related flows. After capacity-related alternatives were developed, each alternative was evaluated against a set of criteria that included project feasibility, construction methods, community issues, long term flexibility, and cost.

Identification of Wastewater System Alternatives. Five alternative scenarios correcting system deficiencies were identified for comprehensive evaluation. Each alternative represented an overall view of Little Rock's wastewater system and to varying degrees incorporated wastewater technology for increased conveyance capacity, storm water storage capabilities, and additional treatment capacity through new or expanded facilities.

Alternatives Evaluation. A Citizens Advisory Group (CAG) was formed to obtain input on the various system alternatives. The CAG identified evaluation criteria from a citizen or community perspective. The criteria included:

- Environmental concerns
- Citizen awareness – social impacts and aesthetics
- Rate and property value impacts
- Technical and ongoing operation and maintenance concerns
- Regulatory concerns
- Construction issues

The five alternatives were also reviewed by representatives from the Little Rock Wastewater Utility (LRWU). When conducting their evaluation, the Utility considered additional issues related to schedule, budget, and implementation of construction projects.

Selected Alternative. Input from both the CAG and Utility was used to select the preferred alternative for the overall capacity assurance program. In general increased system capacity was preferred over construction of new wet weather storage facilities, which were considered less desirable due to permitting issues, site esthetics, environmental and odor concerns.

Permitting, environmental and community concerns were identified with respect to the construction of a new wastewater treatment plant in the Maumelle basin; however,

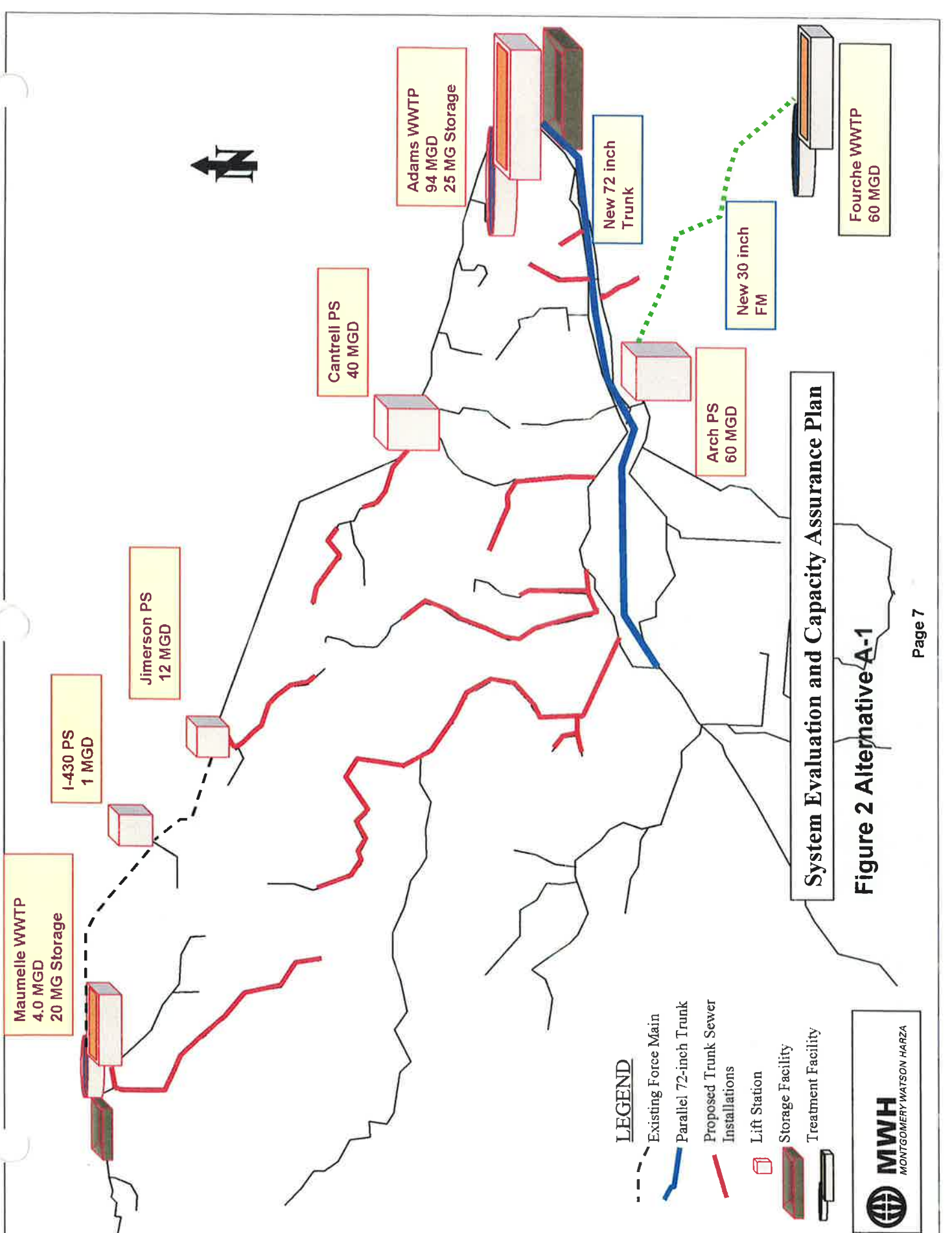
limitations on the ability to expand the existing Adams Field WWTP capabilities in order to accept increased flows outweighed these concerns. Hence, Alternative A1 (**Figure 2**) was selected as the preferred alternative for meeting system capacity deficiencies. Alternative A1 consists of the following improvements:

- A new treatment plant in the Little Maumelle Basin, including 20 million gallons of equalization basins.
- Increased capacity at the Adams Field WWTP (72 to 94 MGD), including 25 million gallons of equalization basins.
- Increased capacity in the Fourche Creek WWTP (38 to 60 MGD).
- Increased capacity at the Arch Street Pump Station (38 to 60 MGD), including 41,500 LF of new 30-inch parallel force main.
- Increased capacity in the Cantrell Pump Station (25 to 40 MGD).
- New Jimerson Creek Pump Station (12 MGD).
- New I-430 Booster Pump Station (1 MGD),
- 72-inch parallel trunk line, from Adams Field WWTP to the west-end of the Twin 60s interceptors.
- Various trunk sewer improvements needed for additional capacity throughout the system.
- Implementation of a sewer rehabilitation and replacement program to reduce system I/I.

Costs. Estimated costs were developed for comparison purposes and do not include land right-of-way acquisition, construction management, legal work and financing fees, and operation and maintenance costs. Capital costs include an additional 25% mark up for contingencies and engineering. No inflation factors were used in the calculations. **Table 1** shows capital costs for all of Alternative A1 improvements.

**Table 1
Estimated Capital Costs for Alternative A1**

Type of Project	Description	Cost (\$ million)
Trunk Sewer Improvements	Trunk Improvements Throughout the 6 Basins	\$53.1
	72-Inch Parallel Line (45,800 linear feet)	\$30.4
Pump Station Improvements	Cantrell (40 MGD)	\$4.6
	Arch (60 MGD), w/41,500 LF of 30-inch FM	\$12.6
	Jimerson (12MGD)	\$2.5
	I-430 Booster (1 MGD)	\$0.4
Treatment Plant Improvements	Maumelle (4 MGD), w/20 MG Basins	\$19.9
	Adams Field (94 MGD), w/25 MG Basins	\$24.0
	Fourche Creek (60 MGD)	\$23.4
Total		\$171.0



Maumelle WWTP
4.0 MGD
20 MG Storage

I-430 PS
1 MGD

Jimerson PS
12 MGD

Cantrell PS
40 MGD

Adams WWTP
94 MGD
25 MG Storage

New 72 inch
Trunk

New 30 inch
FM

Arch PS
60 MGD

Fourche WWTP
60 MGD

LEGEND

- - - Existing Force Main
- Parallel 72-inch Trunk
- Proposed Trunk Sewer Installations
- Lift Station
- ▭ Storage Facility
- ▭ Treatment Facility

System Evaluation and Capacity Assurance Plan

Figure 2 Alternative A-1



IMPLEMENTATION RECOMMENDATIONS

The implementation schedule was developed to accommodate immediate improvement needs at existing facilities while constructing the new Little Maumelle WWTP. Trunk sewer improvements have been scheduled starting with upstream sewer line rehabilitation then moving down stream and concluding with construction of the major 72-inch parallel trunk line. An aggressive I/I abatement program is targeted for areas that would have a direct impact on proposed line work. Projects that increase line capacity were staged to allow for potential credit for any flow reductions resulting from the I/I abatement program. Construction of the major trunk sewers and expansion of the Fourche WWTP would follow completion of the upstream work. This staged implementation approach resulted in a recommended 15 year schedule for installation of recommended capacity improvements. Projects were prioritized based on response to critical conditions existing in the collection system, program flexibility, and coordination with development of the Utility's Wastewater Capital Improvements Plan (CIP). Beyond the costs for the SECAP improvements, the Utility's CIP includes continuing sewer rehabilitation work, facility operation and maintenance improvements, and miscellaneous improvements to wastewater facilities. Capacity improvements outlined in this report were not intended to serve as a substitute for the Utility's comprehensive CIP. The estimated capital costs and schedule for implementation for the SECAP improvements are shown in **Figure 3** and **Figure 4**.

Recommendations. The Utility should begin implementation of the capacity improvement program recommended by the System Evaluation and Capacity Assurance Plan Report. Proposed alignments and sizes of all recommended projects should be verified with detailed pre-design analyses, including topographic surveys, geotechnical investigations, utility research, and constructability reviews. The decision to parallel or replace existing sewers should consider the physical condition and remaining useful life of the existing pipelines; the availability of pipeline corridors for new sewer construction; and operation and maintenance concerns. After completion of sewer rehabilitation, flows should be re-monitored to verify that reductions in I/I have been achieved for local systems. The hydraulic model should be updated accordingly upon completion of that work and credit for downsizing or elimination of additional capacity related improvements should be documented.

INFILTRATION/INFLOW ABATEMENT

The Utility should focus on making the I/I abatement plan an integrated approach that addresses I/I problems with an ongoing sewer replacement and repair effort. The plan should link ongoing emergency repair and sewer renewal programs with a focused effort on removing extraneous I/I from the system. Plan provisions should be consistent with the emerging Environmental Protection Agency's (EPA) Sanitary Sewer Overflow (SSO) policy including capacity, management, operations and maintenance (cMOM) requirements. The targeted I/I reduction program should prioritize sewer rehabilitation and replacement based on the areas with the highest I/I contributions and the ability to impact the capacity improvement plan by reducing or eliminating trunk sewer improvements. The program should also address the complex issue of I/I abatement for private sewer laterals and service

Figure 3
Annual Expenditures for Capacity Assurance Plan Improvements

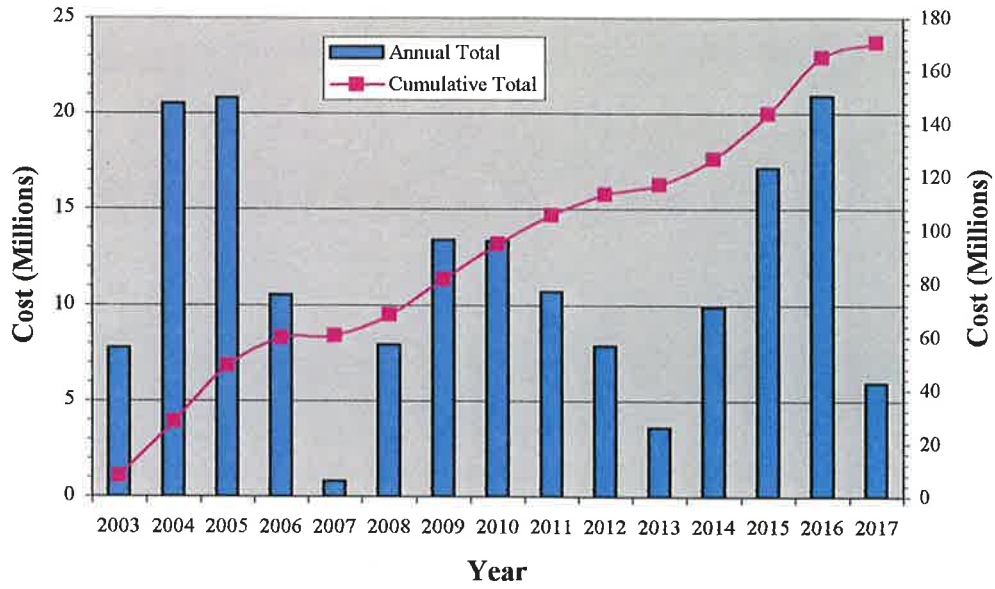
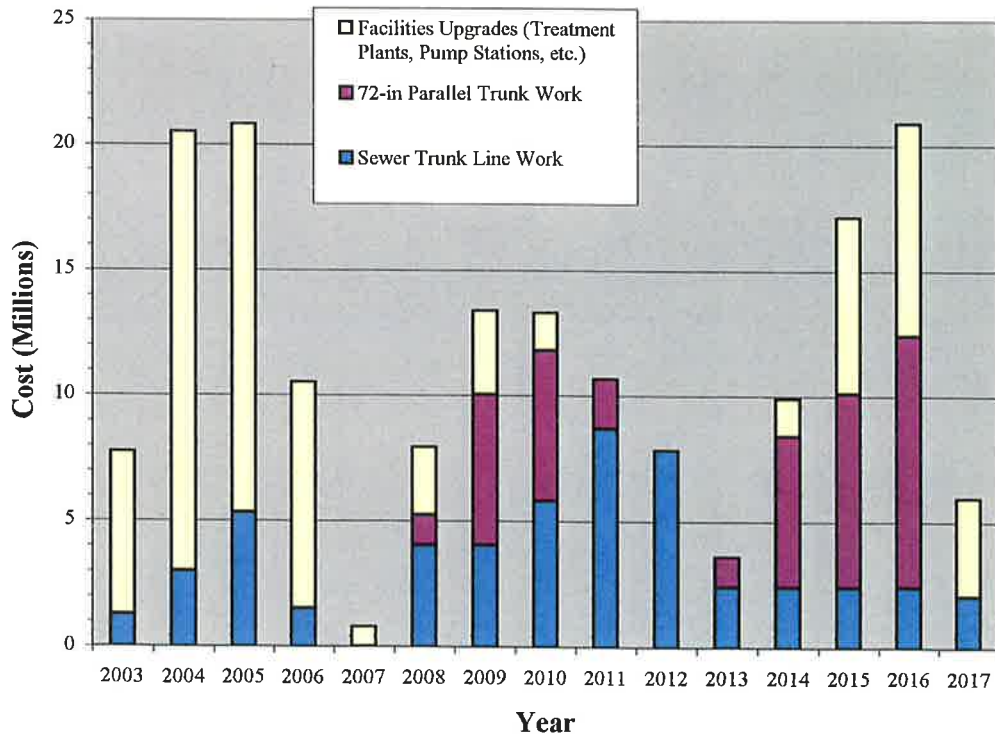


Figure 4
Annual Expenditures by Type of Construction



connections. The infiltration/inflow reduction plan should consist of the following components:

- Flow targeted I/I reduction
- Emergency, corrective and preventative maintenance
- Inspection and condition assessment prioritization
- I/I source identification and abatement
- Private property I/I correction programs

The integrated I/I abatement program should be implemented as part of the overall sewer system improvement program, ongoing maintenance, and capital rehabilitation and replacement efforts. The I/I program should direct its initial focus on known problem areas like Upper Hinson in the Maumelle Basin and developed areas located in the South 60 Basin along the upper reaches of the Rock Creek trunk line.

CITIZEN PARTICIPATION

Members of a Citizens Advisory Group were selected from a cross section of the Little Rock Community representing municipal, regulatory agencies, commercial, industrial, as well as private citizens groups. The Group was organized to exchange information and discuss options for correcting Little Rock's wastewater system capacity deficiencies and to ensure that community values were reflected in the decisions and recommendations of the System Evaluation and Capacity Assurance Plan for Little Rock.

Review of Alternatives. The CAG evaluated options for addressing system capacity deficiencies that included wet weather storage, conveyance and treatment improvements. The CAG developed criteria and an evaluation matrix for ranking capacity improvements and selecting their preferred options. The results of their selections and recommendations became an integral part of the Utility's SECAP evaluation.

Recommendations. The matrix evaluation indicated options involving storage facilities were not preferred. However, opinions regarding construction of a new Maumelle WWTP was less definitive for the Group. While the conveyance option was slightly favored the Group did express concerns regarding higher costs and adverse impacts to the community during construction. The CAG favored implementing a comprehensive rehabilitation program before committing to an extensive program to add capacity by installing larger interceptors or relief sewers. The Group also recommended addressing I/I contributed by private lines and service connections and that the City consider initiating smart growth initiatives to control new development in logical manner.

OTHER RECOMMENDATIONS

Two additional options were identified during the evaluation process. While technically feasible, further evaluation of both of these options would require a collaborative effort with outside parties that extends beyond the scope of this contract and were, therefore, not

included in evaluation for the SECAP. However both of these options appear to merit further consideration due to their cost effectiveness and community minded approach.

North Little Rock WWTP Option. Wastewater from the Maumelle Basin is currently conveyed through the Riverfront Basin to the Adams Field WWTP. The White Oak Bayou WWTP, owned and operated by the North Little Rock Wastewater Utility (NLRWU), may be capable of accepting and treating wastewater from the Maumelle Basin and North Riverfront service area. This option includes installation of a new pump station for the Maumelle Basin and possibly new pump stations for the Jimerson Creek and I-430 areas. Wastewater would be conveyed across Murray Lock and Dam and to the existing White Oak Bayou Treatment Plant. At a minimum, the plant would need additional capacity improvements as well as a revision to permit conditions for plant discharge. This option would reduce the amount of flow to the Adams WWTP and eliminate the need for a new treatment plant in the Maumelle Basin.

Wet Weather Storage Facility Option. Though the Utility and CAG preferred not to incorporate new storage facilities in the selected alternative, site evaluations for the SECAP revealed the existence of a landfill facility located in the same general vicinity where proposed storage facilities might have been installed. Using existing borrow pits to construct wet weather storage facilities at the landfill site could at the least partially alleviate many of the community and environmental concerns. Furthermore, constructing the least cost alternative with wet weather storage would provide \$24.1 million savings over Alternative A1. With a significant amount of the excavation needed for storage facilities already completed in the borrow area, additional savings would be realized by using the landfill site for storage.

This report presents the results and recommendations of the System Evaluation and Capacity Assurance Plan (SECAP) for Little Rock's wastewater collection system. The report was prepared by MWH under an agreement with the Little Rock Sewer Committee dated June 28, 2000.

1.1 BACKGROUND AND MASTER PLAN OBJECTIVES

The Little Rock Wastewater Utility (LRWU) completed the first phase of collection system study and small line improvements in year 2000. Part of this ongoing work involved initial engineering studies completed for Adams Field WWTP in 1998 and Fourche WWTP in 1999; an evaluation of options to handle wastewater for the Little Maumelle Basin was also completed in 2001. This report incorporates information from these planning documents and provides a comprehensive evaluation of the current and future needs of the entire LRWU collection system.

The overall objectives of the SECAP study are as follows:

- Develop a hydraulic model of the trunk sewer system.
- Use the model to identify existing capacity deficiencies and capacity requirements
- Develop phased improvement projects plan and budget estimates for implementing the required capacity improvements to the wastewater collection system.
- Provide recommendations for potential infiltration/inflow reduction measures
- Outline a sewer system renewal and replacement plan

1.2 LWRU SERVICE AREA

The LWRU system provides wastewater collection and treatment services for the City of Little Rock, Arkansas. The Utility's wastewater service area includes six basins: Little Maumelle, Fourche, North and South 60, District 142 and Riverfront. The Utility's wastewater service area boundary, which defines the study area for the SECAP, is shown in **Figure 1.1**.

1.3 LWRU WASTEWATER COLLECTION SYSTEM

The Little Rock Wastewater Utility provides service to over 60,000 customers within the city of Little Rock and maintains over 1,100 miles of collection system lines ranging in size from 6 to 60-inches in diameter. This report addresses capacity-related deficiency found in the larger diameter line and conveyance facilities. LRWU owns and operates two wastewater treatment plants: the Adams Field and Fourche Creek Wastewater Treatment Plants (WWTPs). The Adams Field WWTP has a design flow of 36 million gallons per day (MGD) with a maximum capacity of 72 MGD; the Fourche Creek WWTP has a design flow of 16 MGD with a maximum of 38 MGD. Major conveyance facilities that impact the larger trunk collection and conveyance system include the Cantrell, Little Maumelle and Arch Street

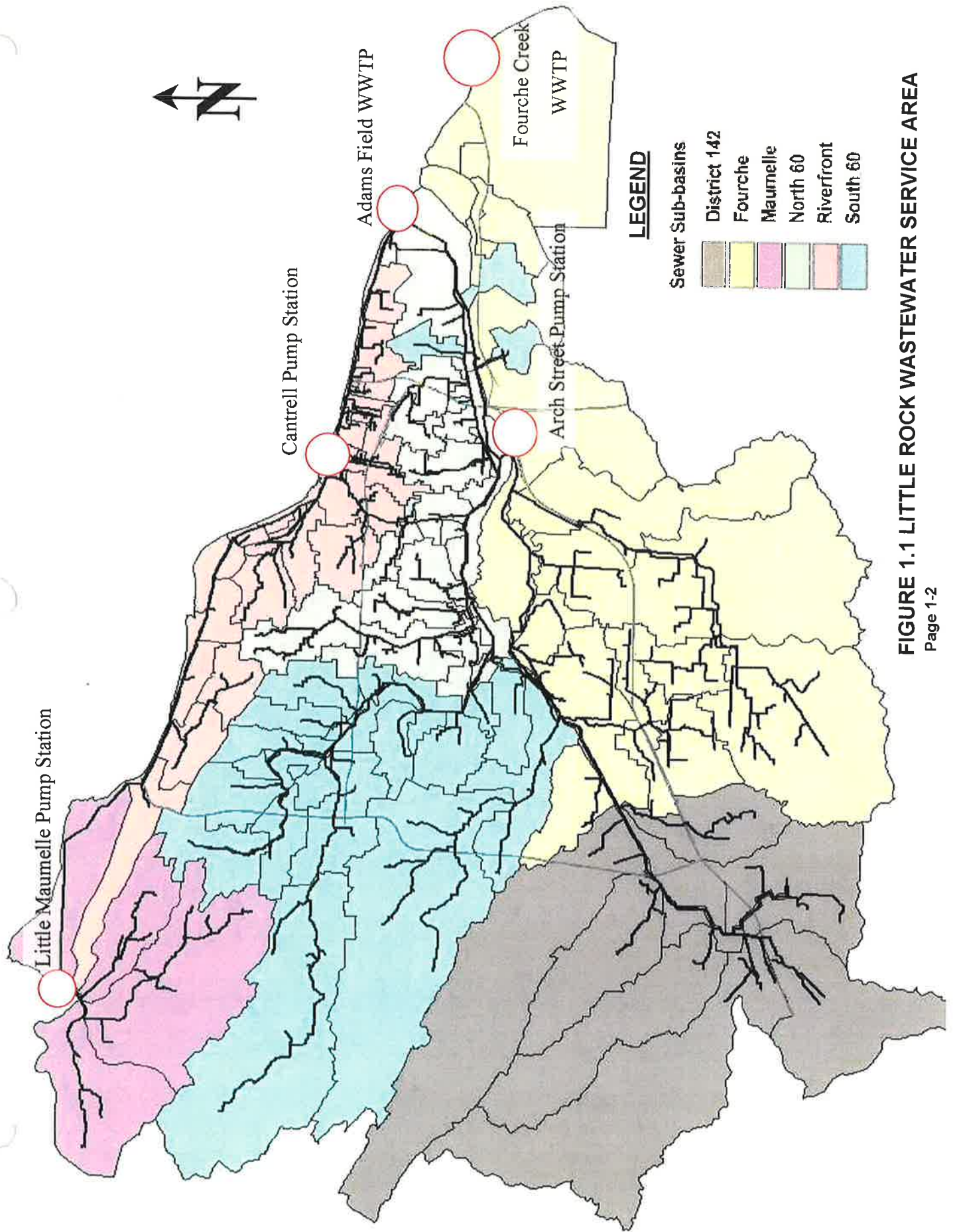


FIGURE 1.1 LITTLE ROCK WASTEWATER SERVICE AREA

Pump Stations. The Arch Street Station has a capacity of 38 MGD, Little Maumelle 5.6 MGD and Cantrell 25 MGD.

1.4 SCOPE OF MASTER PLAN UPDATE

MWH was authorized by LRWU to provide engineering consulting services for the System Evaluation and Capacity Assurance Plan under an agreement dated June 28, 2000.

The scope of the project, as well as a brief discussion of work conducted under each task, is described below.

Task 1 – Project Management. The purpose of this task was to provide project management, identify key members of the project team, mobilize team personnel, conduct meetings with LRWU staff, and provide general project administration throughout duration of the project. MWH coordinated with LRWU to establish agendas for meetings that included:

- Communication issues
- Project Scope
- Project Schedule
- Meeting formats
- Deliverables
- Data sources
- Data Structures for deliverables
- Data Retrieval Coordination
- Large Diameter Pipe Investigation
- Flow Monitoring Status
- Technical Memorandum Standards
- Initial Report Format

Task 2 – Data Collection. The object of this task was to collect existing data, maps and flow information for review and to determine impact on evaluation procedures and inclusion in the project report. The collected data included existing electronic and hardcopy data, data collected under separate contract with LRWU and Pitometer, Byrd / Forbes, and field data collected within the scope of this contract. Data were used to better understand the existing collection system and to develop recommendations for capacity upgrade alternatives. Technical Memoranda (TM) were provided for model standards, large diameter line investigation and pump station evaluations.

Task 3 – Evaluation Criteria. This task involved three phases: establishment of standard evaluation criteria to be used in the hydraulic model, alternatives analysis, and project development based on the data collected and discussions with LRWU personnel. Criteria were developed for interpreting flow data, determining dry and wet weather benchmarks, and estimating dry and wet weather base and peak flows. Standards were developed for determining collection system physical characteristics, I/I rates for the study areas, and data

formats compatible with LRWU datasets and systems. A TM was provided to the Utility for evaluation criteria.

Task 4 – Model Development. This task involved the development and calibration of the LRWU Hydroworks sewer model. In coordination with LRWU, line segment and manhole data necessary for a complete model network were input, into the model. In conjunction with LRWU staff, field verification of this data were supplied and sewershed areas were developed using the evaluation criteria. The model was initially calibrated for dry weather flows and infiltration rates, before the simulation of actual recorded wet weather events for three storms. Upon completion of this task, hard and electronic copies of a technical memorandum of the sewershed data set were provided to LRWU for review and approval.

Task 5 – Development Improvement Projects. This task included developing specific capital improvement projects required to address modeled system deficiencies and future capacity requirements. A proposed phasing plan for projects was developed based upon capacity needs and the City's ability to fund new projects while sustaining existing levels of system operation and maintenance. Recommended alignments were identified and cost estimates were prepared, this task also included the involvement of a Citizens Advisory Group to gather input and obtain acceptance from the public, utility and city officials

Task 6 – Recommendation and Final Report. This task included the creation of draft and final engineering reports summarizing the results of all previous tasks. The report describes:

- Work performed during the various tasks
- Procedures and methodologies used
- Alternatives evaluated in developing the recommended plan
- Detailed plan with cost estimates

The draft report was developed to meet Arkansas Department of Environmental Quality (ADEQ) Revolving Loan Fund requirements. The final report was presented to the Little Rock Sewer Committee, technical memoranda, intermediate reports and previous studies are attached to the report under separate appendices.

1.5 REPORT ORGANIZATION

The System Evaluation and Capacity Assurance Plan Report includes eight sections, which are described below.

- **Section 1, Introduction,** presents the background, objectives, and scope of the Capacity Plan study.
- **Section 2, Existing and Future Flows,** discusses the planning area land use projections, the basis for developing estimates for each component of wastewater flows, and the flow projections for the service areas.

- **Section 3, Modeling and Capacity Analysis**, describes the modeled sewer system, model scenarios, model analysis criteria, and capacity analysis results.
- **Section 4, Alternative Improvement Projects**, explains the process for developing capacity improvement projects and presents the recommended projects.
- **Section 5, Recommendation for Improvement Plan**, presents the recommended improvement projects including project prioritization, budgets, cost allocations, and implementation recommendations.
- **Section 6, Infiltration / Inflow Abatement**, summarizes recommendations and alternatives for I/I reduction plan.
- **Section 7, Citizen Participation**, describes participation of the Citizens Advisory Group, and their concerns and recommendations regarding system capacity deficiencies.
- **Section 8, Other Options**, summarizes additional options for improvements that are not included as a part of the scope for this contract. Identified options indicate sufficient initial feasibility to merit further consideration for possible implementation.

The Appendices to this report include documentation for the recommended improvement plan including flow calculations, model output, and cost estimates. The Technical Memoranda (TMs) completed during the study are included in a separately bound volume.

Section 2

Existing and Future Flows

This section of the report presents the basis of the existing model inflows used to calibrate the model, and the future model inflows used for evaluating hydraulic capacity issues and developing solutions. The section provides a summary of the flow monitoring data collected for calibration and infiltration/inflow (I/I) analysis, development of dry and wet weather flows, and the design rainfall event used to assess capacities and plan solutions.

2.1 FLOW MONITORING SUMMARY

2.1.1 Flow Monitoring Data

The flow meter data was obtained from a temporary flow monitoring contract conducted by Pitometer, Byrd / Forbes (PBF). The goals of the contract were to provide LRWU with dry and wet weather sewer flows for model calibration, measure I/I quantities upstream of each flow meter site, measure pump output of four LRWU pump stations, and monitor groundwater levels at eight locations in the collection system.

PBF installed 63 gravity flow meters, 4 force main flow meters, 8 groundwater gauges, 5 sewer gas meters and 8 rain gauges throughout the study area. The flow monitoring period extended from March 15th 2000 to April 28th 2000 and captured 5 rain events ranging from 0.50 to 3.09 inches per event. Typical dry weather periods or “events” were also identified for purposes of dry weather model calibration. **Table 2.1** lists the dry and wet weather events.

Table 2.1
Dry and Wet Weather Event Summary

TITLE	REF	DURATION (hrs)	START DATE	START DAY	END DATE	END DAY
DWF Event X (Weekday)	X	48	04/26/2000	Wednesday	04/28/2000	Friday
DWF Event Y (Weekday)	Y	48	04/19/2000	Wednesday	04/21/2000	Friday
DWF Event Z (Weekend)	Z	48	04/29/2000	Saturday	05/01/2000	Monday
WWF Event A	A	192	03/15/2000	Wednesday	03/23/2000	Thursday
WWF Event B	B	383	03/23/2000	Thursday	04/08/2000	Saturday
WWF Event C	C	240	04/09/2000	Sunday	04/19/2000	Wednesday
Flow Survey Period	T	1055	03/15/2000	Wednesday	04/28/2000	Friday

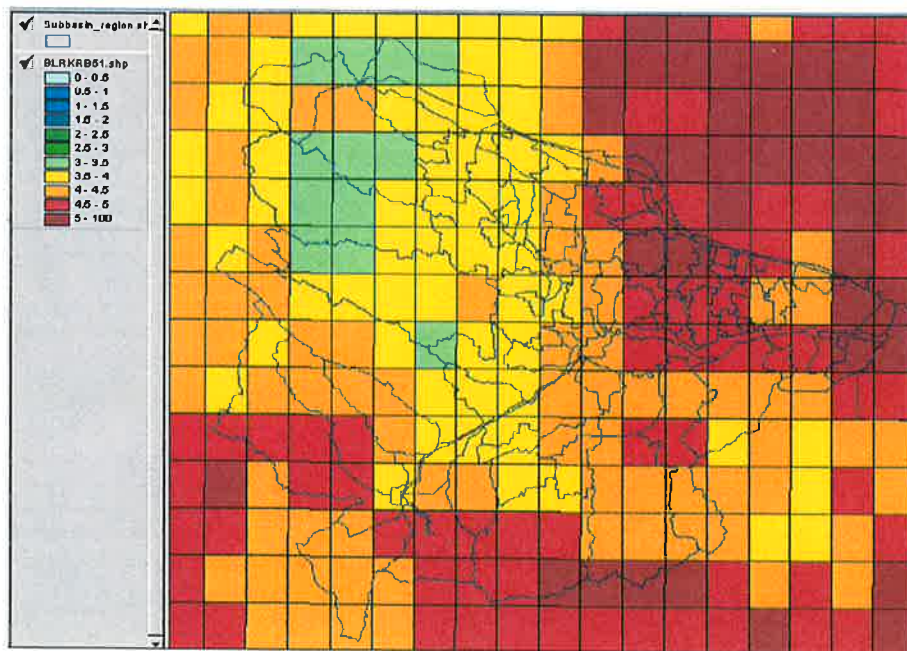
For more information about the flow meters including meter locations, model references, and location descriptions, refer to the Flow Monitoring Technical Memorandum (TM) included as **Appendix I**.

2.1.2 Observed Rainfall Data

The rainfall data used for the project is gauge-adjusted radar-rainfall data provided by NEXRAIN Corporation. Radar rainfall data provides an accurate estimation of the spatial distribution of rainfall which is critical to model calibration. In the past, hydraulic models have been calibrated using rainfall data collected from rain gauge networks providing accurate rain measurements at discrete points, but with poor estimates falling between gauges. Conversely, radar is able to see between the gauges but lacks the consistency in estimating rainfall at a specific point.

The radar data was converted into ArcADE rain data DBF files, and a graphic theme of the grid cells. The data is used to develop HydroWorks rain data (RED) files for selected wet-weather events, and evaluate the spatial variation over the Little Rock study area. **Figure 2.1** shows the spatial variation of total rainfall during the flow monitoring period.

Figure 2.1
Total Rain Depths (in) from 03/15/2000 to 04/28/2000



2.2 EXISTING MODEL INFLOWS

The hydraulic sewer model requires dry weather and wet-weather inflows to assess the hydraulic impact of the existing sewer system. Sewer flows are generated from residential populations, commercial and industrial flows, ground water infiltration and rainfall related infiltration. The population based flows were derived from the building and land-use data provided by LRWU with the ground water and rainfall flows derived from the flow meter data.

2.2.1 Residential and Employment Wastewater Flows

The population data is used to estimate the dry weather flows generated from residential and employment-based populations (i.e.: commercial and industrial). The population estimates were derived from an ArcView GIS building theme which provided a spatial distribution of all residential, commercial and industrial buildings. The populations were expressed as equivalent residential units (ERU) per building. For example, a typical single family home was equal to 1 ERU; where as commercial buildings were assigned multiple ERU values.

The ArcView building theme (buildings2.shp) contained a field defining the building code ("Structure") which allowed the consultant to identify the building type and estimate the ERU based on the building area. However, approximately 60% of the buildings had missing building codes, hence an alternative method of identifying the building type was implemented. The approach compared the building area (ie; 'footprint') with average building footprints for single family, multiple family, and commercial and industrial buildings. Building footprints less than 500 ft² were eliminated from the process to avoid including garages, storage sheds etc. The average building footprints were derived from buildings with known types. **Table 2.2** below lists the building types with average building footprint areas.

Table 2.2
Average Building Footprint Areas

Description	Structure Code	Minimum Area (sq. ft.)	Maximum Area (sq. ft.)
Mobile Homes	410	500	1000
Single Family	411	1000	3000
Multi Family	414	3000	12,000
Commercial	580	12,000	50,000
Industrial	650	50,000	No limit

Population data was used to calculate dry weather flows for residential and employment areas. The dry weather flow was calculated in the model by multiplying the population by a per capita flow rate (eg; 75 gallons/day/capita for residential and 25 gallons/day/capita for employment). The HydroWorks model only accepts one population per sewer basin, therefore it was necessary to derive 'equivalent' residential and employment populations. The following formula was used to calculate the equivalent population:

$$Population (equiv) = Res Pop + [Emp Pop \times (Emp PCF / Res PCF)]$$

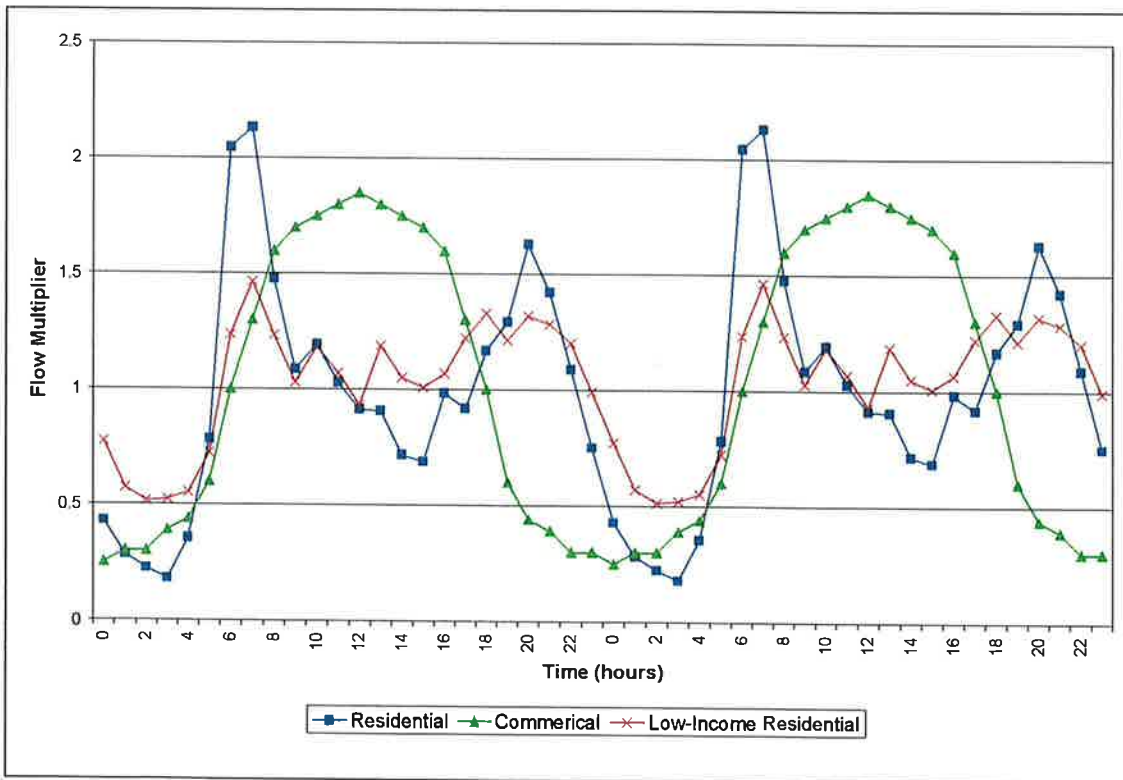
- where; *Res Pop* = Residential Population
- Emp Pop* = Employment Population
- Res PCF* = Residential Per Capita Flow (eg; 75 g/day/head)
- Emp PCF* = Employment Per Capita Flow (eg; 25 g/day/head)

The Sewer Basin Manager tool, within the ArcADE suite, was used to allocate the populations to each sewer basin. This was achieved by overlaying the population theme (converted from the building theme) on top of the sewer basin polygons and spatially distributing the population data.

2.2.2 Wastewater Diurnal Profiles

Diurnal profiles for residential and employment wastewater flows are used to model the daily dry weather flow variation. The profiles were generated from observed flow meter data to create a true representation of time-varying dry weather flows in the Little Rock service area. Flow meters located in the upstream portions of the network were selected to provide a typical residential profile, and a low-income residential profile. The flow data was averaged and normalized to create flow multipliers for 24 hour weekday and weekend periods. The employment diurnal profile was created from a standard commercial diurnal curve. This standard curve was adjusted during initial calibration based on model results to make it specific to the LRWU system. **Figure 2.2** displays the diurnal curves used for this project.

Figure 2.2
Wastewater Diurnal Profiles



2.2.3 Groundwater Infiltration

Groundwater infiltration (GWI) enters the sewer system via pipe joints, manholes, and pipe cracks, and is typically observed as a constant inflow. The GWI flow varies seasonally and

will fluctuate according to local rainfall patterns and soil and ground conditions. The flow monitoring data collected for this study shows significant GWI throughout the sewer network.

The GWI flows were derived from the flow monitoring data by extracting the calculated population-based dry weather flow (base DWF) from the observed minimum dry weather flows. Minimum flows typically occur during the nighttime or early morning hours when base wastewater flows are low. Subtracting an estimate of minimum base DWF from the minimum measured flow yields the estimated GWI for each monitored area. The minimum base DWF is typically about 15 to 20 percent of average base DWF. The resulting GWI is expressed on a unit basis (gallons/day/acre) by dividing by the sewered acreage of the monitored area.

The GWI flows were distributed throughout the model network using ArcADE by allocating observed GWI rates to the sewer basins. Comparing the dry weather flows with the flow monitoring data validated the model and ensured the application of the correct GWI distribution.

2.2.4 Wet Weather Infiltration / Inflow

According to the flow meter data collected during the monitoring period, the Little Rock sewer basin exhibits a significant wet-weather flow response. The data were reviewed to interpret the flow response to rainfall and to develop the wet-weather modeling approach. The flow meter data revealed the following conditions:

- Increased infiltration during rainfall event
- Decreasing infiltration after rainfall event
- Rapid flow response following the initial rainfall
- Increased groundwater infiltration (GWI) during a succession of rainfall events
- Low rapid response flows indicating few direct connections
- Large wet-weather flow variation between flow meters

Following the identification and evaluation of the hydrological processes, the consultant developed an approach for modeling the rainfall, runoff and routing processes. In this context, rainfall is defined as the intensity and duration of rain falling onto the sewer basin during and preceding the event period. The spatial variation of rainfall is significant when relating the rainfall to the wet-weather inflow. After rainfall commences, the runoff process converts the rainfall depth to an inflow volume; this process uses an “effective area” to represent the flow mechanisms such as groundwater seepage, storm water connections, and flow through laterals. Finally, flow routing describes the translation and attenuation of inflow caused by overland routing, seepage through ground, and slows leakage via cracks.

Rainfall data is needed to compute wet weather flows for model events. For any storm event, rainfall may vary throughout the basin. Therefore, specific rainfall amounts must be assigned to each sewer basin in the model. A graphical representation of this model was created using the radar cells to allocate individual rainfall hyetographs to each sewer basin. ArcADE includes a process for graphically assigning a specified “rainfall index” to each

sewer basin using the rainfall basin (radar cell) theme. The rainfall index defines the rainfall to be used for that sewer basin in the model. The actual rainfall data used for model runs are stored in HydroWorks rainfall event data (RED) files. The RED file contains the rainfall data by time step (a 15-minute rainfall time step has been used for the LRWU model) for each rainfall index.

For more information about the wet weather flow modeling and the development of the model files, refer to the Data Management, Model Building, and Model Inflows Technical Memorandums (TMs) included in the **Appendices H, J, & K** respectively.

2.3 DESIGN FLOWS

Forecasted dry weather and wet weather inflows are necessary to assess future sewer system hydraulics and to plan system improvements over the next ten to fifteen years. Future dry weather flows generally represent increased flows caused by population growth, while future wet weather flows are based on a *design rainfall event*. The design rainfall event is generated to create a “worst-case” scenario for predicting future problems and providing flow criteria for developing hydraulic improvements.

2.3.1 Residential / Employment Flow Projections

The following assumptions were made during the assessment of future residential and employment based dry weather flows.

- No population growth for the current sewer basin
- Future development west of Little Maumelle, which *may* drain into the proposed new wastewater treatment plant. Inflow from this development was not included in the model as it is expected to drain directly to the proposed plant without any impact on the existing system.

The hydraulic analysis of the future sewer system used the existing residential and employment dry weather flows. As described previously, these flows were generated from the building data supplied by LRWU.

2.3.2 Groundwater Infiltration Projections

Groundwater infiltration varies seasonally depending on annual rainfall conditions. The variation and magnitude of GWI was examined by reviewing the daily average dry weather flows at the Adams Field WWTP. Based on this review, the following observations were made:

- GWI is predominantly related to rainfall depth and duration
- High GWI occurs during March / April, following the winter rainfall
- Low GWI occurs during the summer months
- GWI is present throughout the year due to winter and summer rainfall

The study assumed the GWI rate remained constant during the existing and future flow projections. This assumption was based on a trade-off in which system degradation and future rehabilitation would exactly offset one another. The GWI was present in all flow meter data indicating that GWI was distributed throughout the system so that it would be difficult to isolate and eliminate. Therefore, the design flows used for developing hydraulic schemes include both groundwater infiltration and the rainfall dependent inflow and infiltration (RDI/I) flow components.

The GWI flow projections were based on existing GWI obtained from the March / April period. This period represented the worst-case scenario of high seasonal groundwater infiltration. The GWI rates from this seasonally high period were extracted from the flow data and used for both model calibration and infiltration projections.

2.3.3 Design Flow Condition

Wastewater collection systems are typically sized for a specific “design” condition, which defines a designated system performance criterion during a wet weather event.

Generally, the performance criterion is defined by the maximum allowable water level in the system, which may be at the ground surface (i.e., “no overflows”), a specified distance below the ground (say, 3 to 5 feet below the manhole rims), or more conservatively, by a maximum allowable flow depth to pipe diameter (d/D) ratio. The “design event” establishes the maximum recurrence frequency under which the design performance criterion can be exceeded. Thus, if the performance criterion is “no overflows” and the recurrence frequency is 10 years, then the system must be designed such that overflows would occur no more frequently than once every 10 years.

In practice, the design event is often equated to a specified recurrence frequency *rainfall* event. Thus, the “design flow” is equated to the flow that would occur for a x-year frequency rainfall event, and the system is sized such that the design performance criterion is not exceeded for the x-year rainfall event flows. Since the magnitude of rain dependent inflow and infiltration flows are not governed solely by the intensity and duration of the rainfall, this system design technique does not necessarily ensure that the flows in the system will violate the performance criterion only once in every x years. However, using rainfall recurrence frequency as a design *flow* criterion is generally considered to be a reasonable approach for establishing collection system design flows.

2.3.4 Design Rainfall Event

Design storms are based on long-term historical rainfall data. During November 2000, LRWU experienced a significant rainfall event following a prolonged month of antecedent rainfall producing high groundwater conditions. The rainfall duration exceeded 48 hours and generated over 5 inches of total rainfall. For this study, the November 2000 observed rainfall event was used as the “design event” to identify and develop solutions for the master plan.

The observed rainfall event was quantified in terms of *return period* by comparing the recorded depth and duration with rainfall intensity-duration-frequency (IDF) relationships. The November 2000 rainfall event equates to a design event with a return period between 2 and 5 years. In addition to meeting LRWU design storm criteria, the November 2000 event was selected as the design event because this rainfall event:

- Exceeds LRWU design criteria
- Provides a realistic spatial distribution of rainfall
- Coincides with reported hydraulic spills / flooding
- Was used for confirming model calibration with permanent flow meters
- Occurred after an unusually long period of rainfall, giving rise to high groundwater infiltration and therefore creating a *worst-case* scenario.
- Had available rainfall radar data providing an accurate spatial representation of rainfall depths.

Table 2.3 summarizes the design rainfall event details, and Figure 2.3 shows a sample rainfall hyetograph with a total depth of 4.8 inches. Figure 2.4 shows the spatial variation of total rainfall depth over the entire sewer basin.

Table 2.3
Design Rainfall Event Details

TITLE	REF	DURATION (hrs)	TOTAL DEPTH (in)	START DATE	END DATE
Design Rainfall Event	E	50	4.5	11/22/2000	11/25/2000

Figure 2.3
Rainfall Hyetograph for Design Rainfall Event (Event E)

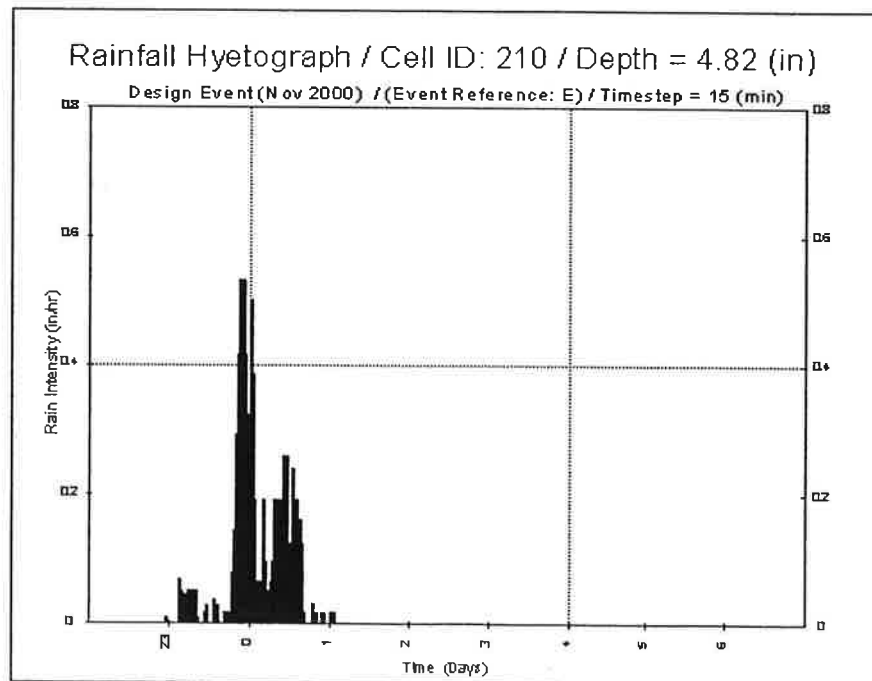
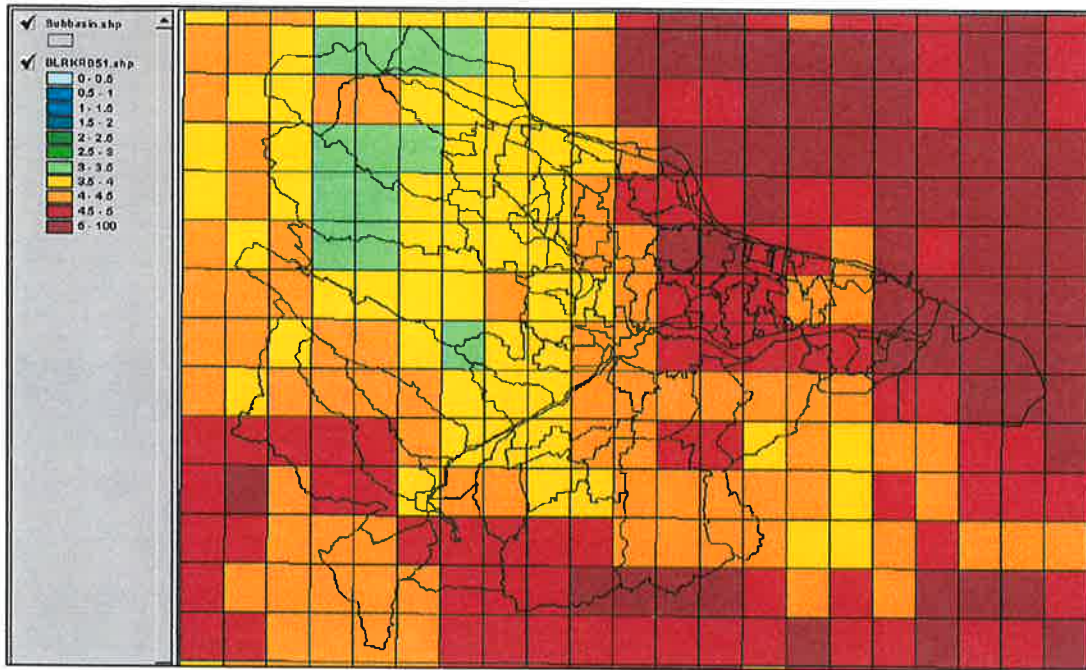


Figure 2.4
Total Rain Depths (in) for Design Rainfall Event (Event E)



2.3.5 Design Wet Weather I/I

The rain dependent inflow and infiltration (RDI/I) was generated from the design rainfall event and revised model runoff parameters calibrated using flow data obtained from four permanent flow monitors. In addition to this flow data, the model spill predictions were verified against reported spills occurring during the storm.

The revised calibration process identified a change in hydraulic conditions that proportionally reduced the wet weather I/I entering the system. This I/I reduction occurs when the system exhibits significant surcharging that prevents additional flow entering the system. As a result, the ratio of I/I to rainfall decreases as the system becomes overloaded. Model calibration parameters were modified to account for this effect. Further calibration details are described in Section 3 and the Model Calibration Technical Memorandum in **Appendix L**.

As previously stated, the study assumed the wet-weather I/I rates remained constant during the existing and future flow projections. This assumption was based on a trade-off between system degradation and future rehabilitation. The wet-weather I/I was present in all flow meter data indicating that I/I is distributed throughout the system making it difficult to isolate and eliminate. Therefore, the design flows used for developing hydraulic schemes includes both the groundwater infiltration and the RDI/I flow components.

Section 3

Modeling and Capacity Analysis

This section describes the hydraulic model used to identify and analyze capacity deficiencies in the LRWU collection system. Model components such as; the modeled network, model areas, pumps, and controls are described and model calibration is discussed. Capacity deficiencies were identified based on model-predicted overflows and surcharging, these deficiencies are divided by service area and presented in this section. The problem areas described in this section correspond to the recommended upgrades for increased conveyance capacity presented in **Section 4**.

3.1 HYDRAULIC MODEL DESCRIPTION

The LRWU collection system was modeled using HydroWorks™, a fully dynamic hydraulic model developed by Wallingford Software in the U.K. HydroWorks was selected based on a previous model evaluation conducted by LRWU.

The HydroWorks model was used in conjunction with an ArcView GIS interface. The interface, called ArcADE, is an ArcView extension developed by MWH specifically for use with HydroWorks and other hydraulic modeling programs. ArcADE facilitates the management and validation of sewer modeling data, the creation of model-input files, and the review of model results. The ArcADE extension has been provided to LRWU as part of this project.

The modeled system consists of links and nodes, which represent pipes, manholes, controls (e.g., pumps, weirs, gates, etc.), and pump station wet-wells. Delineated sewer sub-basins represent flow in unmodeled pipes draining to a modeled node. Population, land use, and groundwater infiltration data determine the amount of dry weather flow entering the modeled system from these areas. In addition to the sewer network and sub-basin areas, rainfall data and runoff information were built into the model to simulate wet-weather conditions. The model uses real time control to simulate operation of pump stations and controls. Detailed information about the model and model files is contained in the Data Management, Model Building, and Model Inflows Technical Memorandums (TMs) located in **Appendices H, J & K**, respectively.

3.1.1 Sewer Network

The LRWU modeled system contains pipes ten inches and greater in diameter, six and eight inch diameter pipes located downstream of larger pipes were also included in the model. Some pipes 10 inches or larger were not included in the modeled system because data for these pipes was not readily available.

The complete modeled network contains 4,814 nodes and 4,847 links. The nodes and links represent actual manholes, pipes, pump station wet-wells and control links (e.g., pumps). The control links included the Little Maumelle, Cantrell, and Jamison Pump Stations and the Interstate Park Gate. The Adams WWTP and Arch Street Pump Station were both represented as 'limited discharge orifices' meaning that the influent flow to these facilities

was limited, based on existing and future flow conditions. **Figure 3.1** shows the entire LRWU collection system with the modeled pipes shown in blue.

All network and pump station information was obtained from LRWU. The data input into the model was validated for common errors, including but not limited to connectivity problems, duplicated or missing data, negative pipe slopes, and pipe crown elevations higher than ground level. In addition to the validation routine, profiles of modeled lines were used to visually identify errors. All discrepancies were corrected with the use of as-built or survey information. These data validation procedures are detailed in the Data Validation TM located in **Appendix H**.

3.1.2 Collection System Areas

i) Service Areas

The LRWU wastewater collection system has six basins, also known as service areas: Little Maumelle, Riverfront, North 60, South 60, Fourche, and District 142 as defined by LRWU. The model system was divided into these service areas for data validation and initial model building and calibration. The system was recombined into a single model during final calibration. The complete model was used to identify areas with capacity deficiencies and to develop solutions to address these deficiencies. The six collection system service areas are shown in **Figure 3.2**.

ii) Sewer Sub-basins

Sewer sub-basins define the areas used to allocate populations and associated flow data to the model network. The sewer sub-basins for this study were created by sub-dividing the service areas defined by LRWU. Sewer sub-basins were delineated to include all unmodeled pipes flowing to a particular node in the modeled system. The average size of a sewer sub-basin is approximately 60 acres. **Figure 3.2** shows the sewer sub-basins within each service area. Population and land use information was obtained for each sewer sub-basin.

iii) Flow Meter Basins


Flow meter basins define the area draining to a downstream flow meter. These basins, consisting of the sewer sub-basins draining between upstream and downstream flow meters, were used for allocating groundwater and rainfall dependent infiltration and inflow. For this study, 60 flow meter basins were defined based on 63 temporary flow meter sites. Three flow meters were on pipe interconnections and, therefore, do not have associated basins.


3.1.3 Pump Stations

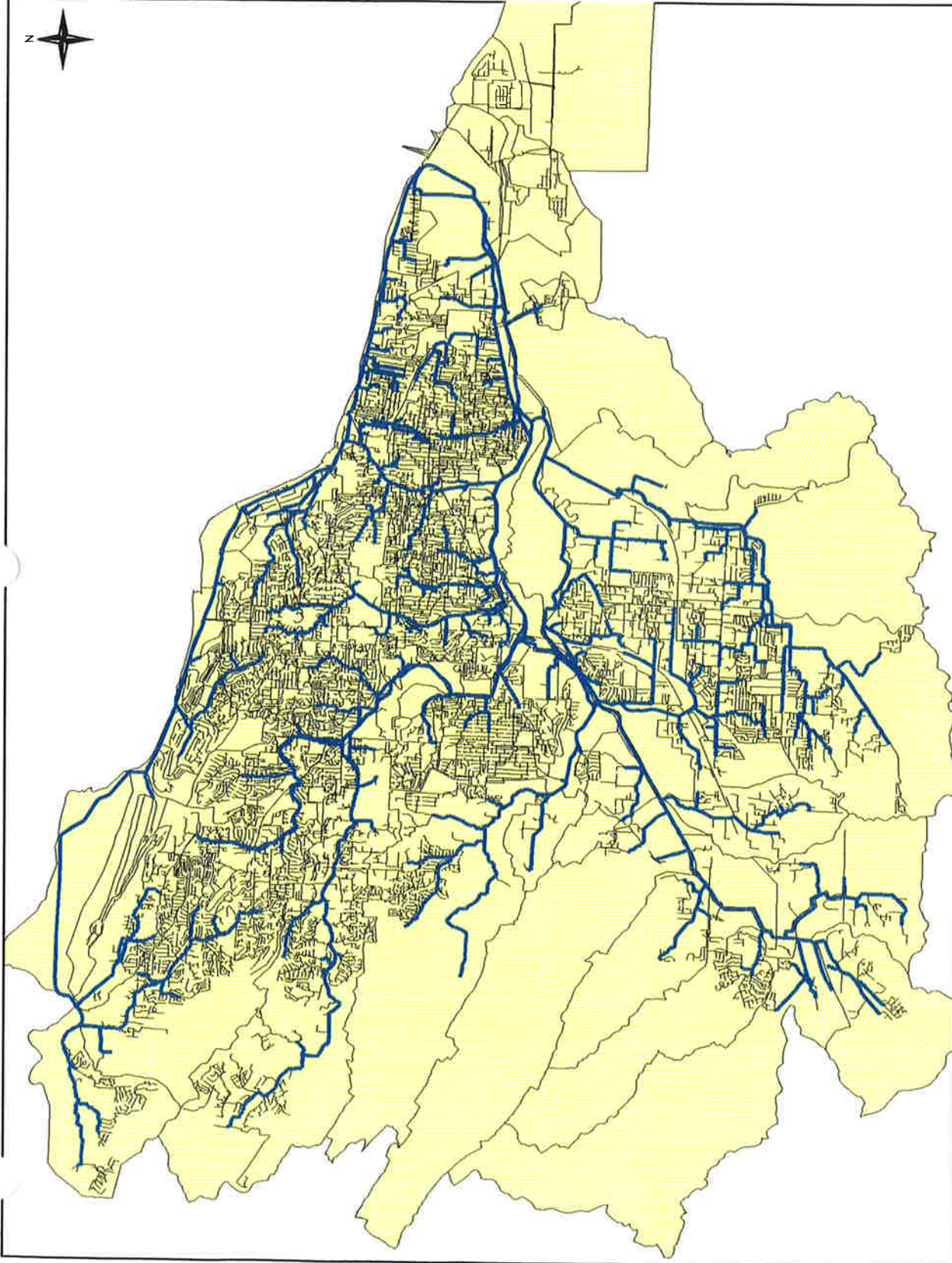
As previously stated, the Little Maumelle, Cantrell and Jamison Pump Stations were fully modeled. Although the operation of Arch Street Pump Station was not modeled, the pump station was represented in the model as a limited discharge orifice. No other pumping facilities in the LRWU system were included in the model.

All pumps at Little Maumelle, Cantrell, and Jamison Pump Stations were modeled as rotodynamic pumps, i.e., curves describing the head-discharge relationship for each pump

LEGEND

 Modeled Network

 Entire Network



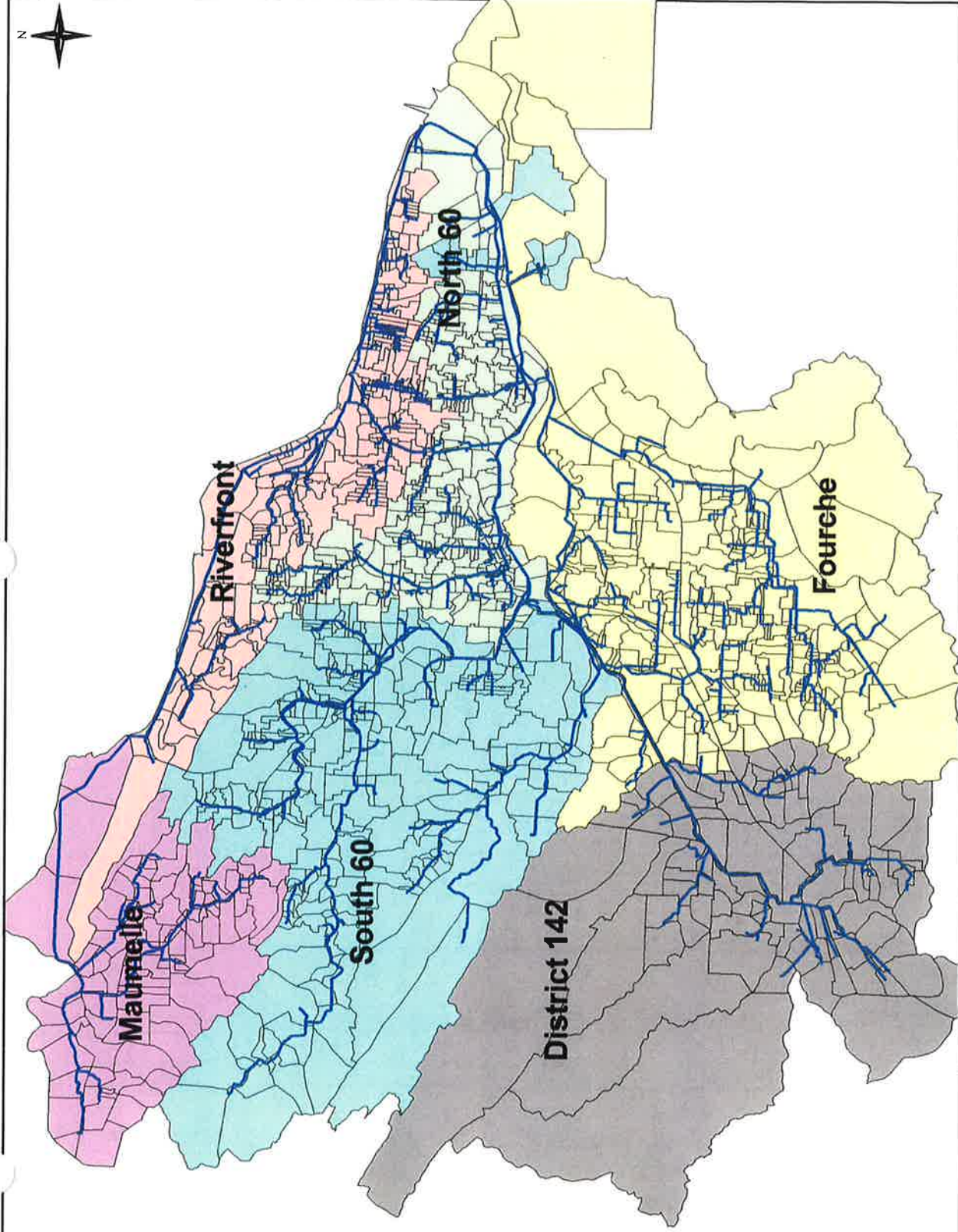
LITTLE ROCK WASTEWATER UTILITY
FIGURE 3.1 MODELED NETWORK
SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

LEGEND

Modeled Network

Service Areas

- District 142
- Fourche
- Maumelle
- North 60
- Riverfront
- South 60



LITTLE ROCK WASTEWATER UTILITY
FIGURE 3.2 SERVICE AREAS AND SUB-BASINS
SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

governed pump operation in the model. These pump curves were entered into the model and calibrated based on observed pumping capacities. Wet-well levels at which pumps turn on and off were defined to model pump sequencing. In addition, the real time control features of HydroWorks were used to model operating rules such as the shut-down of a small pump in response to the start-up of a large pump. Tertiary mode status, when pumping at Little Maumelle is reduced based on the wet-well level at Cantrell, was also modeled using real time control.

3.1.4 Wastewater Treatment Plants

Neither the Adams Field nor the Fourche WWTPs was fully modeled. Adams Field WWTP was represented as a limited discharge orifice in the model; the flow discharge from the collection system was limited to 72 MGD to simulate maximum plant capacity and any backwater in the collection system that may result. Although the Fourche WWTP, was not included in the model, this omission does not affect the accuracy of the model since the capacity of the Arch Street Pump Station, also modeled as a limited discharge orifice, was the limiting factor for this portion of the system. The Arch Street Pump Station was the farthest downstream point in the Fourche system included in the model.

3.1.5 Interstate Gate Park Control Facility

The Interstate Park Gate is operated based on the flow at Adams WWTP; when the flow reaches approximately 42 MGD, this gate is fully opened to divert more flow through the Arch Street Pump Station to the Fourche treatment plant. After the flow at Adams WWTP subsides, the gate is lowered to its standard opening of approximately 15 percent.

This gate was modeled using real time control. Based on historical operating conditions, the gate was modeled to open fully when the flow reaching Adams WWTP increased to 45 MGD. The modeled gate closes to a 15% opening after flow at the treatment plant decreases to 30 MGD. The difference in flow required to open and close the gate prevents the gate from opening and closing too rapidly.

3.2 MODEL CALIBRATION

Model calibration is the process of comparing predicted model flows and depths with observed flow data, identifying anomalies with the model data, and correcting and verifying model changes. The process provides a calibrated hydraulic model that can be used to assess existing and future flow conditions, and enable the user to develop and plan capacity upgrade solutions.

3.2.1 Model Calibration Process

The hydraulic model was calibrated against observed dry weather and wet weather flow events recorded during the flow survey period (**Table 2.1**). The dry weather event, Event X, and the wet weather event, Event A, were selected from the flow survey period between March and May 2000. The survey collected flow and depth data from 63 temporary flow

meters strategically located throughout the collection system to capture flow data from the major trunks and interceptor systems. **Table 3.1** summarizes the calibration event data used for this study.

Table 3.1
Event Information

Event Name	Event Type	Event Dates	Rainfall (inches)
Event X	DWF Calibration	April 26 – April 27, 2000	0.0
Event A	WWF Calibration	March 15 – March 22, 2000	2.4
Event E	Design	November 22 – November 30, 2000	4.1

Model calibration is an iterative process involving many model runs and sequential model modifications until satisfactory model fits are obtained. Model fits (i.e., comparison between predicted and observed hydrographs) were assessed for peak flows, total volume, base flows, timing of peaks, and overall hydrograph shape. Overall, the allowable error between peak flows and volumes is 20 percent for critical locations within the network.

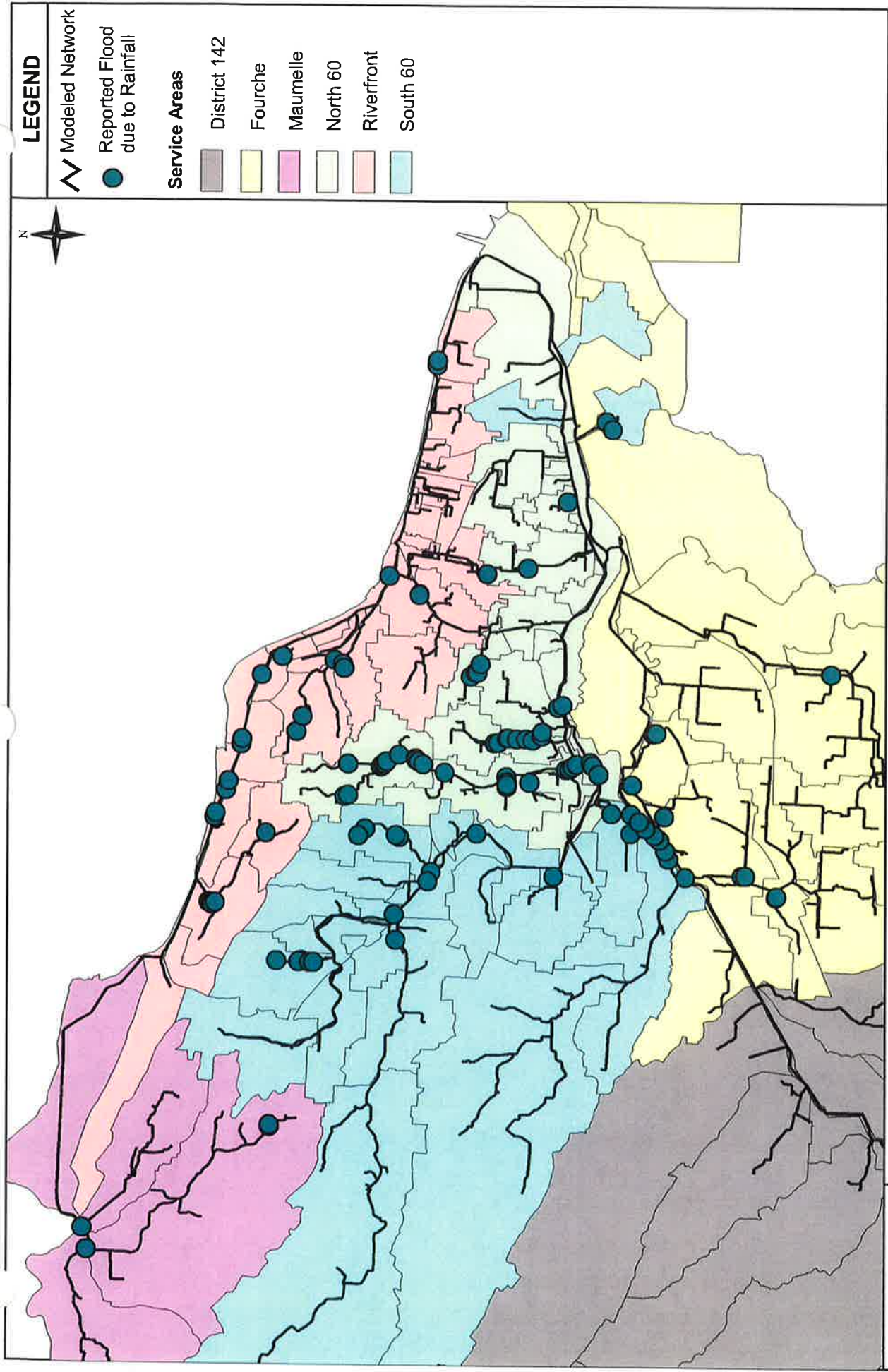
Model parameters such as per capita flows, residential and employment diurnal patterns, and groundwater infiltration were refined during dry weather flow calibration. Runoff routing parameters and the effective areas from which runoff into the collection system occurs were determined during wet weather flow calibration. Pump curves were calibrated based on reported observed pumping capacities, reported pump on/off durations, and downstream flow meters, if available.

3.2.2 Design Storm Calibration









Since the “design storm” described in **Section 2** of this report is an observed rainfall event, this design event data allowed the model predictions to be verified against observed flow data obtained from LRWU's permanent flow meters. Initial findings revealed differences between the model and the design storm occurring due to changes in hydrological and hydraulic conditions. The overall effect was proportionally lower inflows for large rainfall events, due to surcharging and back ups in the sewer system that prevented rainfall inflow from entering the system.

Based on the design storm calibration results, the model runoff parameters were modified to accommodate the change in hydraulic conditions observed during the design event. The calibration was verified by comparing reported historical overflows to model predicted overflows for this event. **Figure 3.3** and **Figure 3.4** show the historical overflows and the model predicted overflows, respectively. The model predicts more overflows than historically recorded. This difference may be because some actual overflows that occurred in secluded areas were not witnessed and reported. In addition, leakage from pipes, which could be significant in some areas, is contained within the modeled system, thus resulting in additional manhole overflows.

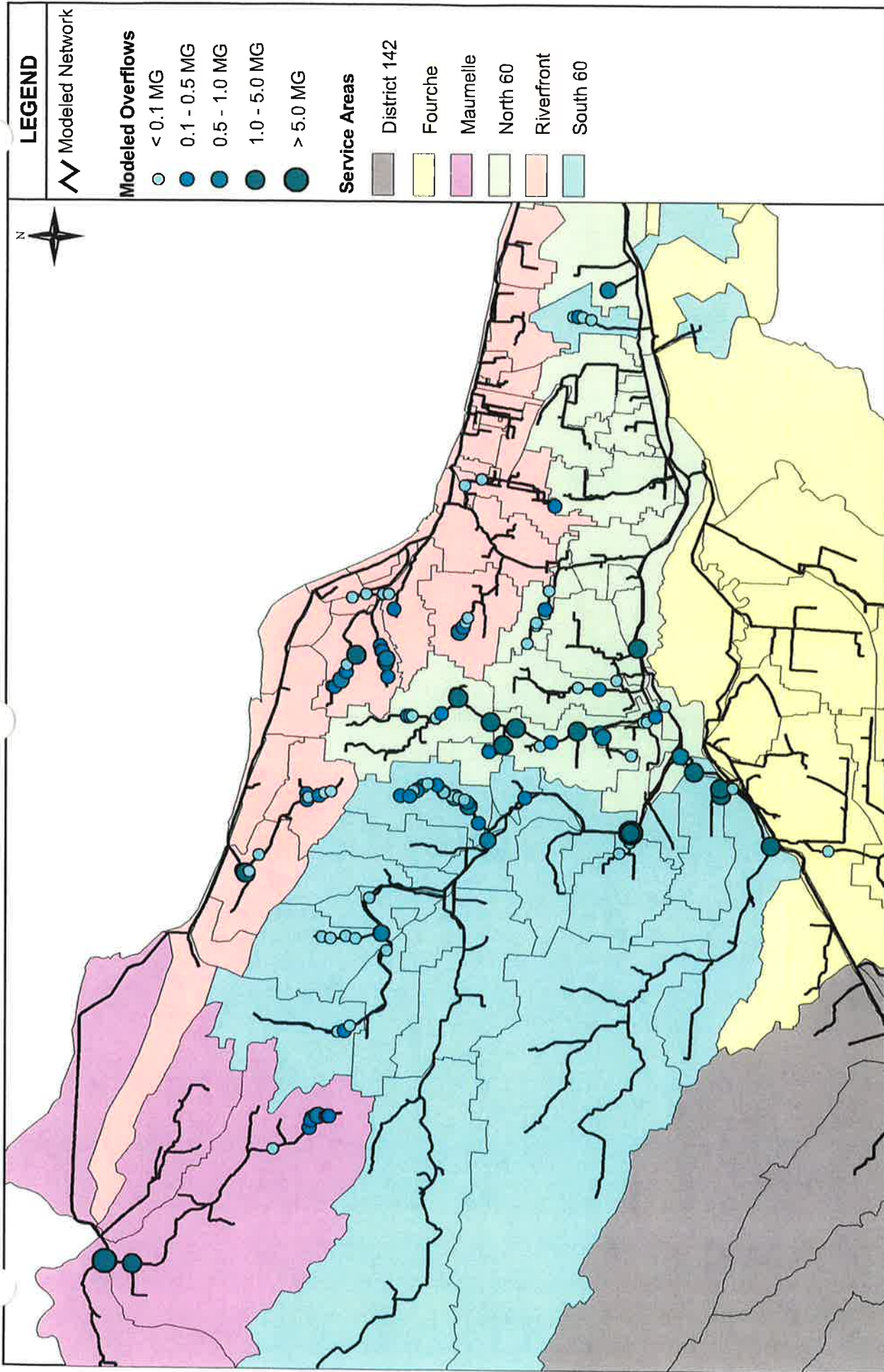
A detailed account of the model calibration procedures are included in the Model Calibration TM located in **Appendix L**.



LEGEND

-  Modeled Network
 -  Reported Flood due to Rainfall
- Service Areas**
-  District 142
 -  Fourche
 -  Maumelle
 -  North 60
 -  Riverfront
 -  South 60

LITTLE ROCK WASTEWATER UTILITY
FIGURE 3.3 HISTORICAL FLOODING DUE TO RAINFALL
SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN



LITTLE ROCK WASTEWATER UTILITY
FIGURE 3.4 MODELED OVERFLOWS, DESIGN EVENT
 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

3.3 HYDRAULIC ANALYSIS

The calibrated model was used to evaluate the hydraulic performance of the trunk system for existing and future flow conditions. This hydraulic analysis was used to identify problems such as spills and capacity constraints and to determine the cause of the hydraulic problems through the use of the hydraulic model.

3.3.1 Hydraulic Model Assumptions

During modeling, hydraulic analysis of sewer networks is typically conducted for existing and future flow conditions. However, since LRWU forecasts a negligible change in population in the service area of the existing WWTPs, the study assumed existing inflows remained the same for the duration of the planning horizon. The following assumptions were applied when developing the model inflows:

- System fully built-out (excluding Little Maumelle)
- No major changes in land use.
- Floodwater assumed not to drain back into the system.
- No net I/I reduction, based on assumed trade-off between sewer system rehabilitation and further deterioration of the pipe network.

3.3.2 Model Inflows

The hydraulic analysis was conducted for dry weather and wet weather flow events. The calibration dry weather flow event (Event X) was considered appropriate for evaluating the worst-case DWF condition as the event included a seasonally high groundwater component. Since the model was calibrated for this event, the model included the groundwater infiltration (GWI).

The “design rainfall event” as described in **Section 2** provided the wet weather event for evaluating the hydraulic performance of the system. The design rainfall event is an observed rainfall event with the data captured in a radar data format. The radar data allowed the consultant to model accurately the spatial distribution of rain over the sewer basin. The rainfall distribution showed a 'non-localized' spatial variation of rainfall depth with minimal variation between high and low elevations. The distribution was discussed with LRWU and concluded to be a typical winter event suitable for using as a 'worst-case' design event.

The design rainfall event (Event E) was used in conjunction with calibration DWF event (Event X). This combined the seasonal high GWI with a major (2-year to 5-year) rainfall event represented the final the wet weather design event.

3.3.3 Hydraulic Model Results

Model runs were conducted for dry weather and wet weather flow conditions, using DWF Event X and WWF Events E, as described above.

The hydraulic model calculated peak flows and flow depths for each modeled pipe segment. The flow depths were expressed as a ratio of pipe diameter (i.e., d/D) and used to evaluate the level of surcharging for the DWF and WWF events. **Figure 3.5** and **Figure 3.6** show d/D ratios for DWF Event X and Design Event E, respectively, as well as model predicted wet weather overflows. Surcharged pipes are identified by d/D values greater than 1.0 ($d/D > 1.0$). The d/D ratios of surcharged pipes are computed based on the height of the hydraulic grade line above the pipe invert.

The model distinguishes between pipes surcharged due to capacity limitations (throttle pipes) and pipes surcharged due to backwater. The initial model results identified pipes with limited capacities causing a 'throttling' effect resulting in backwater upstream of the restriction. These pipes referred as throttle pipes possess a hydraulic gradient steeper than the pipe slope.

Pipes surcharged with backwater can mask potential throttle pipes when the downstream restrictions are removed, i.e., pipes upsized. Therefore, the initial model results do not reveal the entire extent of hydraulic problems. These additional problems are exposed and solved during the solution development phase (see **Section 4**).

3.3.4 Hydraulic Analysis – Description of Problems

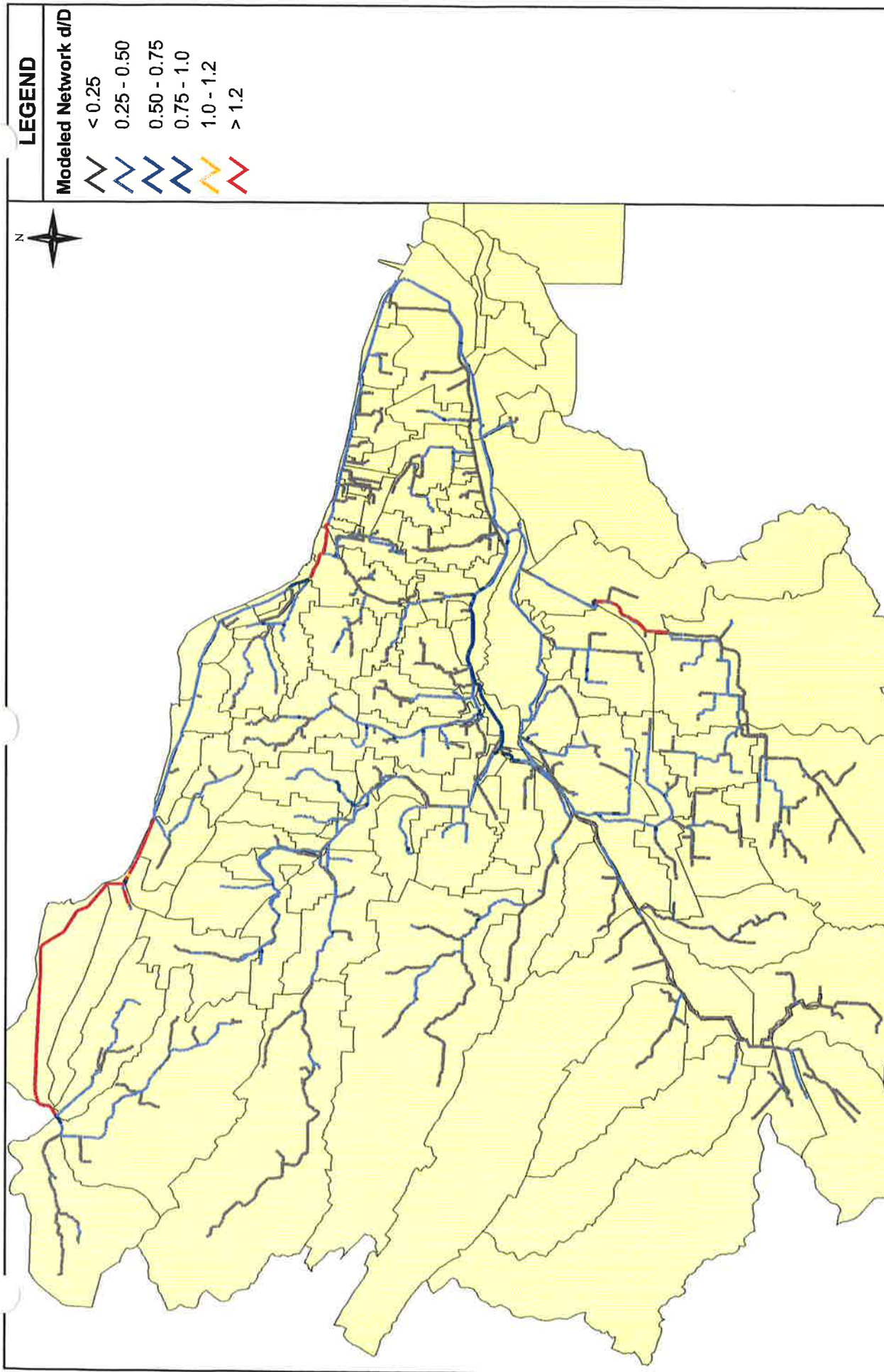
Capacity problems described in this section are grouped by LRWU service basins and are listed based on improvement schemes recommended in **Section 4**. For the LRWU collection system, eliminating overflows was the priority when identifying capacity upgrade solutions. Not all surcharged pipes were recommended for capacity upgrades, particularly where surcharging was relatively minor. For a thorough evaluation of deficient areas, system problem areas were determined from a combination of model results and historical reported overflows due to rainfall. The following capacity problems are described for Design Event E.

Overview

Most of the major capacity-related problems in the LRWU collection system occur in the North 60 service area, Riverfront, older sections of South 60, and selected areas in Little Maumelle. District 142 appears to have no capacity deficiencies in the modeled pipes, while capacity deficiencies in Fourche are relatively minor. A more detailed description of each service area, the twin 60 interceptors, and Adams Field WWTP is presented below.

Little Maumelle

Truss Pipe Region – Significant surcharging and overflows occurred in the truss pipe region of Little Maumelle. This area approximately encompasses the area upstream of manhole –5C116. Maximum d/D ratios in this region ranged from 0.2 to 10, with most values over 2.5. Approximately 6,500 feet of pipe were surcharged. The model predicted overflows at manhole –5C092 and at several manholes surrounding –5D014. The maximum spill volume in this area was predicted to be 0.6 million gallons (MG) from manhole –5D015, with a total spill volume in the region of approximately 1.5 MG.

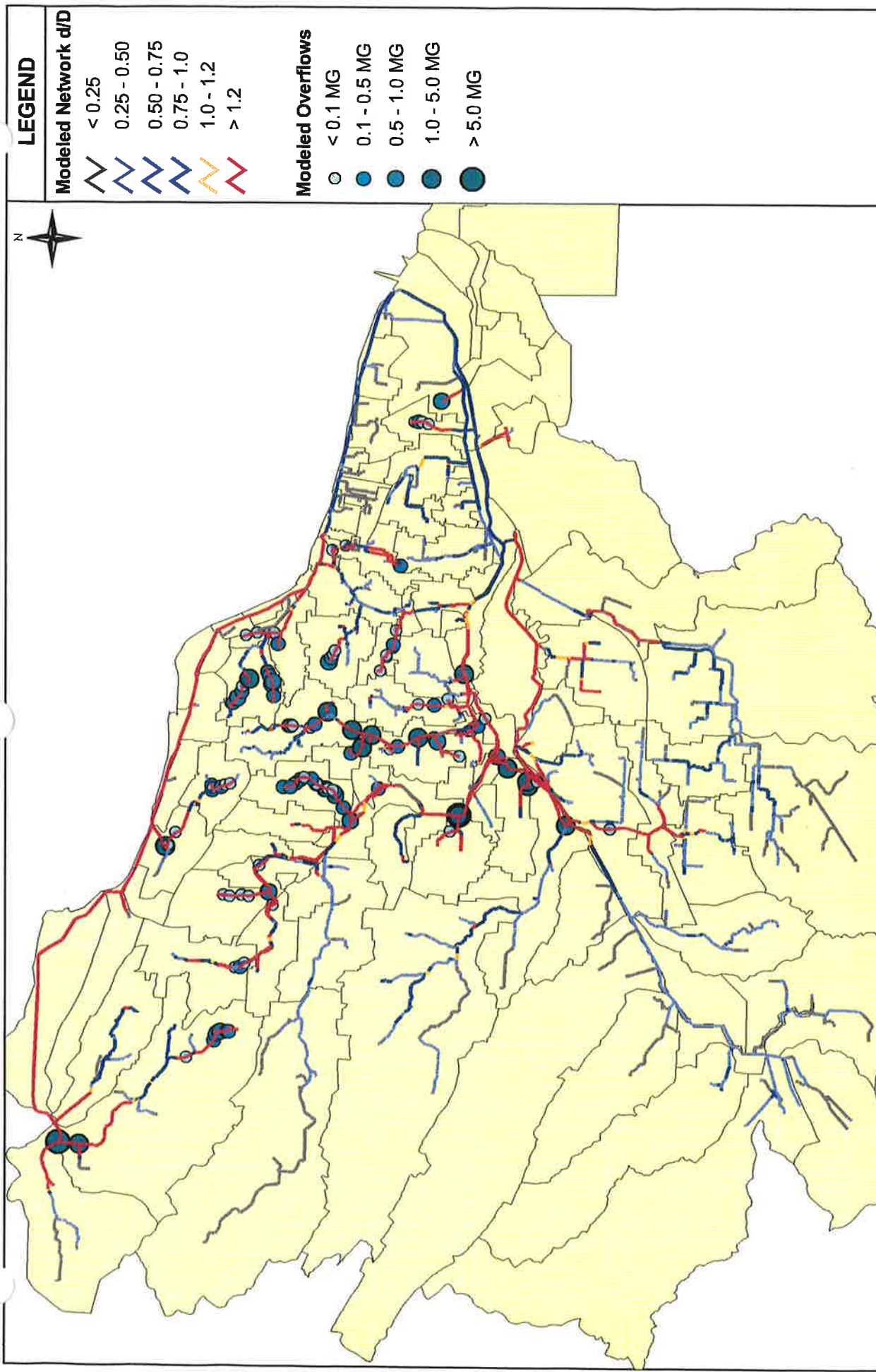


LEGEND

Modeled Network d/D

- < 0.25
- 0.25 - 0.50
- 0.50 - 0.75
- 0.75 - 1.0
- 1.0 - 1.2
- > 1.2

LITTLE ROCK WASTEWATER UTILITY
FIGURE 3.5 DEPTH TO DIAMETER RATIOS, DWF EVENT X
SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN



LITTLE ROCK WASTEWATER UTILITY
FIGURE 3.6 DEPTH TO DIAMETER RATIOS, DESIGN EVENT
 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

Pump Station Region – Surcharging due to backwater from the Little Maumelle Pump Station occurred along all major lines upstream of the pump station. Along each of these three lines, surcharging extended to manholes -10-B013, -7B043 and -6-A018, with a total surcharged length of approximately 21,700 feet. Maximum d/D in the surcharged area ranged from 1 to 12.6. Selected pipes along the middle line showed throttle conditions, indicating that isolated capacity issues may exist along this line in addition to backwater from the pump station. Overflows were predicted at manholes -8-B002, -8-A006, and -8-A012, with a total spill volume of approximately 7.2 MG.

Riverfront

Jimerson Creek

A combination of limited capacity in the Jimerson Creek region and backwater from the surcharged Rebsamen truck sewer contributed to surcharging and overflows in the Jimerson Creek area.

Upstream Region – The upstream region of this area, above manhole 3C139, showed isolated capacity limitations. The longest section of surcharged pipe in this area extended from 3D110 to 3D161, although other, shorter sections of pipe in this area were also surcharged. The total length of surcharged pipe in this region was approximately 3,900 feet. Maximum d/D in the surcharged areas ranged from 1 to 8. Overflows were predicted at several manholes around 3D109, with a total overflow volume of approximately 0.7 MG.

Downstream Region – The downstream region of the Jimerson Creek area, above manhole 2B003 on the Rebsamen trunk sewer, showed significant surcharging due to capacity limitations. This surcharging, however, is likely exacerbated by backwater from the Rebsamen trunk sewer. The total length of surcharged pipe in this region was approximately 6,200 feet, with maximum d/D ranging from 1.3 to 7.4. Overflows were predicted at manholes 1B015, 1B017, 1B018, and 2C005, with a total spill volume of approximately 2.4 MG.

Allsop

Overflows occurred in this area due to capacity limitations and high rates of infiltration. Although overflows in this region were possibly exacerbated by downstream restrictions, this area does have isolated capacity limitations. Surcharging in this region extended from 7E061 to 6D031, a total length of approximately 4,100 feet. Maximum d/D in the surcharged areas ranged from 1.4 to 12. Overflows were predicted at several manholes fairly even intervals between 6D026 and 7E055, with a total spill volume of approximately 2.5 MG.

Country Club

Surcharging and overflows occurred in this area due to a combination of significant backwater from Cantrell PS and isolated capacity restrictions. Surcharging in this region extended from 9F033 to upstream pipes 8D054, 8E051, and 7F109. Overflows occurred at 8E088, 8E046, 8E063, 8E049 and 8F003, with a total spill volume of approximately 0.4 MG.

The upstream area of the Country Club region, between manholes 7E042 and 6E172, also showed some surcharging and overflows. Although the model suggested that this area may

have isolated capacity limitations, further investigation indicated that overflows in this area were caused by backwater from downstream capacity limitations.

Cantrell PS

Cantrell Pump Station was shown to have insufficient capacity during significant wet weather events. During Event E, surcharging due to backwater from the pump station extended along the entire Rebsamen trunk sewer. During DWF Event X, surcharging extended up to 9F022 because the first pump activation level is set higher than the invert of the inflow pipe in order to utilize in-line storage. The current pumping capacity of Cantrell PS is less than the capacity of the downstream pipe.

Other

Rebsamen Trunk – Backwater from Cantrell Pump Station combined with flows from the Maumelle service area caused significant surcharging along this line. Surcharging extended the entire length of this trunk sewer from the Maumelle force main discharge location to Cantrell PS. Additional flow will enter this trunk sewer after upstream overflows in Jimerson Creek and Maumelle are relieved. However, as discussed in **Section 4**, this trunk sewer was not recommended for upgrade, as Cantrell Pump Station upgrades and alternative conveyance options for the flow from Maumelle were determined to be more cost-effective solutions.

Rose Creek – Surcharging and overflows were predicted in the model in certain sections of the Rose Creek area. However, since this area was modeled in a recent study and upgrade schemes were recommended, no further review was performed at this time.

South 60

Rock Creek/Grassy Flats

Backwater from the South 60 interceptor and isolated capacity limitations cause surcharging and overflows from the Rock Creek area to the Grassy Flats area along the parallel lines in the South 60 service area. The total spill volume along the entire length of this line, between manholes 4L012 and -2C002, was predicted to be approximately 10 MG. Additional overflows would likely occur after upstream areas with overflows are upgraded.

Barrow Addition

This region of the South 60 service area shows isolated capacity limitations. Overflows were predicted at manholes 2K077 and 2K143, with a total modeled spill volume of 0.13 MG. Maximum d/D ratios ranged from 1.5 to 10. All but two modeled pipes in this area were surcharged.

Other

Hall High – The model predicted significant overflows and surcharging in the Hall High area. However, the pipes in this region were upgraded after the model was built.

Echo Valley – The model predicted significant overflows and surcharging in the Echo Canyon area. However, the pipes in this region were upgraded after the model was built.

Brodie Creek – The model predicted significant overflows in the Brodie Creek area at manholes 4L015, 4M014, 4N016, 3N055, and 2O025, with a total spill volume of 8.3 MG. The model also predicted reverse flow from pipe 4L013 to 2O024 at certain times during the model simulation. These problems do not indicate isolated capacity deficiencies in this area, but rather are caused by backwater from the South 60 interceptor.

North 60

Coleman Creek

Surcharging in the Coleman Creek area effectively extends from the intersection of the Coleman Creek trunk sewer with the North 60 interceptor up to 5F164.1. Overflows were predicted at several manholes spread throughout this area, with a total spill volume of approximately 9 MG. This flooding and surcharging results from several isolated capacity deficiencies in the Coleman Creek area; these problems are not caused by backwater from the North 60 interceptor.

District 119

Surcharging in District 119 extends from the intersection of the District 119 trunk sewer with the North 60 interceptor up to 6J004.1. Overflows were predicted at manholes 6K060, 6J079, and 6J031, with a total spill volume of 0.15 MG. This flooding and surcharging results from a combination of backwater from the North 60 interceptor and isolated capacity deficiencies in the District 119 area.

Barton

Surcharging predicted at the downstream end of the Barton area is caused by backwater from the North 60 interceptor. In the upstream area of Barton, overflows and surcharging are caused by capacity deficiencies. Surcharging in the upstream region extends from 9J069 to 7I007, the farthest upstream modeled pipe. Overflows were predicted at manholes 7I009, 7I048, 7I050, 8I066, 8I062, and 8I145. The total predicted spill volume was approximately 0.27 MG.

Sub-Basin 30100

For this report, Sub-Basin 30100 was assumed to include the line from 15K013 to 15I018, which drains into the South 60 interceptor, and the line from 16K012 to 15J045 draining into the North 60 interceptor. The model predicted surcharging and overflows on both of these lines due to isolated capacity deficiencies. The total spill volume was approximately 0.69 MG.

Granite Mountain

The model predicted surcharging, but no overflows, in the Granite Mountain area. The maximum d/D ranged from approximately 1.1 to 5.6. This surcharging was caused by capacity limitations, not by backwater from the South 60 interceptor. Overflows due to capacity deficiencies has been reported in this area by LRWU staff.

Fourche

Arch Street PS

Although the Arch Street Pump Station was not modeled, this pump station was represented in the model by a limited discharge orifice. Flow through this orifice was restricted to 35 MGD. Limiting the flow in this area to 35 MGD caused surcharging due to backwater along the Fourche interceptor from the pump station to District 142. The maximum d/D ranged from 1 to 5.

Other

The model predicted surcharging in two other areas in the Fourche region. The area surrounding 7O012 had maximum d/D ratios between 1 and 3.8 with no overflows. Maximum d/D in the area around 2Q016 ranged from 1 to 5.4. The model predicted one relatively small overflow at manhole 2P013, with a spill volume of approximately 3,500 gallons. Although there may be limited capacity in both of these areas, backwater from the Fourche interceptor contributes significantly to the surcharging. If Arch Street PS were upgraded to prevent surcharging in the Fourche interceptor, maximum d/D ratios in these two areas would be reduced to near 1, and no overflows would occur.

District 142

No capacity limitations were identified in District 142.

Twin 60 Interceptors

The model of the original system shows significant surcharging and some flooding in the upper reaches of the North and South 60 interceptors. The maximum d/D ratios reached 4.6 on North 60 and 3.2 on South 60 with a maximum spill volume of 4.6 MG. Spill volumes and surcharge levels would be considerably higher after upstream capacity deficiencies are corrected. Restricted flow through these sections, particularly on North 60, also cause significant backwater in several pipes draining into these Interceptors. As discussed in the sub-section on the South 60 service area, backwater from South 60 causes reverse flow and overflows in the Brodie Creek area.

Although the model of the existing system shows unrestricted flow through the lower reaches of North and South 60, these reaches would be under capacity if upstream overflows and restrictions were relieved, allowing more flow to be conveyed downstream.

Adams Field WWTP

Although the Adams Field WWTP was not modeled, the WWTP was represented as a limited discharge orifice. Flow through this orifice was limited to 72 MGD to simulate maximum plant capacity. In the model of the existing system, this capacity was sufficient to treat incoming flow. However, because the model lost overflow volume due to upstream restrictions, the peak flow at Adams WWTP would be expected to be significantly higher after upstream capacity limitations are corrected.

Section 4

Alternative Improvement Projects

This section summarizes alternative projects that address the capacity issues identified during computer modeling for the LRWU wastewater collection system. The objective of the hydraulic model were to predict flow conditions within Little Rock's trunk sewer system during the design storm event and identify capacity improvements that would eliminate overflows, as described in **Section 3**. The model, which included each of Little Rock's six sewer basins, identified capacity problems in the collection system. From this model output data, potential alternatives were developed to address the capacity problems. These alternatives included paralleling existing deficient sewers, replacement of undersized sewers with larger diameter pipes, upgrading capacity for existing pumping and treatment facilities and providing additional collection system capacity by conveying wet weather related flows to storage facilities. After the capacity upgrade alternatives were developed, each alternative was evaluated against a set of criteria including project feasibility, construction methods, community issues, long term flexibility, and cost.

4.1 BACKGROUND

The Little Rock wastewater collection system consists of six sewer basins: Fourche, North and South 60, Maumelle, District 142 and Riverfront. The wastewater flows from these basins are treated by two existing plants, the Adams Field Wastewater Treatment Plant (WWTP) and the Fourche Creek Wastewater Treatment Plant. The Adams Field WWTP is located east of the Little Rock Airport and treats flows from the Maumelle and Riverfront basins and a portion of the flows from the North 60 and South 60 basins. The Adams Field WWTP has a design flow of 36 MGD with a maximum capacity of 72 MGD. The Fourche Creek WWTP is located farther to the south and at the east-end of Frazier Park Road and treats flows from the District 142 basin and a portion of flow from the North 60 and South 60 basins. The Fourche WWTP has a design flow of 16 MGD with a maximum capacity of 38 MGD. Both plants have permits to discharge into the Arkansas River regulated by the Arkansas Department of Environmental Quality (ADEQ). Studies have been completed that identify proposed capacity upgrades for both WWTPs. Identified improvements include a capacity increase to 94 MGD with equalization basins having a total volume of 25 MG for the Adams Field WWTP, and a capacity increase to 60 MGD for the Fourche Creek WWTP. These proposed capacity upgrades to the existing Adams Field and Fourche Creek WWTPs are detailed in **Appendix E** and **Appendix F**, respectively.

As part the data collection process for capacity system evaluation three existing pump stations were studied: the Cantrell Pump Station located in the Riverfront Basin having a current maximum pumping capacity of 25 MGD; Little Maumelle Pump Station located in the Maumelle Basin with a capacity of 5.6 MGD and; Arch Street Pump Station located in the Fourche Basin with a current capacity of 38 MGD.

At present, all wastewater from the Maumelle Basin is pumped by the Little Maumelle Pump Station into the Adams Field WWTP collection system. The pump station discharges via a 24-inch force main into trunk lines servicing the Riverfront Basin at the upstream connection located north of the Jimerson Creek Area. This flow travels through the Riverfront gravity

trunk lines to the Cantrell Pump Station, located south of the Country Club Area. The Cantrell Pump Station then pumps its flow through a 30-inch force main which discharges into trunk lines that eventually enter Adams Field WWTP. The Maumelle and Riverfront Basins comprise the total flow Adams WWTP receives from the northern part of Little Rock. Wastewater from the southern part of Little Rock enters Adams WWTP via Twin 60-inch Interceptors that run downstream from west to east along the borders for Fourche, North 60 and South 60 Basins. The majority of the flow impacting the Fourche Creek WWTP is diverted to the plant by a gate structure, known as the Interstate Gate Park Control Facility, installed in the Twin 60-inch Interceptors located upstream of the Arch Street Pump Station. The amount of flow diverted by the gate is regulated by operational limits in the Adams Field WWTP. As the flow reaches capacity limits, as explained in **Section 3.1.5**, the gate automatically adjusts to divert a greater amount of flow to the Fourche WWTP via the Arch Street Pump Station and its 42-inch force main. The Fourche WWTP also receives minor flows from tributary areas located upstream of College Pump Station, which discharges into the 42-inch Arch Street force main.

4.2 IDENTIFICATION OF WASTEWATER SYSTEM ALTERNATIVES

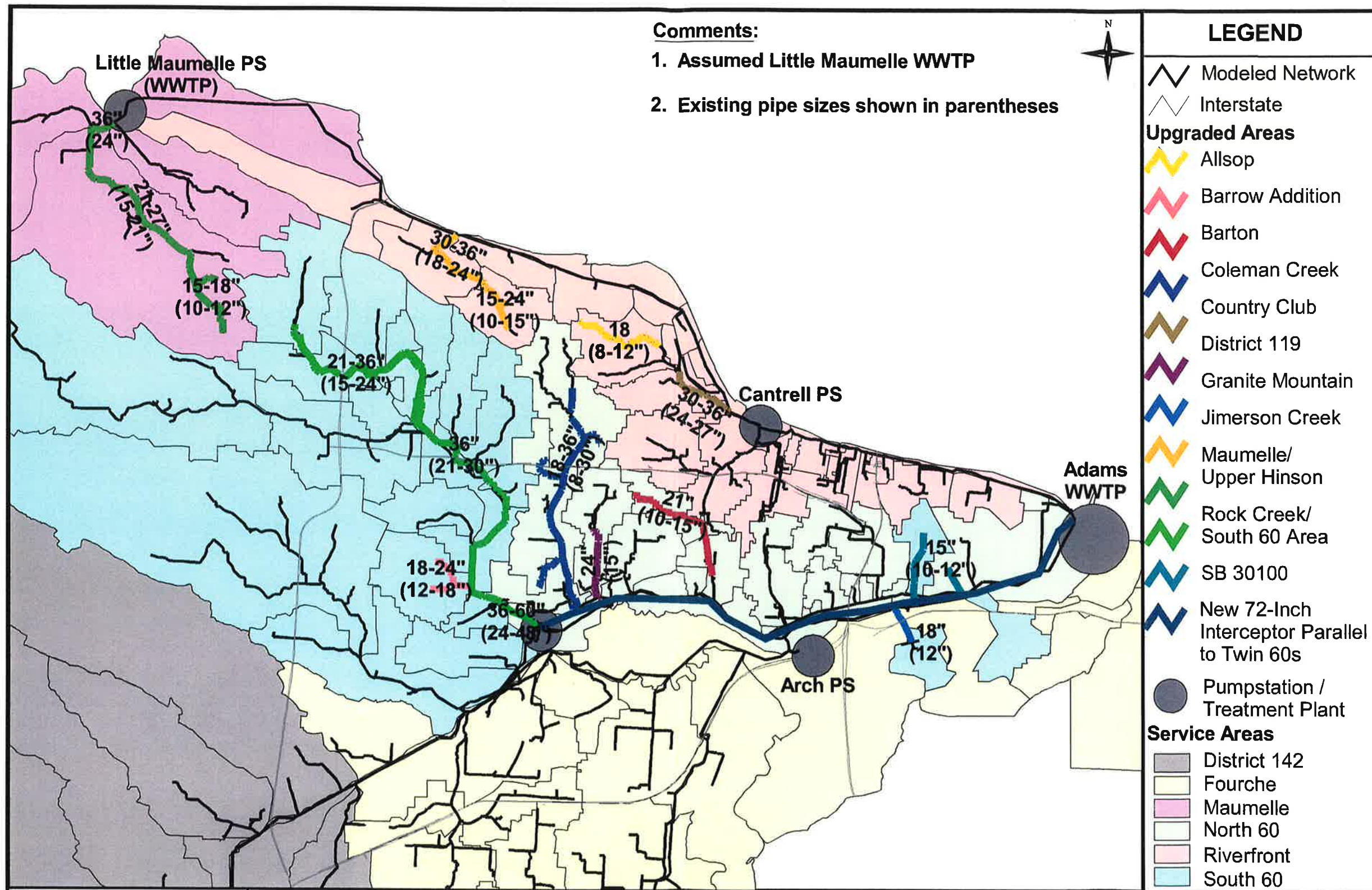
Five alternatives to correct Little Rock wastewater system deficiencies were identified for further review and evaluation. Each alternative represents an overall view of Little Rock's wastewater system and to varying degrees incorporates the following three capacity upgrades:

- increased wastewater conveyance capacity
- wet weather water storage capabilities, and
- additional treatment facilities.

Each of these capacity upgrades is discussed below.

4.2.1 Increased Conveyance Capacity

Alternatives for increased conveyance capacity were modeled into the system by substituting existing lines determined to be undersized with new larger diameter pipes. Additional capacity upgrades were also included for the Cantrell and Arch Street pump stations to accommodate the modeled flows. In sizing new pipes, no reduction in flow was assumed from comprehensive line rehabilitation for I/I abatement (**Section 6** provides a discussion of I/I abatement). Eleven improvement projects to provide additional hydraulic capacity were identified with the hydraulic model described in **Section 3**. **Table 4.1** lists a summary of the trunk system improvement projects with approximate lengths, pipe size and capital costs for each. The sizes, capacities, and costs listed in the table and discussed in the following text were estimated assuming the existing pipe would be replaced with new pipe segments. **Figure 4.1** shows the general location for each of the proposed line replacements. It should be noted that modeled results indicate that these eleven sewer trunk improvements are required in order to eliminate overall system deficiencies. Hence these projects have been identified as common improvements requiring integration into the five overall system alternatives that were evaluated and discussed later in this section.



LITTLE ROCK WASTEWATER UTILITY
FIGURE 4.1 PROPOSED SYSTEM UPGRADES
 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

**Table 4.1
Proposed Trunk Upgrades**

Project Name	Location	Description of Upgrades	Estimated Capital Cost
Allsop	Hawthorne Rd, Van Buren St, Country Club Blvd, Spruce St	7,800 linear feet 18-inch pipe	\$ 1,550,000
Barrow Addition	W 35th St, W 36th St, Potter St, Walker St, Gilman St	5,600 linear feet 18 to 24-inch pipe	\$ 1,220,000
Barton	W 17th St, W 15th St, W 14th St, Maple St	10,600 feet 15 to 21-inch pipe	\$ 2,290,000
Coleman Creek	Coleman Creek, Polk St, W 10th St, W 28th St, Asher Ave	26,200 feet 18 to 36-inch pipe	\$ 8,020,000
Country Club	Cantrell Road, Rebsamen Park Rd	7,500 linear feet 30 to 54-inch pipe	\$ 3,210,000
District 119	W 34th St, Mary St, Boulevard Ave, W 22nd St	5,500 linear feet 24-inch pipe	\$ 1,570,000
Granite Mountain	Springer Blvd	2,900 linear feet 18-inch pipe	\$ 570,000
Jimerson Creek	Near Foxcroft Rd, Tallyho Ln, Youngblood Rd, Pine Valley Rd	11,500 linear feet 15 to 36-inch pipe	\$ 3,060,000
Maumelle (a)	Near Hinson Rd, Jennifer Dr	24,500 linear feet 15 to 36-inch pipe	\$ 6,540,000
Rock Creek/ Grassy Flats (b)	Rooney Parham Rd, Cunningham Lake Rd, Barrow Rd, Serenity Dr, Grassy Flat Creek	57,800 linear feet 21 to 60-inch pipe	\$ 23,650,000
Sub-Basin 301000 Area	Near Security Ave, Bolton St	7,500 linear feet 15 inch pipe	\$ 1,420,000
Total:			\$ 53,100,000
72-inch Parallel Trunk Line			
72-inch Line	From University to Adams Field WWTP	45,800 linear feet 72-inch Trunk	\$ 30,360,000

- (a) An alternative for Maumelle would be to achieve significant inflow and infiltration reduction in the Upper Hinson area.
- (b) An alternative for the Rock Creek/Grassy Flats area would be to replace parallel pipes with a single, larger pipe and reduce inflow and infiltration upstream of the Grassy Flat Creek area.

Each of these trunk system improvements is briefly described below, by service area. The proposed trunk upgrades address the capacity deficiencies described in **Section 3**. Detail lists of the specific pipes recommend for upgrade are included in **Appendix C**. The lists include the pipe reference, length, suggested replacement size, and estimated replacement cost for each pipe segment recommended for upgrade.

Little Maumelle

The recommended capacity improvements in the Little Maumelle service area consist of approximately 4.5 miles of 15 to 36-inch replacement pipe. The existing pipe sizes in this line range from 10 to 24-inches. As seen on **Figure 4.1**, this improvement scheme stretches from the Upper Hinson area to the Little Maumelle Pump Station. Although two separate problem areas, Upper Hinson and the Maumelle Pump Station region, were identified in **Section 3**, overflow relief due to proposed capacity improvements in the Upper Hinson area would result in additional downstream capacity limitations. Therefore, capacity upgrades were necessary along the entire length of this trunk sewer. As indicated in **Table 4.1**, significantly reducing I/I in the Upper Hinson area could reduce the pipe length requiring capacity upgrades.

Flooding and surcharging associated with backwater from the existing Little Maumelle Pump Station along the other trunk sewers was relieved by assuming sufficient future storage and treatment capacity would be provided by the new Maumelle WWTP.

Riverfront

Jimerson Creek

Approximately 2 miles of pipe from 3D066 to 2B002 are recommended for capacity upgrades in this area. The existing 10 to 24-inch pipes are suggested for upgrade to 15 to 36-inch to provide sufficient capacity for peak wet weather flows.

Allsop

This scheme refers to pipes from 7E001.1 to 5D096.1. Approximately 1.5 miles of 8 to 12-inch diameter pipe are recommended for upgrade to 18-inch diameter pipe to relieve capacity-related overflows.

Country Club

This scheme refers to pipes from 10G069.1 to 8E049.1, from Allsop to the Cantrell pump station. Replacement size of 30 to 54 inch diameter is recommended for approximately 1.5 miles of existing 24 to 42-inch diameter pipe. These upgrades provide sufficient capacity for additional flow resulting from upstream capacity upgrades as well as previously identified localized capacity limitations.

South 60

Rock Creek/Grassy Flats

This scheme refers to the parallel trunk sewer stretching from the discharge into the South 60 Interceptor (4L012.1) to the truss pipe region in the northwest area of the South 60 service area. Recommended upgrades provide sufficient capacity for several existing isolated capacity problems and for additional flow resulting from upgrades of the Echo Valley and Hall High areas. For modeling purposes, both parallel pipes were upgraded from 15 to 48-inch diameter pipes to 21 to 60-inch diameter pipes, a total length of approximately 11 miles. Estimated costs listed in **Table 4.1** and in the **Appendix B** are based on replacement of both parallel pipes. However, a single replacement pipe providing equivalent additional capacity would be an alternate, less expensive solution.

Barrow Addition

Overflows resulting from isolated capacity restrictions in this region were relieved in the model with the replacement of existing 12 to 18-inch pipes with new 18 to 24-inch pipes. A total length of approximately 1-mile of pipe is recommended for upgrade.

North 60

Coleman Creek

Outside of Twin 60 interceptor system, Coleman Creek requires the most extensive upgrades in the North 60 service area. Approximately 5 miles of pipe are recommended for upgrade from the existing 8 to 30-inch diameter to 18 to 36-inch diameter pipes.

District 119

Approximately 1 mile of pipe is recommended for upgrade in District 119, stretching from the North 60 interceptor to 6J005.1. Upgrade from the existing 15-inch diameter pipes to 24-inch diameter pipes provides sufficient capacity for peak wet weather flows.

Barton

Approximately 2 miles of pipe in the Barton area require upgrade from 10 to 15-inch diameter pipe to 21-inch diameter. These recommended upgrades stretch from 9K034.1 to 7I007.1.

Sub-Basin 30100

For this report, the Sub-Basin 30100 area was assumed to include the line from 15K013.1 to 15I018.1 draining to the South 60 interceptor and the line from 16K012.1 to 15J045.1 draining to the North 60 interceptor. A total length of approximately 1.5 miles of pipe is recommended for upgrade to 15-inch diameter pipe to relieve modeled overflows.

Granite Mountain

Approximately 0.5 mile of pipe is recommended for upgrade in the Granite Mountain area. A new 18-inch diameter pipe is recommend for replacement of the existing 12-inch pipe. The hydraulic model predicted surcharging but no flooding in this area. However, these pipes are recommended for upgrade because of reported capacity-related overflows.

Twin 60 Interceptors

The existing Twin 60-inch Interceptors that convey the wastewater from the southern part of Little Rock experience line surcharging that contributes to upstream system overflows during severe storm events. To achieve the additional conveyance capacity needed to alleviate these surcharge conditions, a new 72-inch trunk line that parallels the Twin 60s could be installed. Since the remaining four capacity upgrade alternatives require varying volumes of temporary wastewater storage (storm water I/I detention) to control surcharging in the Twin 60s, the required length of proposed 72-inch trunk line would be reduced for two of the evaluated alternatives and completely eliminated for the remaining two.

4.2.2 Wet Weather Storage Capabilities

Several alternatives evaluated included off-line wet weather storage as an option to reduce downstream conveyance capacity requirements that occurs during wet weather events. This technology would utilize partially buried lagoons to store estimated volumes of wet weather flow calculated by the hydraulic model for the design storm event. Wastewater surcharging in the Twin 60s during a storm event would be taken out of the interceptor(s) by means of an in-line overflow weir structure(s). The diverted surcharging flow would then be conveyed through a gravity line(s) to the storage site and pumped into a series of tandemly filled lagoons. Once the wet weather surge occurring in the main trunk system had passed, stored wastewater in the lagoons would be returned to the main system by gravity or pumping (as needed), and the lagoons would be cleaned.

4.2.3 Additional Treatment Plant

Currently, Maumelle Basin wastewater flows to the existing Little Maumelle Pump Station that pumps to the Cantrell Pump Station which pumps its flow into the gravity sewer system that feeds the Adams Field WWTP. Each alternative discussed in this section of the report propose the elimination of the Little Maumelle Pump Station and construction of a new treatment plant in the Maumelle Basin. The engineering and cost report for this new treatment plant is detailed in the “Little Maumelle River Subbasin Sewerage Study” developed by Tanner Engineering Consultants, in affiliation with Carter Burgess. This report, contained in **Appendix G**, describes the recommended process facilities and equalization basins needed for the treatment plant and estimated capital cost for construction.

4.3 ALTERNATIVE IMPROVEMENT PROJECTS

4.3.1 Costs

Estimated costs were developed for each alternative based on conceptual designs for facility improvements. These costs were developed for comparison purposes and are not intended to be detailed design cost estimates. Where possible, standard materials and equipment were assumed for costing purposes. Material and construction costs were based on local prices derived from similar types of construction projects completed in the Little Rock Area; other costs were estimated by using the Engineering News Record (ENR) Construction Cost Index adjusted for year 2001. These costs do not include land right-of-way acquisition, construction management and inspection, legal work and financing fees, and operation and maintenance costs. Capital costs do include 25% for contingencies and engineering. No inflation factors were used in the calculations.

4.3.2 Alternatives

Through a series of workshops with Wastewater Utility staff and a Little Rock Citizen’s Group, five alternatives (A1, B1, B2, C1 and C2) to resolve capacity deficiencies for the entire Little Rock wastewater system were developed. Alternative A1 proposes capacity upgrades to convey the entire collection system flows to the Adams Field, Fourche Creek and

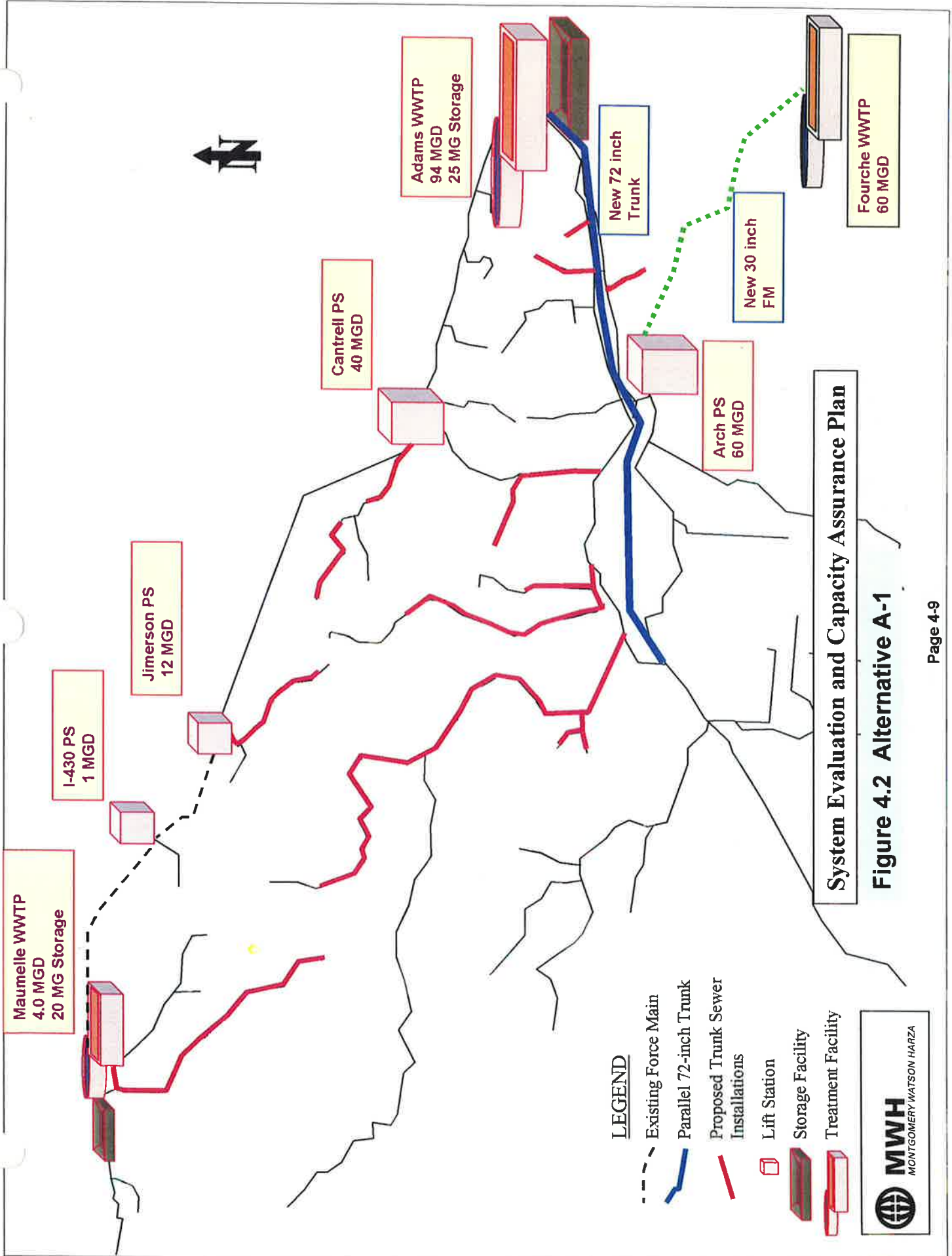
the proposed Maumelle WWTPs. Alternatives B1 and B2 employ large storage facilities located at the upper end of the Twin 60-inch Interceptors in lieu of the proposed parallel 72-inch line. Alternatives C1 and C2 propose a combination of partial storage and partial conveyance through the proposed 72-inch parallel line to eliminate system deficiencies. This section discusses the significant improvement projects associated with each of these alternatives.

Alternative A1: Conveyance and Treatment. This alternative incorporates a philosophy of conveyance of all flows to the wastewater treatment plants. This alternative consists of the following capacity upgrades:

- construct a new treatment plant in the Little Maumelle Basin,
- increase the treatment capacity of the Adams Field WWTP from 72 MGD to 94 MGD,
- increase the treatment capacity of the Fourche Creek WWTP from 38 MGD to 60 MGD,
- increase the pumping capacity of the Arch Street Pump Station from 38 MGD to 60 MGD,
- increase the pumping capacity of the Cantrell Pump Station from 25 MGD to 40 MGD,
- construct a new 12 MGD Jimerson Creek Pump Station,
- construct a new 1.0 MGD I-430 booster pump station, and
- install eleven trunk lines listed in **Table 4.1**.

Under Alternative A1 (**Figure 4.2**), the Maumelle Basin wastewater flows would be treated and discharged by a new plant located within the Maumelle Basin along the Little Maumelle River. This new plant would alleviate the surcharging problems in the existing trunk system along the Riverfront Basin from Maumelle to the Adams WWTP and reduce the capacity problems at the Cantrell Pump Station. Despite the flow reduction provided by the new plant, the model revealed that the existing Riverfront system would continue to surcharge during the design storm event. In response to this model identified deficiency, this alternative included installation of an additional pump station located at the east-end of the Jimerson Creek Area and a booster pump station located near the I-430 connection along the river. The proposed Jimerson Pump Station (12 MGD) would divert wet weather flow from the Jimerson Creek Area from the Riverfront system by conveying its effluent to the new Maumelle WWTP. This proposed station would be configured so that it would connect to the existing 24-inch force main, presently being used by the Maumelle Pump Station, in order to return Jimerson Creek flow to the Maumelle Basin. During dry weather conditions, the wastewater from the Jimerson Pump Station service area would flow through the Riverfront system to the Adams WWTP. Tributary flow into the new I-430 Pump Station (1 MGD) could either be boosted into the existing 24-inch force main or returned to the new Jimerson Pump Station for conveyance based on the conditions described above.

For the southern part of Little Rock, a proposed 72-inch trunk line would parallel the entire length of the existing Twin 60-inch Interceptors providing additional conveyance capacity. Although the proposed Maumelle WWTP would reduce the amount of flow to the Adams Field WWTP, modeled results indicate that the following additional capacity upgrades are required to address the collection system deficiencies:



System Evaluation and Capacity Assurance Plan

Figure 4.2 Alternative A-1



Section 4 – Alternative Improvement Projects

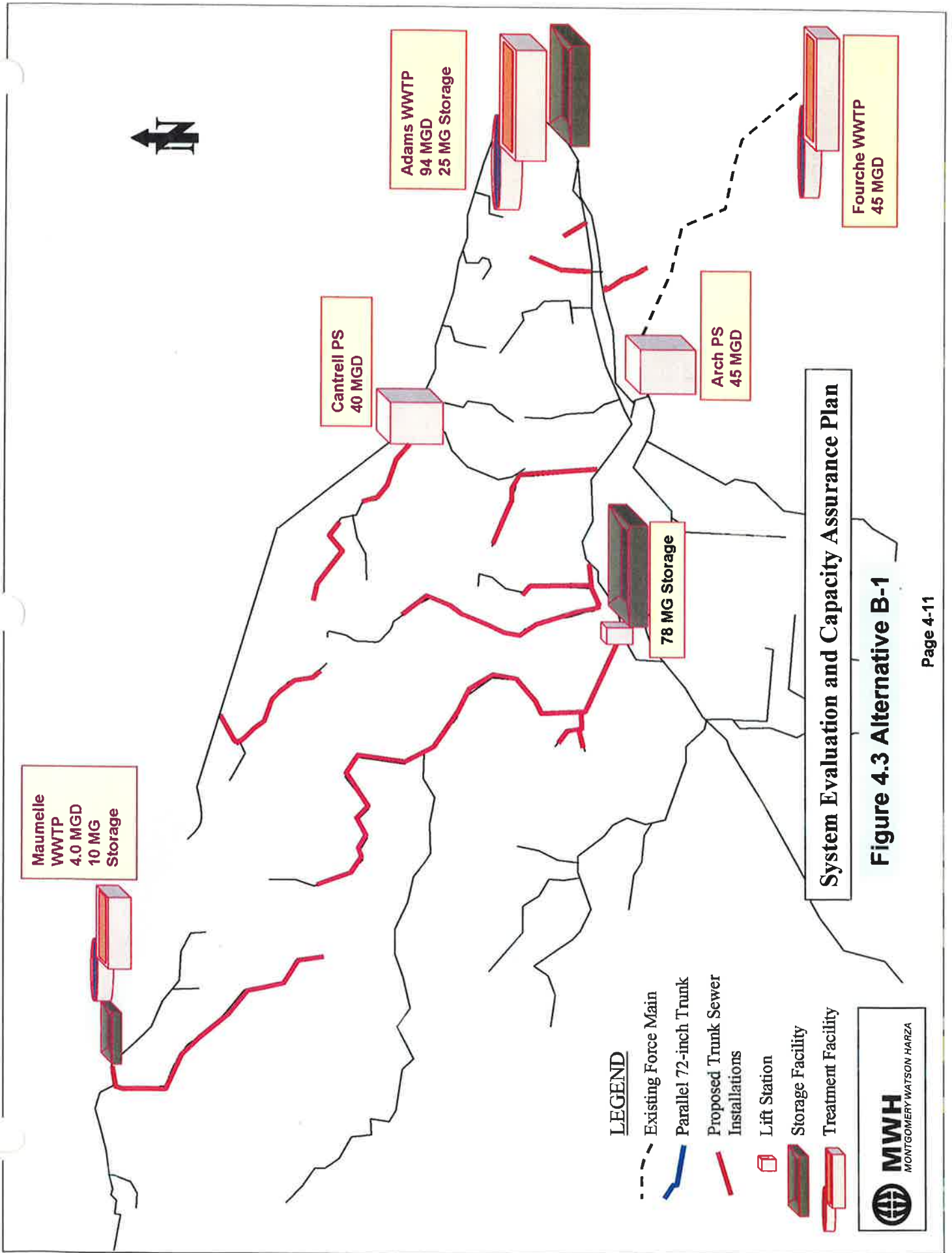
- increase the Adams Field WWTP capacity to 94 MGD with 25 million gallon equalization basin volume(**Appendix E**),
- upgrade the Arch Pump Station to 60 MGD, including 41,500 LF of new 30-inch parallel force main,
- upgrade Fourche Creek WWTP to treat 60 MGD (**Appendix F**)
- install the 72-inch parallel trunk from Adams to the west-end of the Twin 60s, and
- install eleven trunk lines listed in **Table 4.1**.

Estimated capital costs for each of the project improvements in Alternative A1 are listed in **Table 4.2**.

Table 4.2
Estimated Capital Costs for Alternative A1

Type of Project	Description	Costs (\$ million)
Trunk Sewer Upgrades	Trunk Line Improvements (Table 4.1)	\$53.1
	72-Inch Parallel Line (45,772 feet)	\$30.4
Pump Station Improvements	Cantrell (40 MGD)	\$4.6
	Arch (60 MGD), w/41,500 LF of 30-inch FM	\$12.6
	Jimerson (12MGD)	\$2.5
	I-430 (1 MGD)	\$0.4
Treatment Plant Improvements	Maumelle (4 MGD), w/20 MG Basins	\$19.9
	Adams Field (94 MGD), w/25 MG Basins	\$24.0
	Fourche Creek (60 MGD)	\$23.4
Total		\$171.0

Alternative B1: Large Volume Storage with Arch Street Pump Station and Fourche WWTP Improvements. Alternatives B1 and B2 apply a different strategy for resolving modeled system deficiencies for the southern part of Little Rock. These alternatives would utilize large volume storage facilities, described in **Section 4.2.2**, to divert excess storm water from the Twin 60-inch Interceptors rather than increasing conveyance capacity by installing a parallel 72-inch line. Alternative B1 (**Figure 4.3**) proposes the construction of a 78 MG storage facility located at the upper end of the Twin 60s, immediately downstream of the District 119 Area. This scenario provides sufficient flow reduction to the Adams WWTP to eliminate the need for a 72-inch parallel line and for the Jimerson Creek and I-430 Pump Stations. However, additional improvements increasing capacities at the Arch Street Pump Station from 38 to 45 MGD, Cantrell Pump Station from 25 to 40 MGD and Fourche Creek WWTP from 38 to 45 MGD would be required. Additionally, the installation of the eleven trunk lines noted in **Table 4.1** would be required. Estimated capital costs are shown below in **Table 4.3**.



Section 4 – Alternative Improvement Projects

**Table 4.3
Estimated Capital Costs for Alternative B1**

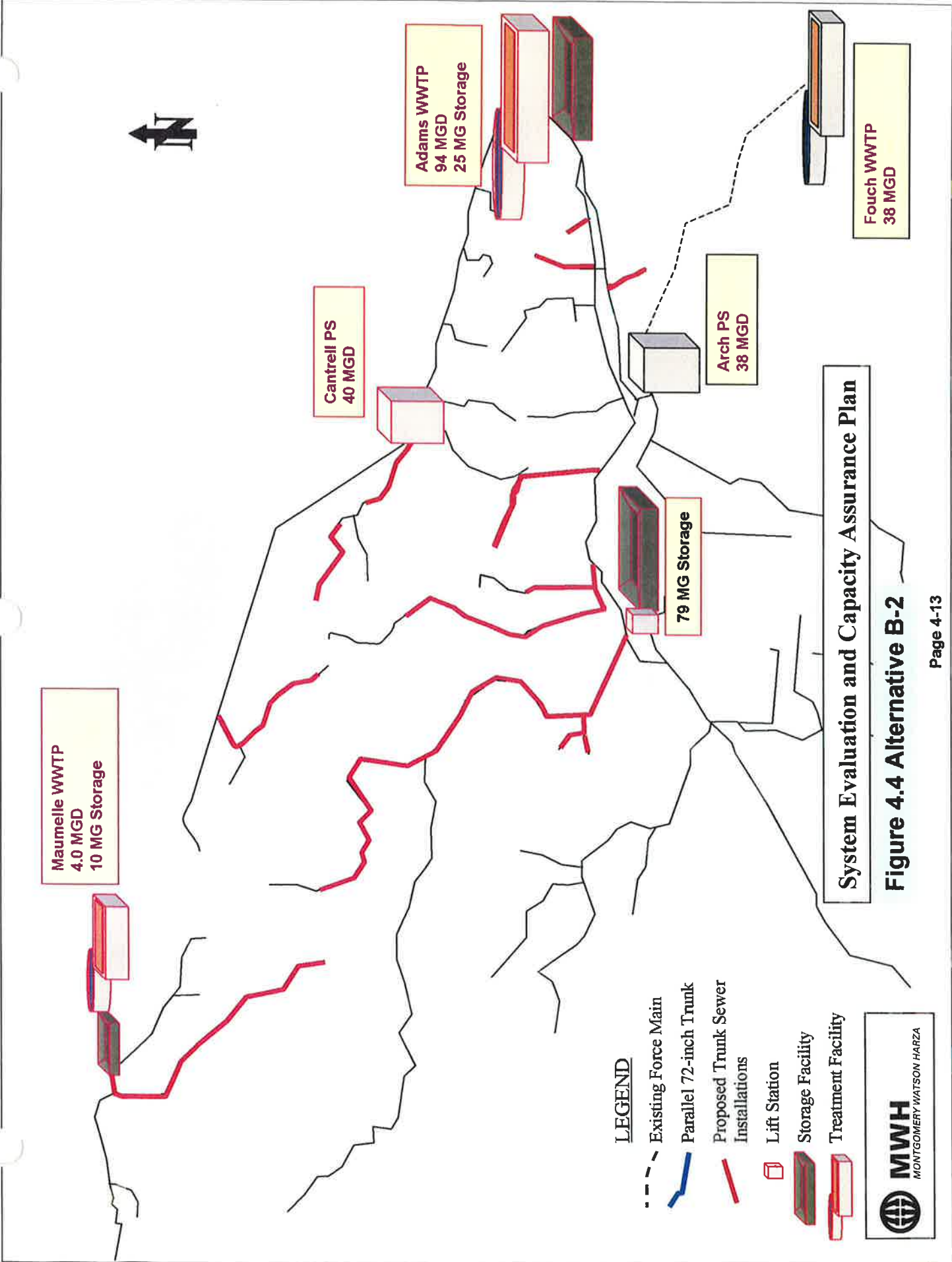
Type of Project	Description	Costs (\$ million)
Trunk Sewer Upgrades	Trunk Line Improvements (Table 4.1)	\$53.1
Pump Station Improvements	Cantrell (40 MGD) Arch (45 MGD)	\$4.6 \$1.8
Treatment Plant Improvements	Maumelle (4 MGD), w/10 MG Basins Adams Field (94 MGD), w/25 MG Basins Fourche Creek (45 MGD)	\$18.9 \$24.0 \$12.0
Storage Facilities	78 MG	\$50.6
Total		\$164.8

Alternative B2: Large Storage. Alternative B2 (Figure 4.4) also utilizes a large volume storage facility at the west-end of the Twin 60s to relieve system deficiencies for the south Little Rock collection system. Modeled results indicated that a 79 MG storage facility would eliminate the need for increased pumping capacity in the Arch Street Station and increased treatment capacity for Fourche WWTP. With exception of the increased storage volume proposed in this Alternative and elimination of the need for capacity improvements to the Arch Street Station and Fourche WWTP, all other improvements noted for Alternative B1 would be required to resolve system deficiencies. Estimated capital costs are listed below in Table 4.4.

**Table 4.4
Estimated Capital Costs for Alternative B2**

Type of Project	Description	Costs (\$ million)
Trunk Sewer Upgrades	Trunk Line Improvements (Table 4.1)	\$53.1
Pump Station Improvements	Cantrell (40 MGD)	\$4.6
Treatment Plant Improvements	Maumelle (4 MGD), w/10 MG Basins Adams Field (94 MGD), w/25 MG Basins	\$18.9 \$24.0
Storage Facilities	79 MG	\$50.6
Total		\$151.3

Alternative C1: Reduced Storage with Conveyance and Improvements to Arch Street Pump Station and Fourche WWTP. The last two Alternatives, C1 and C2, combine storage and conveyance improvements to relieve surcharge conditions for the southern part of the Little Rock collection system. Both Alternatives require construction of the new Maumelle WWTP, increased treatment capacity for the Adams Field WWTP to 94 MGD, increased



System Evaluation and Capacity Assurance Plan

Figure 4.4 Alternative B-2



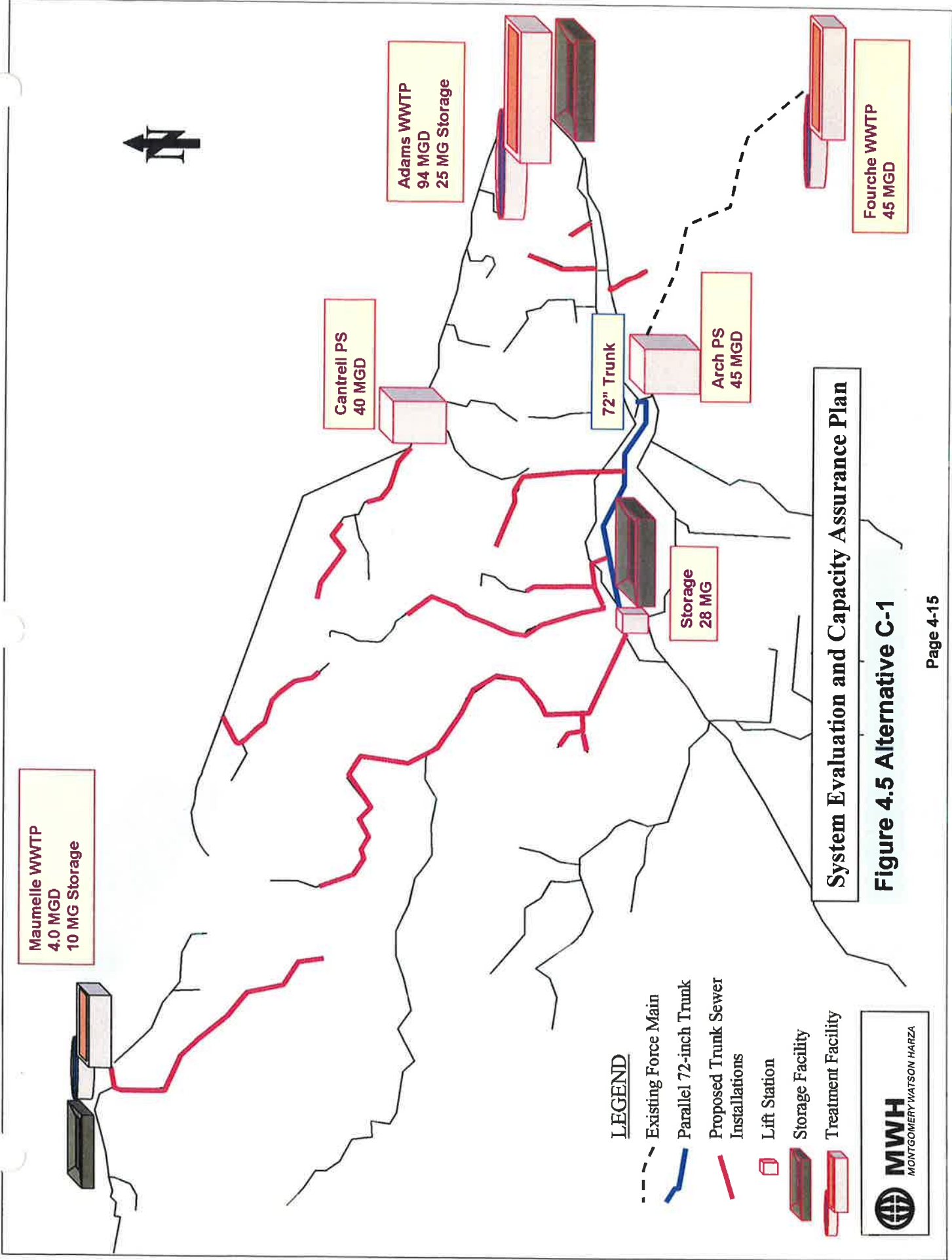
Section 4 – Alternative Improvement Projects

capacity for the Cantrell Pump Station to 40 MGD, and installation of the eleven area trunk lines noted in **Table 4.1**. The significant differences between alternatives for the B and C scenarios are the amount of storage volume diverted from the Twin 60-inch Interceptor system and partial use of the proposed parallel 72-inch trunk line. While Alternatives B1 and B2 utilize large storage volumes to eliminate the need for the 72-inch parallel line, Alternatives C1 and C2 utilize a combination of reduced storage volume and improvements for additional conveyance capacity. Alternative C1 (**Figure 4.5**) proposes installation of a 28 MG storage facility located in the same area as proposed for similar facilities noted in Alternatives B1 and B2. The model shows that with the reduced level of storage, the 72-inch parallel line must be installed from the Arch Street Pump Station upstream to the Rock Creek Trunk line, for added conveyance capacity and surcharge relief. This Alternative also requires increasing Arch Street Station capacity from 38 to 45 MGD and the Fourche WWTP capacity from 38 to 45 MGD. Capital costs for Alternative C1 are listed in **Table 4.5**.

Table 4.5
Estimated Capital Costs for Alternative C1

Type of Project	Description	Costs (\$ million)
Trunk Sewer Upgrades	Trunk Line Improvements (Table 4.1)	\$53.1
	72-Inch Parallel Line (22,900 feet)	\$15.2
Pump Station Improvements	Cantrell (40 MGD)	\$4.6
	Arch (45 MGD)	\$1.8
Treatment Plant Improvements	Maumelle (4 MGD), w / 10 MG Basins	\$18.9
	Adams Field (94 MGD), w / 25 MG Basins	\$24.0
	Fourche (45 MGD)	\$12.0
Storage Facilities	28 MG	\$27.0
Total		\$156.6

Alternative C2: Reduced Storage with Conveyance. Alternative C2 (**Figure 4.6**) proposes an increase in storage volume to 33 MG. Model results indicated that increasing storage still requires the added conveyance capacity provided by the 72-inch parallel, from Arch Street Station upstream to the Rock Creek trunk, in order to relieve surcharge conditions in the Twin 60s. However, the increase in storage volume eliminated the need to increase capacities for the Arch Street Station and Fourche WWTP. All other capacity improvements noted in Alternative C1 are required for this Alternative. Capital costs for Alternative C2 are listed in **Table 4.6**.



Maumelle WWTP
4.0 MGD
10 MG Storage

Adams WWTP
94 MGD
25 MG Storage

Cantrell PS
40 MGD

72" Trunk

Arch PS
45 MGD

Storage
28 MG

Fourche WWTP
45 MGD

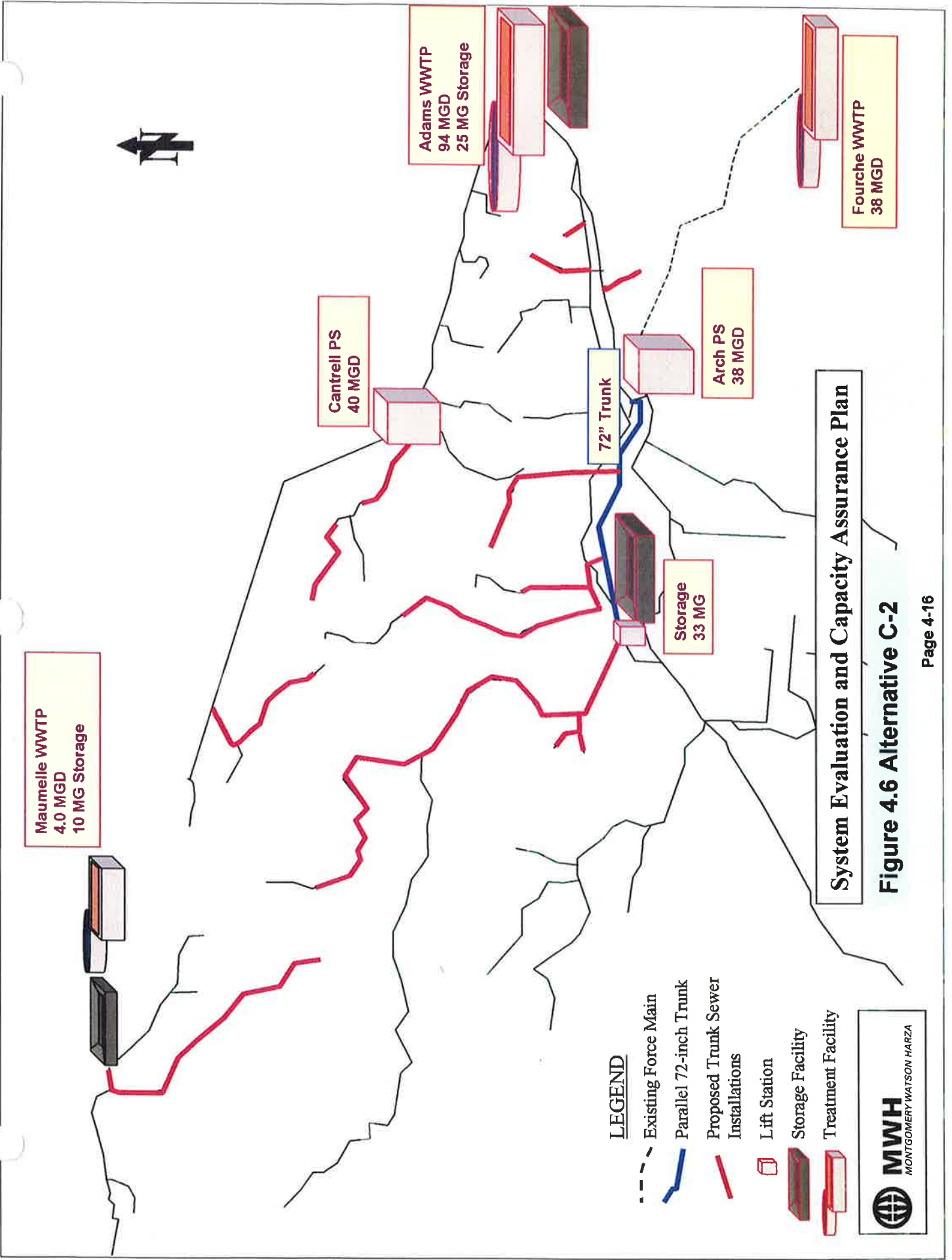
LEGEND

- - - Existing Force Main
- Parallel 72-inch Trunk
- Proposed Trunk Sewer Installations
- ☐ Lift Station
- ▭ Storage Facility
- ▭ Treatment Facility

System Evaluation and Capacity Assurance Plan

Figure 4.5 Alternative C-1





System Evaluation and Capacity Assurance Plan

Figure 4.6 Alternative C-2



**Table 4.6
Capital Costs for Alternative C2**

Type of Project	Description	Cost (\$ million)
Trunk Sewer Upgrades	Trunk Line Improvements (Table 4.1) 72-Inch Parallel Line (22,900 feet)	\$53.1 \$15.2
Pump Station Improvements	Cantrell (40 MGD)	\$4.6
Treatment Plant Improvements	Maumelle (4 MGD), w / 10 MG Basins Adams Field (94 MGD), w / 25 MG Basins	\$18.9 \$24.0
Storage Facilities	33 MG	\$28.9
Total		\$146.9

4.3.3 City and Public Participation

Alternatives for capacity assurance projects were reviewed by representatives from the Wastewater Utility and a Little Rock Citizens Advisory Group (see **Section 7**). The Utility and Citizens Advisory Group (CAG) met in separate groups to review proposed improvements, provide technical input, identify city interests, and incorporate community values. The information provided to the Utility and CAG to evaluate each alternative included the model results, proposed improvement projects, and cost figures developed by MWH and Crist Engineering. This information included the following components:

- descriptions of the wastewater model developed for the study and model results,
- construction technology available for installation and repair of systems,
- permitting and technical requirements for each alternative,
- and preliminary costs.

Evaluation Matrix

The CAG developed an Evaluation Matrix containing the following eight categories for evaluation and consideration of the five alternative scenarios:

1. Environmental Concerns
2. Citizen Awareness - Social Impact Esthetic
3. Financial
4. Technical Concerns
5. Regulatory Concerns
6. Construction Issues
7. Growth Planning
8. Property Value

Each evaluation category was assigned a weight from 0 to 3 to indicate a level of importance the CAG placed on the item as it might impact the community. A maximum weight of 3 indicated that major consideration should be given to the item, while a weight of 1 indicated

minimum consideration. Any category given a weight of 0 indicated a consensus that the category should not be given consideration in the alternative evaluation. For each of the eight categories listed above, additional criteria described in descending levels of feasibility of each improvement's implementation were assigned. As shown in **Table 4.7**, a selected weight of 3 would indicate that an alternative was deemed to have the greatest level of feasibility for installation with the least impact on the community, while a weight of 1 would indicate the lowest level of feasibility with increased adverse affects to the community. Again, a weight of 0 would preclude the assigned criteria from further consideration during the ranking process. Total ranking is based on the selected level of importance for each category multiplied by the criteria ranking for each alternative improvement. Scores ranking each alternative were totaled for all eight categories with the highest total indicating the most preferred alternative by the CAG.

To compare the improvements proposed in the five alternatives and to simplify the ranking process, Little Rock's wastewater system was separated into a north and a south collection system. The north area included improvements for the Little Maumelle and Riverfront Basins. The south area consisted of improvements located in the North and South 60, Fourche, and District 142 Basins. Additionally, the matrix was subdivided by critical elements for alternative improvements related to total storage, partial storage and conveyance, and total conveyance scenarios for the south area, and conveyance versus constructing the new Maumelle WWTP in the north. The summary of the Citizens Advisory Group ranking is shown in **Table 4.8**.

It should be noted that although the Citizens Advisory Group developed the Evaluation Matrix the Utility concurred with the general approach and the content for each item discussed. While conducting their evaluation, the Utility incorporated additional considerations such as scheduling, budgeting for construction, and implementation of the selected improvements.

4.3.4 Selected Alternative

Based on the selection criteria and evaluation methodology presented above, the preferred capacity upgrade alternative for south Little Rock was to utilize total conveyance, i.e., installation of the 72-inch gravity trunk line, pump station and WWTP capacity upgrades rather than wet weather storage. Matrix categories related to permitting issues, site aesthetics, environmental and odor concerns were the major factors that depressed the rankings for the storage alternatives.

The Citizens Advisory Group also expressed its concerns over the construction of a new Maumelle WWTP in north Little Rock. Environmental and community concerns were identified as the pertinent issues. Despite the CAG's slightly higher ranking (24 versus 23) favoring an option to convey all flow from the Maumelle and Riverfront Basins to the Adams WWTP, the Utility chose an alternative that included construction of the new treatment plant. The compelling factor was the cost differential of \$33.2 million between the two alternatives, required to convey wastewater from Maumelle through the Riverfront Basin and onto the Adams WWTP. Another disadvantage of the CAG conveyance option was that no additional space is available to expand facilities to increase treatment capacities at the Adams Field

**Table 4.7
Evaluation Criteria**

	Category	3	2	1	0
1	Environmental Concerns	No sight or odor problems. Maintains water quality	Potential sight or odor problems during extreme rain events. Maintains water quality.	Potential sight or odor problems during seasonal rains. Maintains water quality.	Year round sight and odor problems, potential for water quality problems.
2	Citizen Awareness – Social Impact Aesthetic	Operations do not effect neighborhoods or quality of life	Minimal disruptions due to operations during extreme rain events.	Moderate disruptions seasonally.	Moderate year round disruptions.
3	Financial	Lowest effect on rates	Moderate impact on rates	Major impact on rates	Extreme impact on rates
4	Technical / Ongoing Concerns	Compatible with existing system, capable of being expanded cost effectively, and timely. Meets long-term need. Minimal maintenance and operational costs, only functions during periods of high flow.	Minimal system disruption, moderate system changes with medium costs, longer period construction, multiple phasing. Moderate operational costs and minimal maintenance.	Moderate system changes. High initial costs, multiple phases for long term needs. High operation and maintenance costs. Repairs difficult. Operations continual for low and high flow conditions.	Technically difficult to implement, major changes to existing system. High initial costs, extremely long lead times for equipment. Highest operation maintenance costs. Outside contractors needed for routine maintenance.
5	Regulatory Concerns	Meets regulatory agency requirements with no unusual features.	Meets regulatory agency requirements. Permits required.	Regulatory education required, Clean Water Act amendments necessary. Meets intent of CWA.	Agency approvals will be extremely difficult to obtain
6	Construction Issues	Construction does not disrupt neighborhoods.	Minimal disruption due to construction.	Major disruptions due to construction.	Major long term construction disruptions.
7	Growth Planning	Anticipates municipal growth and addresses those issues	Considers municipal growth with minimal impact.	Only slightly realizes municipal growth and its impact.	Does not consider municipal growth
8	Property Value	No effect on property values	Minimal effect on property values	Moderate effect on property values	Major effect on property values.

**Table 4.8
Evaluation Matrix**

Evaluation Category	Wt	Options for South Little Rock (North 60, South 60, District 142, & Fourche)			Options for North Little Rock (Maumelle and Riverfront)	
		Full Storage Option #1	Partial Storage Option #2	72" Line Conveyance Option #3	New WWTP Option #4	Conveyance Option #5
Environmental Concerns	3 ¹	1 ² / 3 ³	1/3	3/9	1/3	3/9
Social Impact Aesthetic	3	2/6	2/6	3/9	0/0	2/6
Financial	3	3/9	2/6	1/3	3/9	0/0
Technical /Ongoing Concerns	2	1/2	1/2	3/6	1/2	3/6
Regulatory Concerns	1	1/1	2/2	2/2	2/2	2/1
Construction Issues	1	2/2	2/2	0/0	1/1	0/0
Growth Planning	2	0/0	0/0	1/2	3/6	1/2
Property Value	0	0/0	0	0	0	0
Total Points		23 ⁴	21	31	23	24
Ranking		2	3	1		Preference Unknown

Note:

1. Represents the level of importance CAG gave to each category.
2. Represents weight for criteria (0-3) for each category in Table 4.7, as assigned by the CAG when evaluating collection system options.
3. Ranking score for each category calculated by multiplying weight given for importance by the assigned criteria weight.
4. Total calculated ranking for each option.

Section 4 – Alternative Improvement Projects

WWTP. The facility is land locked and improvements identified by the previous study completed for the plant (**Appendix E**), increasing its capacity to 94 MGD, would essentially take up all remaining space for the site. Hence, delivering wastewater from Maumelle to Adams WWTP as part of a total conveyance option would exceed the limits of 94 MGD treatment and 25 MG of equalization/storage capacity. Based on the criteria described above, Alternative A1 was selected as the preferred alternative for meeting Little Rock's overall wastewater system capacity needs.

Section 5

Recommended Improvement Plan

This section presents the implementation schedule for the recommended improvements and additional recommendations for capacity assurance for the LRWU wastewater system. The improvement plan includes estimated capital costs for a 15-year implementation schedule.

5.1 PROJECT COSTS

Among the LRWU wastewater collection system capacity improvement alternatives presented in **Section 4**, Alternative A1 was selected for implementation. Preliminary construction cost estimates were prepared for each capacity improvement project described under Alternative A1. Pipeline project costs based on conceptual designs were developed from construction projects for similar installations recently completed in the Little Rock Area. Costs for pump station upgrades and/or replacement were obtained from the Engineering News Record (ENR) "Construction Cost Index" for 1994 Los Angeles, California, for similar projects. Applying a conversion factor of 0.98 the costs, pump station estimates were adjusted to comply with a national average based on October 2001 dollars. After determining the base construction cost for each project, an allowance of 25% for contingencies and engineering was added to develop the capital cost estimates. The estimated capital costs for treatment plant improvements were derived from studies completed for the proposed Maumelle WWTP (**Appendix G**), the Adams Field WWTP (**Appendix E**), and the Fourche WWTP (**Appendix F**). All costs should be considered budgetary planning level estimates with an estimated accuracy of -30 to +50 percent. The estimated costs do not account for inflation between the time of estimate development and the anticipated construction. The pipeline installation estimates do not include costs for land right-of-way acquisition, construction management, inspection, legal work, financing fees, operation and maintenance costs. These costs should be reviewed and revised based on the detailed information developed during design.

5.2 PROJECT PRIORITIZATION AND SCHEDULE

The proposed schedule for construction of the recommended capacity improvement projects is based on a 15-year implementation plan. The capacity upgrade projects were prioritized and scheduled based on the severity of existing capacity deficiencies, the extent of potential surcharge during the design storm condition, planning flexibility, and funding constraints.

Projects proposed to address existing trunk line capacity deficiencies include the eleven trunk sewer line replacements (the Alsop, Barrow Addition, Barton, Coleman Creek, Country Club, District 119, Granite Mountain, Sub-Basin 30100, Jimerson Creek, Maumelle and Rock Creek trunk lines), and the installation of the parallel 72-inch trunk line extending from Adams WWTP upstream to the west end of the existing Twin 60s. The pump station capacity improvement projects include upgrades for the Cantrell Pump Station and Arch Street Pump Station with its new parallel force main, and new pump stations for the Jimerson Creek and I-430 areas. Treatment capacity upgrades include construction of the new Maumelle WWTP, and expansions of the Adams Field and the Fourche Creek WWTPs.

Trunk Line Improvements. With exception of the new trunk lines required for the Jimerson Creek, Rock Creek and Coleman Creek Areas, new trunk line installations listed in **Table 4.1** are

scheduled to occur between years 2008 and 2012. Reoccurring historical overflows verified by the hydraulic model results indicate a significant need to provide additional sewer capacity for these areas. Jimerson Creek and Coleman Creek trunks are scheduled to occur between 2003 and 2006. Rock Creek improvements are scheduled to occur between years 2008 and 2017 with the 72-inch parallel trunk scheduled between 2008 and 2016. This sequencing prioritizes the most critical trunk replacement projects. It also provides the Utility the option to perform trunk rehabilitation and system monitoring in order to minimize the level of needed future trunk replacement. **Table 5.1** indicates the schedule for installation of all gravity trunk sewer improvements.

**Table 5.1
Schedule for Trunk Line Improvements**

Project Name	Begin Planning/Design	Complete Construction
Alsop	2011	2012
Barrow Addition	2011	2012
Barton	2010	2012
Coleman Creek	2003	2006
Country Club	2010	2012
District 119	2011	2012
Granite Mountain	2012	2012
Sub-Basin 30100	2011	2012
Jimerson Creek	2003	2005
Maumelle	2008	2011
Rock Creek	2008	2017
Upper 72-inch Parallel Line (a)	2008	2011
Lower 72-inch Parallel Line (b)	2013	2016

- (a) Upper reach for the 72-inch line runs from Arch Street PS upstream to the west-end of the existing Twin 60-inch Interceptors.
- (b) Lower reach for the 72-inch line runs from the Adams WWTP upstream to Arch Street Pump Station.

Pump Station Improvements. With exception of the Arch Street facility, improvements for upgrading and installing new pump stations are scheduled to occur between years 2008 and 2015. The capacity upgrades to the Arch Street Pump Station have been prioritized since the facility represents the major conveyance component for the Fourche Creek WWTP system. The station currently experiences operational problems limiting the capacity of Fourche’s collection system. Although the facility’s existing 42-inch force main was recently repaired to correct problems related to entrapped air in the line, the station itself is in need of additional internal mechanical upgrades. These upgrades are scheduled to occur during years 2005 to 2007. Although the Cantrell Pump Station experiences operational problems, needed improvements for this facility received a lower priority and were scheduled for installation from years 2008 to 2010. Also, improvements to the Arch Street and Cantrell Pump Stations were not scheduled concurrently because of financial constraints. The construction of the Jimerson and I-430

facilities was also scheduled from 2008 to 2010. **Table 5.2** summarizes scheduled improvements for all pump stations and their associated force mains. It should be noted that the 30-inch parallel force main intended to support capacity improvements for Arch Street has been scheduled for installation much later than the station improvements, from years 2015 to 2016. Although the new parallel force main is required for the ultimate conveyance capacity, the existing 42-inch force main can support a maximum flow of approximately 45 MGD. Since the planned Arch Street Pump Station improvements add 7 MGD of additional conveyance capacity prior to the force main installation, it was believe that scheduling the new force main installation could be delayed.

Table 5.2
Schedule for Pump Station Improvements

Project Name	Begin Planning/Design	Complete Construction
Arch Street PS (60 MGD)	2005	2007
30-inch Force Main (for Arch)	2015	2016
Cantrell PS (40 MGD)	2008	2010
Jimerson Creek PS (12 MGD)	2008	2009
24-inch Force Main (for Jimerson)	2008	2009
I-430 PS (1 MGD)	2008	2009

Treatment Plant Improvements. Prior to the development of the hydraulic model, engineering studies were completed that identify proposed capacity upgrades for both the Adams Field and the Fourche Creek WWTPs. These capacity upgrades include a capacity increase from 72 MGD to 94 MGD for the Adams Field WWTP and a capacity increase from 38 MGD to 60 MGD for the Fourche WWTP. The Adams study also includes equalization basins having a total volume of 25 MG. The proposed capacity upgrades are provided in greater detailed in **Appendix E** and **Appendix F**.

At present, during storm events, the Adams Field WWTP becomes overloaded due to high flow conditions. Since the automatic gate upstream of the Arch Pump Station is regulated by the amount of flow occurring at Adams Field WWTP, the line surcharge conditions in the Twin 60s and upstream tributary areas are a function of the capacity limitations experienced by the Adams Field Plant. Due to permitting issues and the need for immediate response to system overflows, scheduling for the existing plant improvements was slated to start in 2003 with completion in 2005. Small upgrades to the Fourche Creek WWTP are scheduled to occur 2004 with the bulk of the capacity improvements scheduled between 2014 and 2017. In order to relieve line surcharges along the Riverfront Basin and to help further relieve capacity constraints at the Adams WWTP, the Maumelle WWTP is schedule to start the engineering and permitting process for the new facilities in 2003 with installation completed by 2006. **Table 5.3** presents the anticipated schedule for implementation of the treatment facilities.

**Table 5.3
Schedule for Treatment Plant Improvements**

Project Name	Begin Planning/Design	Complete Construction
Fourche WWTP (60 MGD)	2004 / 2014	2005 / 2017
Adams Field WWTP (94 MGD) (a)	2003	2005
Maumelle WWTP (b)	2003	2006

(a) Adams WWTP improvements include installation of 25 MG of equalization basins.

(b) Maumelle WWTP improvements include installation of 30 MG of equalization basins.

The implementation schedule for capacity related improvements was developed during a series of program workshops with LRWU staff. Projects were prioritized based on response to critical conditions existing in the collection system, program flexibility, and coordination with development of the Utility’s Wastewater Capital Improvements Plan (CIP). The CIP also includes continuing line rehabilitation work, facility operation and maintenance costs, and miscellaneous wastewater installations. Capacity improvements outlined in the SECAP Report are not intended to serve as a substitute for the Utility’s comprehensive CIP. The complete schedule for capacity improvements for this SECAP are shown in **Table 5.4**. Note that the schedule has been divided into three 5-year phases. This phasing was done to provide greater flexibility for assigning costs to interim milestone projects, assessment of schedule progress, and ongoing evaluation for planned improvements. **Figure 5.1** provides a graphical representation of cash flow for improvements and **Figure 5.2** shows the annual expenditures by type of construction.

5.3 IMPLEMENTATION RECOMMENDATIONS

The Utility should begin implementation of the capacity improvement program recommended in this System Evaluation and Capacity Assurance Plan, in accordance with the schedule shown above. The following items should be considered during project scheduling and design, and in future updates of the capacity plan.

- The alignments and sizes of all recommended projects should be verified with detailed predesign analyses, including topographic surveys, geotechnical investigations, utility research, and constructability reviews.
- Evaluation for paralleling or replacing existing sewers should consider the physical condition and remaining useful life of the existing pipelines; the availability of pipeline corridors for new sewer construction; and operation and maintenance concerns.

Table 5.4
System Evaluation and Capacity Assurance Plan
15-Year Implementation Schedule and Costs

Project	Total Project Cost (Million)	Estimated Capital Costs (\$ Millions)														
		1st 5-years					2nd 5-years					3rd 5-years				
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Allsop	1.55			REHAB						0.77	0.78					
Barrow Add.	1.22			REHAB						0.61	0.61					
Barton	2.29			REHAB					0.76	0.76	0.77					
Coleman Creek	8.01	0.75	1.50	4.26	1.50					1.00	1.21					
Country Club	3.21			REHAB						0.78	0.79					
District 119	1.57			REHAB						0.78	0.57					
Granite Mt	0.57			REHAB						0.71	0.71					
SB 30100	1.42	0.50	1.50	1.06												
Jimerson Creek	3.06			REHAB			1.63	1.63	1.64	1.64		2.40	2.40	2.40	2.40	2.04
Maumelle	6.54			REHAB			2.40	2.40	2.40	2.40		2.40	2.40	2.40	2.40	2.04
Rock Creek	23.64	1.25	3.00	5.32	1.50	0.00	4.03	4.03	5.80	8.67	7.84	2.40	2.40	2.40	2.40	2.04
Subtotals:	53.08								Upper					Lower		
72" Trunk	30.40						1.20	6.00	6.00	2.00		1.20	6.00	6.00	2.00	
30-inch Parallel Force Main for Arch Street PS	9.72													1.72	8.00	
Subtotals:	40.12	0.00	0.00	0.00	0.00	0.00	1.20	6.00	6.00	2.00	0.00	1.20	6.00	7.72	10.00	0.00
Adam Field WWTP (94 MGD + 25 MG Storage)	24.00	6.00	12.00	6.00												
Maumelle WWTP (w/ 20 MG Storage)	19.90	0.50	3.00	9.00	7.40											
Fourche WWTP (60 MGD)	23.42		2.50										1.50	7.02	8.50	3.90
40 MGD Cantrell L.S.	4.60															
60 MGD Arch L.S.	2.92			0.50	1.62	0.80										
12 MGD Jimerson L.S.	2.54						1.00	1.54								
1 MGD I-430 L.S.	0.40						0.20	0.20								
Subtotals:	77.78	6.50	17.50	15.50	9.02	0.80	2.70	3.34	1.50	0.00	0.00	0.00	1.50	7.02	8.50	3.90
Yearly Total (Millions)	170.98	7.75	20.50	20.82	10.52	0.80	7.93	13.37	13.30	10.67	7.84	3.60	9.90	17.14	20.90	5.94

Figure 5.1
Annual Expenditures for Capacity Assurance Plan Improvements

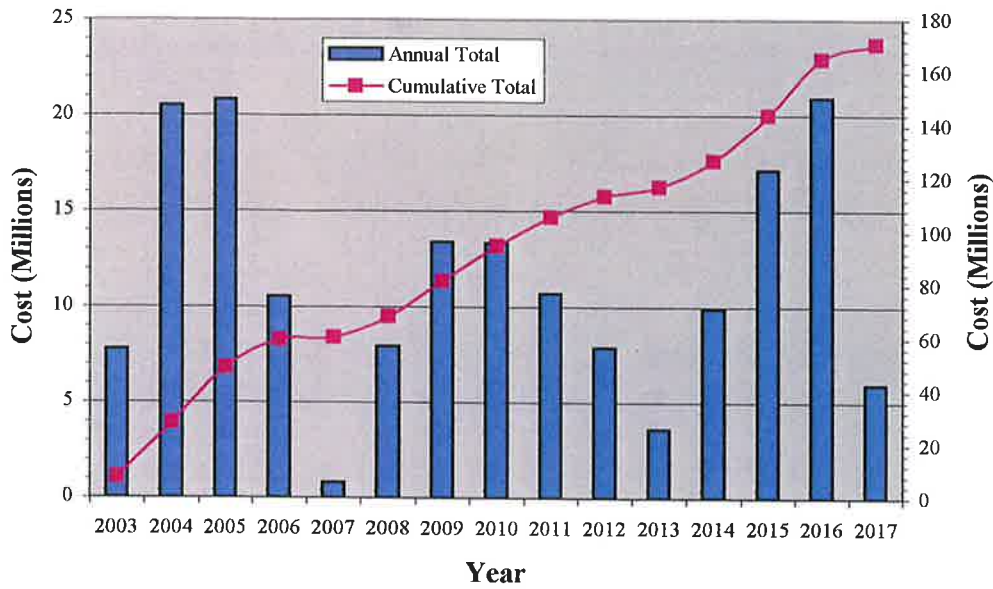
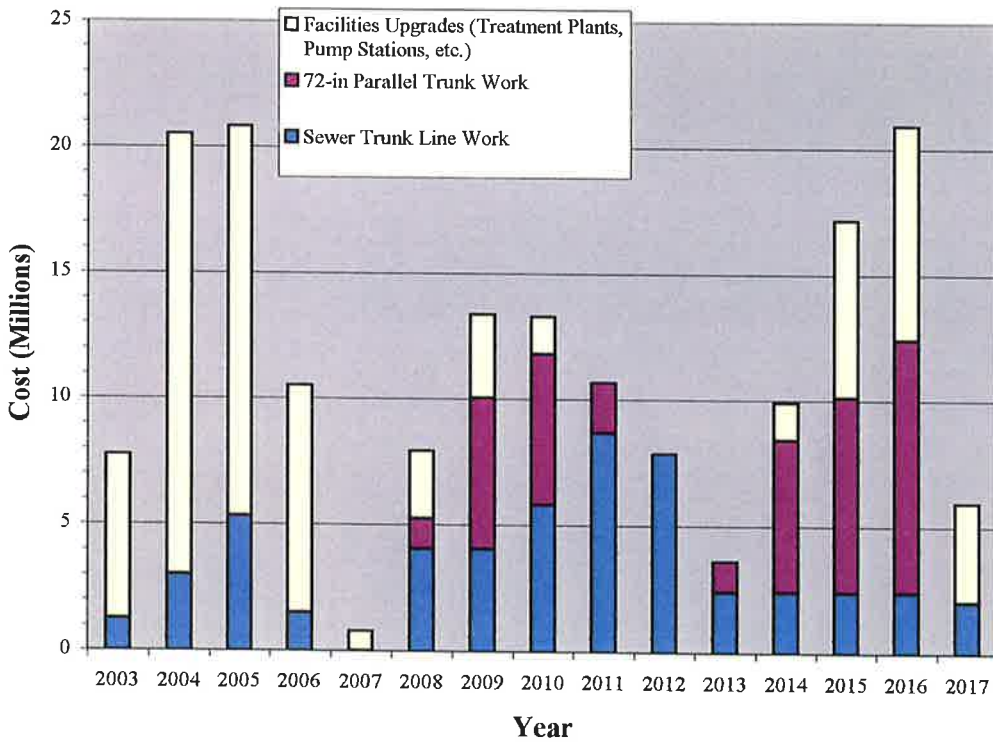


Figure 5.2
Annual Expenditures by Type of Construction



Section 5 – Recommended Improvement Plan

- The hydraulic model has been developed to assist the Utility in performing capacity analyses and updating their assurance plan in the future. The model should be kept up-to-date with any changes to existing sewer connections, sewer system facilities, or other collection system improvements.
- The Utility should continue to monitor flow at key locations in the sewer system, particularly in areas where comprehensive line rehabilitation is scheduled to occur. Flow levels during large storm events should be compared to the peak flows simulated by the hydraulic model to verify the modeling predictions for the design storm.
- After completion of line rehabilitation, flows should be re-monitored to verify that reductions in I/I have been achieved for local systems. The hydraulic model should be updated accordingly upon completion of that work and credit for downsizing or elimination of additional capacity related improvements should be documented.

This System Evaluation and Capacity Assurance Plan report is intended to be a working document to be refined and updated as additional data and new planning information becomes available. The Capacity Plan should be updated whenever changes are made to the sewer collection and treatment system.

Section 6

Infiltration / Inflow Abatement

This section provides discussion and recommendations for implementing a correction and maintenance program to address problems related to system infiltration and inflow (I/I). The discussion provided in this section is intended to assist the Utility with identifying sub-basin areas that contribute excessive I/I into the sewer system and provide recommendations for implementing a comprehensive plan that employs appropriate repair technologies, continued system flow monitoring, and modeling updates.

6.1 INFILTRATION/INFLOW REDUCTION PLAN

This section summarizes recommendations to The Utility with respect to infiltration/inflow (I/I) reduction and an ongoing sewer system renewal and replacement effort. The I/I abatement plan is an integrated approach that addresses I/I problems with an ongoing sewer replacement and repair effort. The plan links ongoing emergency repair and sewer renewal programs with a focused effort on removing extraneous I/I from the system. The plan includes provisions that are consistent with the emerging EPA SSO policy, including capacity, management, operations and maintenance (cMOM) requirements.

I/I reduction is system specific and rehabilitation is far less effective in removing I/I than most, including regulators expect. Factors such as pipe and manhole materials, system age, number of pipe joints, etc. impact the ability to remove I/I. The approach to emergency, preventive, and corrective maintenance also impact the level of I/I reduction. Peak flows depend on a number of variables that interact in a complex way. In addition, the accuracy of monitoring peak flows is limited, which impacts our ability to effectively quantify I/I flows and reductions from rehabilitation.

The previous section (**Section 5**) of this report presents the recommended system capacity improvement plan for the LRWU wastewater collection system, based on the hydraulic capacity required to handle a design wet weather event. In identifying wastewater system alternatives, no credit was given for potential I/I reduction obtained through the proposed I/I abatement program outlined in this section. However, I/I abatement is recommended as a cornerstone of every sewer system improvement program. The CAG recommended that the Utility address I/I reduction as part of the overall system improvement program.

The flow targeted I/I reduction program would prioritize sewer rehabilitation and replacement based on the areas with the highest I/I contributions and the ability to impact the capacity improvement plan by reducing or proposed trunk sewer replacements. Targeted areas would be scheduled for comprehensive closed-circuit television (CCTV) inspection as warranted by the results of the hydraulic model and field observations. The program should also begin to address the complex issue of I/I abatement on sewer laterals located on private property. The proposed targeted I/I reduction and sewer rehabilitation/replacement plan should reduce I/I and peak wet weather flows (WWF) in the collection system. However, final credit for I/I reductions would not be taken until post rehabilitation flow monitoring confirms the volume reduction.

6.2 SOURCES OF INFILTRATION AND INFLOW

The flow monitoring and hydraulic analyses conducted for this SECAP Report indicated that the collection system experiences inflow and infiltration (I/I) of extraneous groundwater and storm water, into the sewer system. Inflow results in a rapid increased flow response to rainfall and includes storm water that enters the sanitary sewer system from:

- roof leaders,
- cellar drains,
- yard drains,
- area drains,
- drains from springs and swampy areas,
- manhole covers,
- cross connections between storm sewers and sanitary sewers.

Infiltration, on the other hand, is reflected by a slower, sustained response to rainfall and high groundwater conditions. Infiltration generally enters the sewer system through the ground via such means as defective pipes, pipe joints, connections, or manholes. The magnitude of I/I flows varies with the age, location and pipe material across the entire City. Some areas of the Little Rock system do have significant I/I as indicated by the flow monitoring data. The flow monitoring analysis produced the following system I/I characteristics:

- Delayed infiltration
- Increased infiltration during rainfall event
- Decreasing infiltration after rainfall event
- Rapid flow response is delayed following the initial rainfall
- Groundwater infiltration (GWI) increases during a succession of rainfall events
- Low rapid response flows indicating few direct connections
- Large wet-weather flow variation between flow meters

The above characteristics suggest that the I/I in the Little Rock system is predominantly steady, rainfall-induced infiltration as opposed to a rapid inflow response associated with direct connection to the City's storm water conveyance system

The Utility's ongoing sewer inspection program, which includes closed-circuit television (CCTV) has shown typical sewer defects such as offset joints, minor cracks, extensive corrosion, major structural failures, sags, etc. One specific area of concern is the extensive use of ABS truss pipe in the upper Rock Creek and Maumelle areas. There are numerous structural failures associated with the truss pipe in these areas resulting in high I/I potential.

6.3 CHALLENGE OF EFFECTIVE I/I ABATEMENT

Large expenditures for the correction of I/I sometimes produce only a small reduction in infiltration. The EPA recognized that the correction of excessive infiltration is likely to be unsuccessful in many circumstances.

While the technology and procedures associated with measuring and removing I/I continue to improve, the success of specific I/I removal projects depends on an extremely complex set of variables. This indicates that I/I removal is only one component of a collection system management program and that such a program needs to accommodate the variability in the success of I/I removal. Experience with I/I work has highlighted the need to address the following concerns during I/I removal efforts:

- The success of I/I removal efforts can be significantly limited if these efforts do not address private laterals. Many municipalities have hesitated to address private laterals due to legal, institutional, and technical problems.
- Peak flows must be correctly characterized. Infiltration may be incorrectly identified as inflow when RDI/I (Rainfall Derived Infiltration and Inflow) enters the sewer system through defects and produces a peak flow response similar to that of inflow from direct inflow connections.
- A correlation between measured rainfall and RDI/I entering a particular system is very difficult to determine reliable quantities without many years of historical data.
- Groundwater migration affects the effectiveness of I/I removal. Correction of a specific infiltration source may not result in corresponding reduction in the infiltration rate where groundwater migration occurs. Traditional approaches to identifying the cost effectiveness of sewer system rehabilitation that evaluate each inflow source or sewer defect on an individual basis may overestimate the amount of flow reduction by failing to account for the migration of water into pipe defects that remain unrepaired. Hence, groundwater that was precluded from entering main pipes prior to I/I removal efforts can enter the system after major sources of I/I have been repaired.
- The relationship between monitored flows and I/I from source defects may overestimate I/I removal. Metering programs may not have accounted for peak flows that bypass the treatment facility or that overflow from the system itself.
- Capital relief and replacement projects will lower surcharged conditions in numerous pipeline segments. Meeting this sewer system program objective may allow for additional I/I to enter the system. Accurately projecting and modeling this effect is difficult

The above challenges do not preclude the need to take pro-active steps to reduce excessive I/I and prevent I/I levels from increasing due to further deterioration of the collection system. However, they do offer a realistic assessment of the difficulties in dealing with a complex sewer system. They also support the approach that limits credit for I/I reduction in the planning process until actual I/I volume and peak flow reductions can be confirmed by actual observed decreases in peak wet weather flows.

6.4 FLOW TARGETED I/I REDUCTION

Sustained reduction in infiltration and inflow is a difficult challenge in any wastewater collection system. This is especially true in older systems or in systems where the material used and installation procedures resulted in multiple failure points throughout the area. As part of the integrated I/I reduction and sewer rehabilitation program, a flow targeted effort will:

- Identify parts of the system with high I/I volumes,
- Prioritize areas that will have a tangible impact on the size and location of capital infrastructure improvements,
- Employ comprehensive CCTV inspection and rehabilitation to effectively reduce I/I volumes,
- Confirm reductions in I/I by observed consistent decreases in wet weather flows.

An initial analysis of peak wet weather flow (PWWF) versus dry weather flow (DWF) for modeled line segments in the Little Rock system is shown in **Figure 6.1**.

**Figure 6.1
PWWF to DWF Analysis**

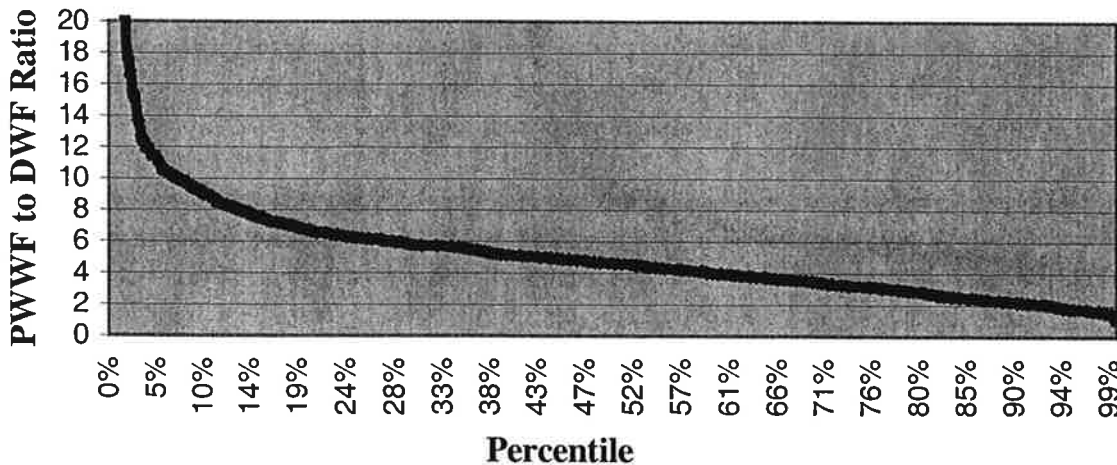


Figure 6.1 plots the PWWF to DWF ratio for the percentile of modeled lines segments. This “knee-of-the-curve” type analysis indicates that less than 12% of the modeled lines had a PWWF to DWF ratio above 8. Therefore, as an initial target, the rehabilitation program would focus I/I reduction on trunk segments and areas with PWWF to DWF ratios in excess of 8.

Infiltration and inflow reduction would be an ongoing effort for LRWU. The near term, 5-year I/I reduction plan would target those prioritized trunk segments or areas that would have a tangible impact, on the planned capital pipeline relief and replacement program. **Figure 6.2** illustrates the areas in the collection system, which show the highest PWWF to average DWF. In general, those areas with high PWWF to average DWF that are upstream of those pipelines scheduled for replacement or relief over the next 15 years will be targeted. **Figure 6.3** shows the relation between the Peak / Dry ratio and the proposed system trunk line upgrades. As part of the I/I abatement initiative, a more detailed analysis of trunk lines in the initial 5-year construction schedule would target those areas for comprehensive CCTV inspection and rehabilitation.

Flow targeted areas for I/I abatement must be checked against maintenance and repair histories and other factors to maximize the impact, of sewer rehabilitation on actual peak flow reduction. Targeted areas would require additional flow monitoring to isolate areas for inspection and rehabilitation. Pre-rehabilitation flow monitoring may also be helpful in establishing a baseline to gauge actual PWWF reduction.

Comprehensive cleaning and physical inspection using CCTV and other leak detection methods should be performed in the targeted areas. Comprehensive sewer replacement or rehabilitation should follow the results of the inspection efforts. Consideration should be given to the utilization of available unit-priced construction contracts and work order systems to perform most of the routine replacement and rehabilitation construction. This approach provides a direct link between inspection and repair in a “find and fix” mode, which provides rapid, cost effective rehabilitation, and may be helpful in monitoring the actual effects on I/I reduction. Larger mainline repairs and replacement in busy streets or those requiring more analysis and design can be accomplished in a more traditional capital sewer rehabilitation program.

Post-construction flow monitoring is essential to verify the actual reduction in I/I volume and the corresponding reduction in peak WWF. The results of post rehab flow monitoring coupled with re-modeling results can then be used to reevaluate the proposed pipeline replacement program. The proposed pipeline replacement program should be scheduled to accommodate the results of the I/I abatement effort and avoid replacing sewers that may be impacted by the I/I abatement effort.

6.5 EMERGENCY, CORRECTIVE, AND PREVENTIVE MAINTENANCE

Emergency and routine repairs and replacement of sewers can impact the success of the overall I/I abatement effort. Customer complaints, back-ups and overflows are indicators of sewer system maintenance, structural and capacity problems. The primary objectives of these ongoing maintenance programs are customer service and overall asset management. However, work order, customer complaint and overflow history can provide critical data in assessing I/I sources. The Utility field workers have the best hands-on knowledge of system condition and potential I/I sources. Coordination of emergency and corrective maintenance with I/I abatement can expand the mission of these ongoing maintenance programs to include I/I reduction.

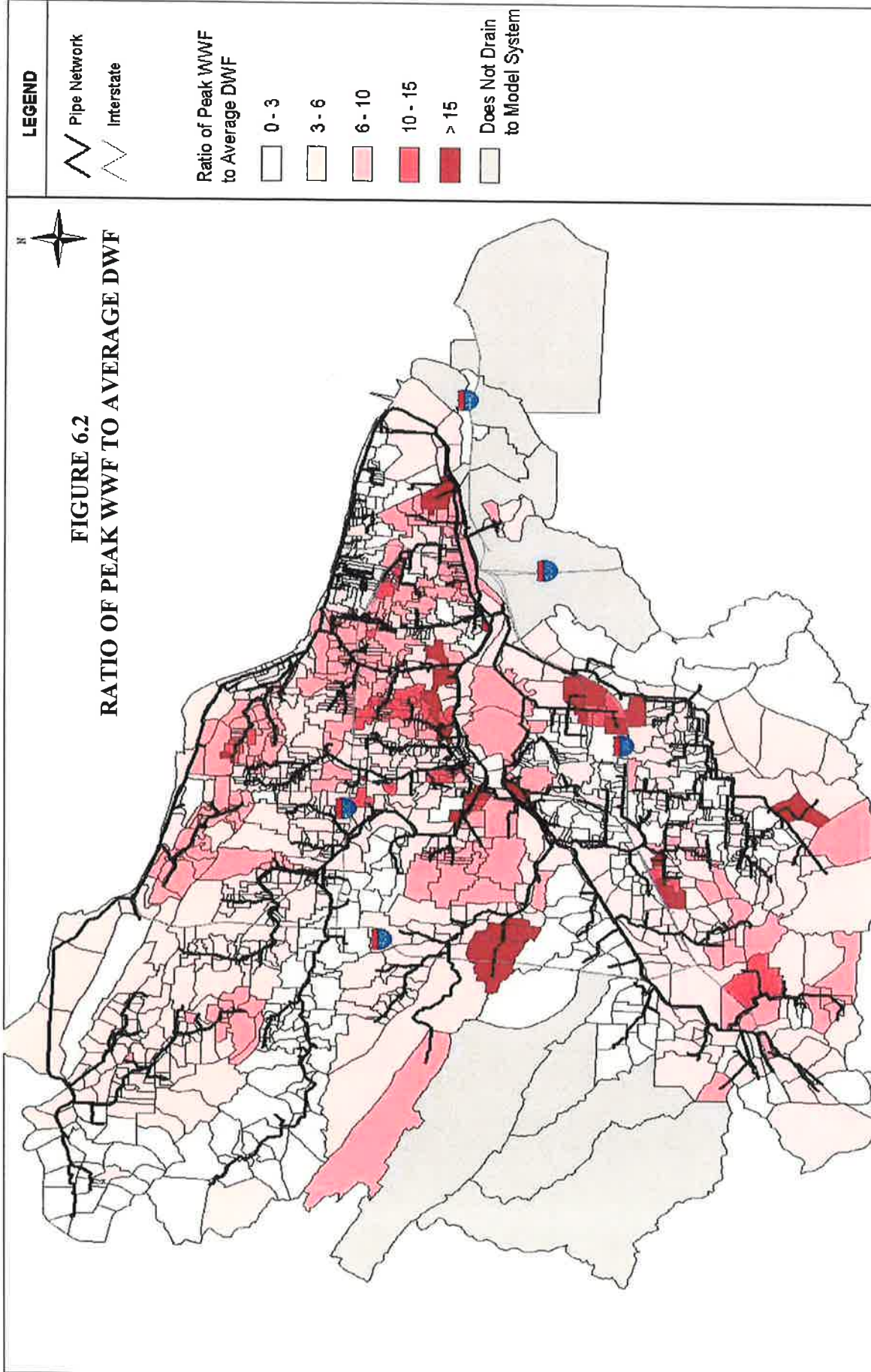








FIGURE 6.2
RATIO OF PEAK WWF TO AVERAGE DWF

LEGEND

-  Pipe Network
-  Interstate

Ratio of Peak WWF to Average DWF

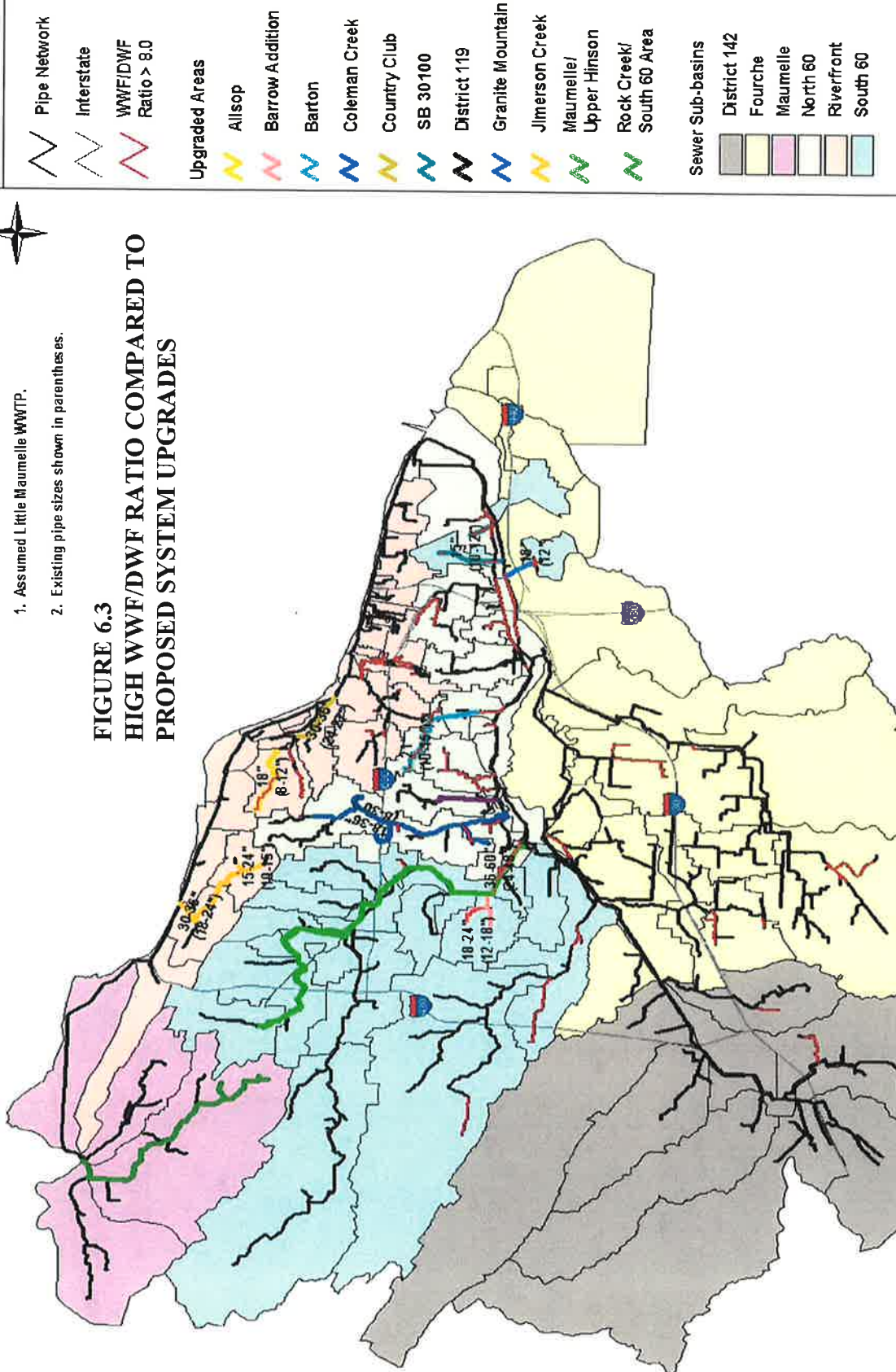
-  0 - 3
-  3 - 6
-  6 - 10
-  10 - 15
-  > 15
-  Does Not Drain to Model System

LITTLE ROCK WASTEWATER UTILITY
 HYDRAULIC MODELING / COLLECTION SYSTEM FACILITIES PLAN
RATIO OF PEAK WWF TO AVERAGE DWF
STORM EVENT A: MARCH 15, 2000 - MARCH 23, 2000

Comments:

1. Assumed Little Maumelle WWTP.
2. Existing pipe sizes shown in parentheses.

**FIGURE 6.3
HIGH WWF/DWF RATIO COMPARED TO
PROPOSED SYSTEM UPGRADES**



LEGEND

- Pipe Network
- Interstate
- WWF/DWF Ratio > 8.0
- Upgraded Areas**
- Allsop
- Barrow Addition
- Barton
- Coleman Creek
- Country Club
- SB 30100
- District 119
- Granite Mountain
- Jimerson Creek
- Maumelle/Upper Hinson
- Rock Creek/South 60 Area
- Sewer Sub-basins**
- District 142
- Fourche
- Maumelle
- North 60
- Riverfront
- South 60



LITTLE ROCK WASTEWATER UTILITY

HYDRAULIC MODELING / COLLECTION SYSTEM FACILITIES PLAN

HIGH WWF/DWF RATIO COMPARED TO PROPOSED SYSTEM UPGRADES

The I/I abatement program would serve as a catalyst for information sharing, program assessment, and work order coordination to maximize the impact of ongoing repairs on I/I reduction.

Emergency Maintenance. Emergency maintenance is typically made in response to a customer complaint or critical system problem. Typically, emergency maintenance crews deal with blockages and structural failures. Deposition and blockages may occur from introducing improper materials into sewers, and from introduction of grease, grit, roots, or other debris. The potential for blockages can increase in sewers having flat slopes that reduce flow velocities or other structural defects.

A wide range of structural defects occurs in sanitary sewer collection systems. Examples include cracks or holes in pipes caused by corrosion or external forces and separated joints. A continuous maintenance effort, including an inspection program, should reduce the occurrence of overflows due to structural failures.

Corrective and Preventive Maintenance. The same approach holds true for ongoing corrective and preventative maintenance programs. A good preventive and corrective maintenance program is one of the best ways to keep a system in good repair, prevent service interruptions, avoid system failures, and reduce I/I. In addition to preventing overflows, backups, service interruptions, and system failures, a preventive and corrective maintenance program can protect the capital investment in the collection system. Preventive maintenance typically bases system management on historical information and how the system ages. Predictive management is an important feature of preventive maintenance and can be used for both long-range replacement and repairs and for establishing routine maintenance work orders for areas with known histories. Good record keeping and information management is the key for an effective predictive management program.

Components of a good preventive and corrective maintenance program would typically include:

- Routine inspection of the collection system, including pump stations
- Correction of faulty conditions that produce historical complaints
- Adequate workforce and appropriate equipment
- Maintain a schedule of planned activities
- Planned, systematic, and scheduled cleaning and repairs
- Proper sealing and/or maintenance of manholes
- Regular repair of deteriorating sewer lines
- Remediation of poor construction
- Regular inspection and maintenance of pump stations and other appurtenances

The inventory identified various types of sewer type materials in the LRWU collection system, as listed in **Table 6.1**. The table also indicates the projected service life of each material based on generally accepted values derived from manufacturers' estimates and experience in other communities. For the purpose of this study, service life is considered to be the age at which the deterioration and defect accumulation may begin to affect the

structural integrity of a pipe, or allow excessive infiltration to occur. The service life is useful for anticipating future renewal or replacement requirements.

**Table 6.1
Estimated Sewer Pipe Service Life**

Pipe Material	Lower Service Life (years)	Upper Service Life (years)	Comments/Potential Problems
Reinforced Concrete Pipe (RCP) (a)	25	50	Hydrogen sulfide corrosion
Unreinforced Concrete (CON)	25	50	Hydrogen sulfide corrosion
Asbestos Cement (ACP)	25	50	Hydrogen sulfide corrosion
Vitrified Clay with Gasket Joints (VCP)	75	100	Joint flexibility, bell and spigot cracking. Material brittleness-cracking and breakage
Vitrified Clay with Cement or Bituminous Joints (VCP)	50	75	Inflexible joint, bell and spigot cracking and breakage. Material brittleness-cracking and breakage
Polyvinyl Chloride (PVC)	50	75	Lacks long term life data
Acrylonitrile Butadiene Styrene (ABS)	50	75	Lacks long term life data
Polyethylene (PEP)	50	75	Lacks long term life data
ABS Truss Pipe	10	50	Material failures
Ductile Iron (DIP) and Steel (STL)	75	100	Corrosion

(a) Expected service life of PVC-lined RCP (T-lock) would be longer (50 to 100 years).

Inspection and Condition Assessment Prioritization. Specific needs for sewer renewal and replacement can be identified by CCTV inspection of the pipes and performing a condition assessment based on the CCTV data. Condition “ratings” based on CCTV data can be developed and used to prioritize renewal and replacement efforts. A key component of developing a renewal/replacement plan is a systematic program for cyclic CCTV inspection of the sewers. Performing CCTV inspection on a regular cycle is important for tracking changes in condition over time

One method of grouping or prioritizing sewers for CCTV inspection is by age and relative risk of failure. While age is a good guideline for prioritizing inspection other considerations, such as potential susceptibility to corrosion or location in a critical area (e.g., crossing a creek or highway), may dictate higher priority for certain segments. A plan should be proposed that utilizes a schedule for inspection and condition assessment based on two factors: corrosion resistance of the pipe material and age. The I/I abatement program should utilize comprehensive CCTV inspection to identify rehabilitation needs in the targeted flow reduction areas.

6.6 PRIVATE PROPERTY PROGRAMS

Private sewer connections represent 50% or more total sewer length of the collection system. Many storm water cross connection like foundation drains, area drains, downspouts are associated with these private sewers including connections that are intentionally made to provide site drainage. A number of studies have shown that the overall effectiveness of I/I removal efforts will be limited in many municipal collection systems if private sources of I/I are not addressed. Typically the I/I contribution from private sewers can range from 40% to 60% of the total I/I problem.

There are numerous legal, institutional, social, financial, and political issues associated with the inspection, rehabilitation and repair of private sewer laterals. The political will to force utility customers and citizens to spend large amounts of money in repair of their sewer, which seems to work perfectly fine, is typically lacking. Investment of public funds on private property presents another funding challenge. Equity and social impacts that result from the high replacement costs in the older and impoverished parts of the City also present a challenge.

There are successful private property programs around the country. Some of ideas from these programs should be adapted to Little Rock and tested in a private sewer prototype program. The results of these prototype efforts should be monitored and modeled to evaluate the true effectiveness with regards to I/I reduction.

6.7 POTENTIAL I/I REDUCTION METHODS

Potential methods to reduce I/I are based on the types of sources found in the system. Methods for addressing direct inflow sources, infiltration sources in sewer mains and manholes, and sources on private property are summarized below. The I/I abatement program will employ a comprehensive approach to system rehabilitation and replacement.

Direct Inflow Sources. Direct inflow sources such as roof and area drains and storm drain connections are a possibility throughout the system, and will be indicated by the high peak flow rate during rainfall events. Elimination of direct inflow connections requires disconnection of the source and re-direction of the drainage to an appropriate location. Manholes subject to ponding or located in drainage courses are also considered to be sources of direct inflow. Physical inspection of manholes can identify such conditions and correction is straightforward (replace cover, realign frame, raise manhole to grade, remove or relocate manhole in watercourse, etc.).

Infiltration Sources in Sewer Mains and Manholes. Infiltration sources are primarily defects in sewer pipes or manholes caused by defective materials or construction, general deterioration, or damage caused by physical conditions. Visual inspection (for manholes) and CCTV inspection (for sewers) can detect infiltration sources. Infiltration correction methods generally involve lining or replacement of entire pipe segments, manholes or spot repair of localized defects. The cost per unit amount of I/I removed is relatively high, since the defects individually contribute relatively small amounts of flow. Rehabilitation is cost

effective only if a significant volume of infiltration can be isolated to a small area. Isolation of areas of infiltration can be done by flow monitoring or other flow measurement techniques, which are most effective, where very localized problems are suspected.

I/I Sources on Private Property. These I/I sources are mainly defective laterals, but may also include broken cleanouts or cleanout caps, or directly connected roof and area drains. Smoke testing is the primary method of detection. Correction of private property defects can be expensive due to the necessity of manual excavation of trenches and measures to protect and/or restore improvements such as driveways and fences. One method that has been implemented by sewerage agencies is an ordinance requiring testing or inspection of the sewer lateral at the sale of the property. If the lateral fails the inspection, appropriate repairs must be made before the sale closes. Therefore, the repair cost can be added to the sale price or closing costs.

6.8 RECOMMENDATIONS

- An integrated I/I abatement program should be implemented as part of the overall sewer system improvement program. This program should link a flow targeted I/I reduction effort with ongoing maintenance and capital rehabilitation and replacement efforts.
- The flow targeted I/I reduction program should prioritize areas for comprehensive inspection and rehabilitation. Post rehabilitation flow monitoring and modeling should be used to verify I/I volume and peak-flow reductions.
- The I/I abatement program should initially focus on known problem areas such as the Upper Hinson area in the Rock Trunk system and Maumelle Basin in order to maximize the I/I reduction impact of this ongoing program.
- Capital pipeline repair and replacement projects should be adjusted during the preliminary design stage to accommodate the verified results of the I/I abatement effort.
- The overall I/I abatement program should address the requirements of emerging EPA SSO policies including the cMOM initiative.

Section 7

Citizen Participation

This section presents recommendations developed by the Little Rock Citizens Advisory Group. Members of the Group were selected from a cross section of the Little Rock Community representing municipal and regulatory agencies, commercial and industry, and private citizens groups. The Group was organized to exchange information and discuss options for correcting Little Rock's wastewater system capacity deficiencies.

7.1 CITIZENS ADVISORY GROUP OVERVIEW

The Citizens Advisory Group (CAG) was formed to ensure that community values were reflected in the decisions and recommendations of the System Evaluation and Capacity Assurance Plan for Little Rock. The roles and objectives for the Group were to:

- Serve as a communication link between the community and the Little Rock Wastewater Utility
- Assist in educating the public about the issues, proposed solutions, and the decision making process
- Define and prioritize community-related issues regarding wastewater
- Articulate community values and opinions
- Review studies' results and help evaluate alternatives using previously agreed upon criteria
- Issue recommendations to the Wastewater Utility
- Become familiar with the issues and take identified issues back to their constituents
- Provide input on the cost-effectiveness of the program
- Identify potential public concerns regarding wastewater-related issues and solutions facing the City of Little Rock and the Utility
- Identify potential community impacts of the alternative improvement projects including noise, access limitations, and traffic disruption
- Assist the City by making specific recommendations for the prioritization of the System Evaluation and Capacity Assurance Plan (SECAP)

Members of the CAG were selected from the community to represent neighborhood groups, municipal and public works agencies, business and industry, environmental groups, and the Little Rock Sewer Committee. The Group met independently of the LRWU so that conventional engineering and administrative contributions by the LRWU would not bias the opinions of the CAG. The Group developed their own set of criteria and selection matrix to assist them with identifying important issues and resolutions to Little Rock's sewer system capacity problems. A notebook was developed for the CAG members to track progress for the Group's four meetings; a copy of this notebook is provided in **Appendix D**.

7.2 REVIEW OF ALTERNATIVES

Four options for addressing system capacity deficiencies were evaluated and ranked by the Group. Each of the four options utilized varying capacity upgrade techniques including peak

wet weather storage, conveyance and treatment improvements. To effectively rank and ultimately select a capacity upgrade option, the CAG developed an evaluation matrix and criteria for defining each option's feasibility and impact to community. **Section 4.3.3, Evaluation Matrix**, discusses the criteria (**Table 4.3**) and evaluation matrix (**Table 4.4**) for ranking wastewater construction technologies. The four options evaluated included:

Option 1. This option includes the same project components for Alternative A1 as noted in **Section 4.3, Alternative Improvement Projects**. These components include the construction of the new Maumelle WWTP and the 72-inch parallel trunk line from Adams Field WWTP upstream to the west-end of the existing Twin 60s.

Option 2. This option eliminates the need for the proposed Maumelle WWTP by installing additional line and facility improvements through the Riverfront Basin with sufficient conveyance capacity to deliver all Maumelle Basin flow to the Adams Field WWTP.

Option 3. This option provides the same improvement components as Alternative B2. This option uses a large storage facility to collect wastewater surcharge from the system during a storm event. The large storage volume eliminates the need to install the 72-inch parallel trunk line and capacity improvements to the Arch Street Pump Station and the Adams Field WWTP. This option includes the construction of the proposed Maumelle WWTP.

Option 4. This option is similar to Alternative C2. It provides reduced storage and partial installation of the 72-inch parallel trunk line from Arch Pump Station upstream to the west-end of the Twin 60s.

7.2 RECOMMENDATIONS

Estimated capital costs for each option along with the CAG ranking are shown in **Table 7.1**. The options presented to the CAG were conceptual in nature and used only to convey a general understanding of the basic components, available technologies, and overall strategy for solving capacity deficiencies. Similarly, capital improvement costs estimated for options presented at the CAG workshops were developed only for discussion purposes. These estimates were not intended to reflect the same budget definition required for the Utility's Capital Improvement Plan. Also, further alternative analysis and refinement of the hydraulic model continued beyond the scheduled CAG workshops. As additional capacity improvement projects were identified, the costs were better defined and revisions were made to each alternative appropriately. Because of this progressive refinement of alternatives, **Table 4.1** and **Table 7.1** may show similar project components with different overall costs. However, a cost-based review of the alternative analysis rankings compared to the CAG selected options, showed no change in ranking position.

The results of the CAG matrix evaluation clearly indicated that options involving storage facilities were not preferred. Instead of storage, the CAG favored options involving installing the 72-inch parallel trunk line and increasing capacities for the Arch Street and Fourche facilities to eliminate system deficiencies in south Little Rock.

Table 7.1
Summary of Options Presented to the
Citizens Advisory Group

Option	Type of Work	Description	Component Cost (Millions)	Cost Ranking	Matrix Ranking
1	Line Work	Utility Trunk Sewer Upgrades	\$53.1	3	2
		72" Parallel to Twin 60" Trunks (45,772 L.F.)	\$30.4		
		36" Force Main from Arch L.S. to Fourche WWTP (42,000 L.F.)	\$7.5		
		42" Force Main from Cantrell L.S. to Gravity Line	\$0.6		
	Pump Stations	Cantrell - 25MGD to 40 MGD	\$5.7		
Treatment	Arch - 35 MGD to 60 MGD (FM - 30" @ 41,500 L.F.)	\$7.5			
	Little Maumelle 4 MGD WWTP (w/ 30 MG Storage)	\$18.9			
	Adam WWTP Upgrades (94 MGD w/ 25 MG Storage)	\$24.0			
	Fourche WWTP Upgrade (from 38 MGD to 60 MGD)	\$29.3			
		Total	\$177.0		
2	Line Work	Utility Trunk Sewer Upgrades	\$53.1	4	1
		72" Parallel to Twin 60" Trunks (45,772 L.F.)	\$30.4		
		30" Force Main from Little Maumelle L.S. to Gravity Line	\$13.3		
		60" Gravity Line for Little Maumelle FM to Cantrell L.S.	\$18.6		
		Twin 36" Force Main from Cantrell L.S. to Gravity Line	\$1.1		
		72" Gravity Line from Cantrell FM to Adams WWTP	\$17.5		
	Pump Stations	36" Force Main from Arch L.S. to Fourche WWTP (42,000 L.F.)	\$7.5		
	Treatment	Cantrell - 25MGD to 70 MGD (New Station)	\$8.3		
		Arch - 35 MGD to 60 MGD (New Station)	\$7.5		
		Little Maumelle to 16 MGD (New Station)	\$3.1		
Adam WWTP Upgrades (94 MGD w/ 25 MG Storage)		\$24.0			
		Fourche WWTP Upgrade (from 38 MGD to 45 MGD)	\$29.3		
		Total	\$213.7		

Table 7.1
Summary of Options Presented to the
Citizens Advisory Group

(continued)

Option	Type of Work	Description	Component Cost (Millions)	Cost Ranking	Matrix Ranking
3	Line Work	Utility Trunk Sewer Upgrades	\$53.1	1	3
	Pump Stations	42" Force Main from Cantrell L.S. to Grav Line	\$0.6		
	Treatment	Cantrell - 25MGD to 40 MGD	\$5.7		
	Storage Facility	Little Maumelle 4 MGD WWTP (w/ 10 MG Storage)	\$18.9		
		65 MGD Storage Facility (w/ 65 MGD Pump Station, Yard piping, Chlorination/Dechlorination facilities, influent / return piping & property)	\$43.6		
		Total	\$121.9		
4	Line Work	Utility Trunk Sewer Upgrades	\$53.1	2	3
	Pump Stations	60" Parallel to Twin 60" Trunks	\$13.1		
	Treatment	Cantrell - 25MGD to 40 MGD	\$5.7		
		Arch - 35 MGD to 45 MGD (FM - 30" @ 41,500 L.F.)	\$2.2		
		Little Maumelle 4 MGD WWTP (w/ 10 MG Storage)	\$18.9		
		Adam WWTP Upgrades (94 MGD w/ 25 MG Storage)	\$24.0		
	Fourche WWTP Upgrade (from 38 MGD to 50 MGD)	\$12.0			
	Storage Facility	35 MGD Storage Facility (w/ 35 MGD Pump Station, Yard piping, Chlorination/Dechlorination facilities, influent / return piping & property)	\$30.6		
		Total	\$159.6		

The Group's evaluation of options related to system deficiencies in north Little Rock yielded a less definitive group opinion. Although the matrix slightly favored system improvements, to convey all wastewater from the Maumelle Basin to the Adams WWTP over the construction of the new Maumelle WWTP, the Group did express significant concerns regarding the additional costs and potential community impact that would be caused by construction of the associated conveyance capacity projects.

The CAG also applied the matrix evaluation to an option that compared immediate construction of trunk sewer improvements before performing a comprehensive program of line rehabilitation. The results showed that the Group favored prioritizing the comprehensive rehabilitation program. The Group made the following additional recommendations:

- The Utility should address the issue of correcting I/I contributed by private lines and service connections located on private property. A pilot program to study I/I reduction realized by repairing service connections was suggested.
- For basins and sewer sub-basins where extensive I/I have been monitored, the Utility should conduct a comprehensive line/manhole rehabilitation program rather than performing immediate trunk line replacement. This program would consist of ongoing rehabilitation and flow monitoring to identify I/I reductions that might otherwise minimize the number of required new trunk lines, or possibly decrease the diameter size of new trunk lines needing to be replaced.
- The Utility should continue to install new facilities to incorporate areas that are not presently served by the Little Rock Wastewater Utility.
- The City of Little Rock should consider smart growth initiatives to control new development in logical manner. The intent is to provide an opportunity for Public Utilities to keep pace with service needs for both existing and new development without creating a major impact to the City's ability to finance continuing improvements.
- The City should adopt a schedule for implementing the recommended capacity system improvements that would minimize impact on future user rate increases.
- The Citizens Advisory Group should continue to work with the Little Rock Sewer Committee, Wastewater Utility and City Council toward the final development and adoption of the Capacity Assurance and System Evaluation Plan and the implementation schedule for Little Rock's Wastewater Capital Improvement Plan.

Section 8 Other Options

This section discusses two additional options for increasing capacity in the overall Little Rock Wastewater System. The discussion below shows that each option is worthy of further consideration as a cost effective and community minded approach to solving system capacity deficiencies. To ensure that these options are viable, a collaborative effort between the Utility, Sewer Committee and City, Browning-Ferris, Inc. (BFI), and North Little Rock Wastewater Utility will be required. The full development of these alternatives extends beyond the parameters of this report. Therefore, additional studies will be required to determine the feasibility for each option, identify facility improvements, define capital costs, and schedule implementation. This section provides conceptual parameters for each option and discusses some of the potential benefits.

8.1 ADDITIONAL OPTIONS

8.1.1 Background for North Little Rock WWTP Option

The Maumelle Basin is projected to experience more population growth over the next 25 years than any other basin in Little Rock. To better understand the impact that population growth would have on the wastewater system; the LRWU commissioned an engineering study. The "Little Maumelle Sub-basin Sewerage Study" (**Appendix G**) predicted that the average daily flow (ADF) of the basin would increase by 45% in 10 years and would more than double in 25 years.

The Maumelle Basin is located in the northwest part of the city. Wastewater from the basin currently flows to the existing Maumelle Pump Station before being pumped to gravity lines running along the Riverfront Basin to the Cantrell Pump Station. The flow at the Cantrell Station is then pumped to gravity trunk lines that flow to the Adams WWTP. This conveyance system experiences surcharging at the Cantrell Station and in the gravity lines along the Riverfront Basin during storm events. Since this system configuration already surcharges, these current conditions would be further stressed by the anticipated population growth in the Maumelle Basin. Hence, Maumelle's impending growth necessitates some form of collection system capacity upgrade or a new treatment plant for the area. The following paragraphs discuss one option for the conveyance and treatment for wastewater flow from the Maumelle Basin.

8.1.2 Description of North Little Rock WWTP Option

This option differs from previous alternatives discussed in the report by eliminating the need for a new treatment plant in the Maumelle Basin and improvements for total conveyance of flow to the Adams WWTP. This option includes the installation of a new pump station having an ultimate build-out capacity of 16 MGD, replacing the existing Maumelle Pump Station. The replacement station would also require the installation of an additional parallel force main to meet ultimate capacity requirements. Under this option wastewater from Maumelle would be pumped through the existing station's 24-inch force main, and the new parallel line, to Murray Lock and Dam. Crossing the Arkansas River, attached to a proposed pedestrian/bikeway bridge located just downstream of the dam, the force mains would

combine into a single larger diameter force main and continue onto the White Oak Bayou WWTP for treatment.

8.1.3 White Oak Bayou WWTP

The White Oak Bayou WWTP is owned and operated by the North Little Rock Wastewater Utility (NLRWU). The plant is a partial mix aerated facultative lagoon facility with a design capacity of 4.25 MGD and an average daily flow ranging from 2.25 to 2.5 MGD. At a minimum, in order to accommodate the Maumelle flows, the facility would need to expand its lagoon system and install additional aeration equipment. The chlorine contact chamber will require expansion as well. Since NLRWU does not own adjacent property where these potential capacity improvements would be constructed, additional land will have to be purchased. This expansion also requires increasing the NPDES permitting limits for additional discharge of treated effluent created by Maumelle. Should this option be selected for implementation by LWRU, it is anticipated that the NLRWU will continue to operate and maintain the facility after improvements are made. Since additional study outside the scope of this report is required to identify and quantify needed capacity improvements to the WWTP construction costs estimates were not completed for this option. **Figure 8.1** shows the general location for the facilities.

8.1.4 Additional Option Improvements

Jimerson Creek and I-430 Pump Stations. Maumelle's wastewater would be conveyed across the Arkansas River through a single force main passing directly adjacent to the Jimerson Creek and I-430 Areas. Should the replacement pump station for Maumelle be feasible, and if capacity is available in the new larger force main crossing the Arkansas River, it may be practical to include flows from the new pump stations for Jimerson Creek (12 MGD) and I-430 (1 MGD), by connecting one or both discharges directly to the proposed force main crossing the Arkansas River.

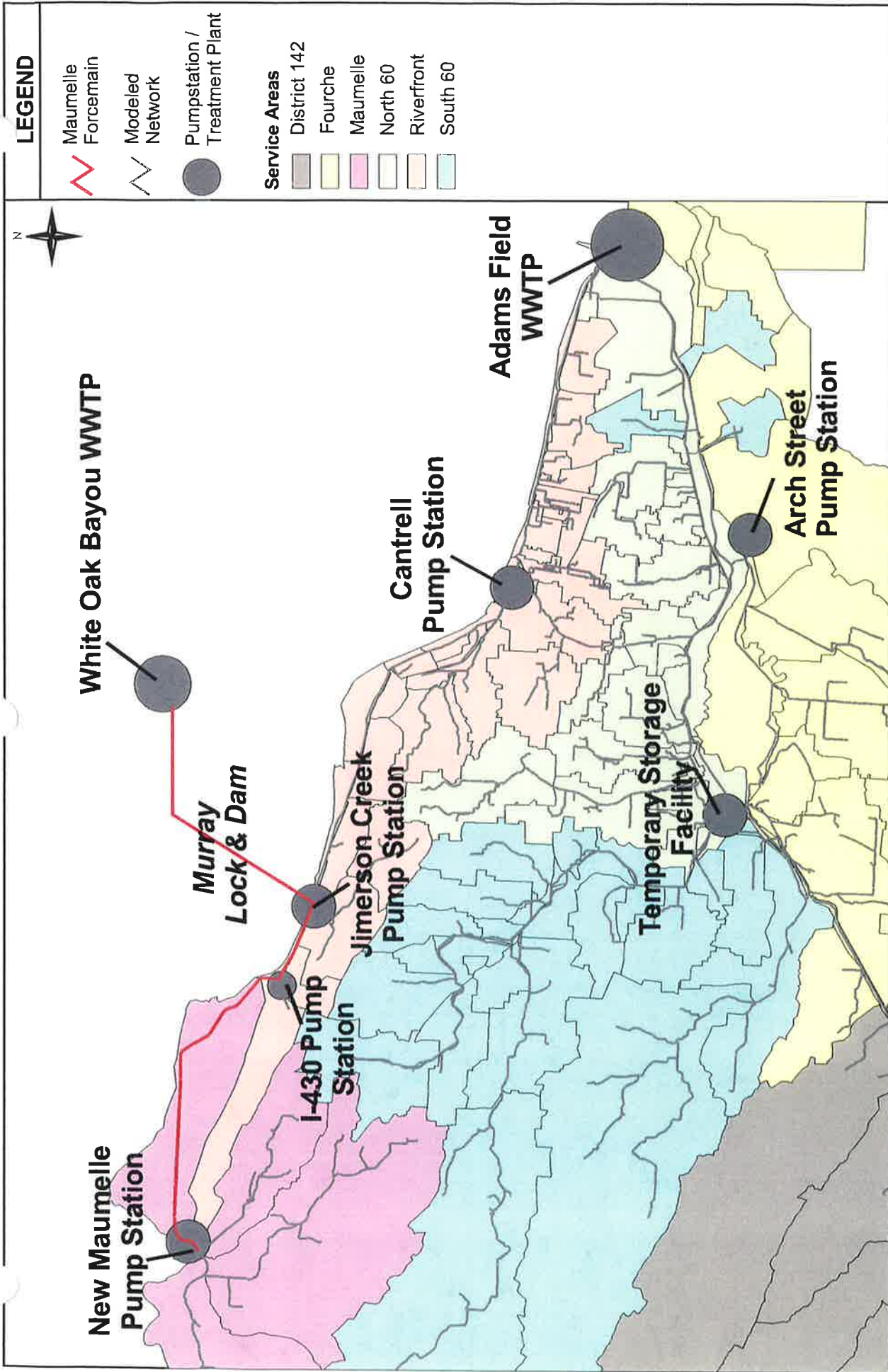
8.1.5 Benefits of North Little Rock Option

The reduction of flow provided by diverting wastewater from Jimerson Creek, Maumelle and the I-430 areas would alleviate surcharge conditions along the Riverfront Basin and at the Cantrell Pump Station. Additionally, this option would provide the added treatment capacity to allow the Adams Field WWTP to handle flow from south Little Rock more effectively. In addition to solving many of the system's deficiencies and operational problems, this option would avoid installation of a new treatment plant in the Maumelle Basin. This option would thereby eliminate the community concerns about the proposed Maumelle WWTP expressed by the Citizens Advisory Group, as well as associated environmental issues.

8.2 STORAGE DETENTION FACILITY

8.2.1 Landfill Site Storage Option

The Utility and Citizens Advisory Group selected alternatives that incorporated storage facilities as the least desirable options. However, as site investigations were conducted for



LITTLE ROCK WASTEWATER UTILITY
FIGURE 8.1 OTHER OPTION
 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

the original storage alternatives it was discovered that existing landfill facilities are located in the same general vicinity where proposed lagoons might have been installed. The landfill site includes a large excavated borrow area with adequate volume to achieve the 79 MG of storage requirements outlined in Alternative B2. Additional property surrounding the borrow area is also available for purchase in order to install needed ancillary facilities such as an over-flow discharge structure and a return pump station. Due to the strategic location of the existing landfill facilities, near the west-end of the Twin 60s, and the fact that the borrow area has already been excavated, this option showed additional merit for continued evaluation. It should be noted that although the borrow area has already been excavated, the installation of containment berms to enclose the storage basin and basin lining will be required.

8.2.2 Storage Facility Operation

The storage site is located between the north and south Twin 60 interceptors, near Geyer Springs. As described in Alternative B2, a weir structure(s) would be installed over the Twin 60-inch Interceptor(s) to divert surcharging wastewater from the system. Collected flows would then be conveyed to the storage facility through a series of gravity lines and pumped into the storage area. Collected wastewater would remain in storage until the wet weather surge passed through Little Rock's collection system. Wastewater would then be returned to the main system either by gravity lines or pumping, as needed. **Figure 8.1** shows the general location of the facilities.

8.2.3 Benefits of Landfill Storage Option

This option represents considerable capital cost savings to the Utility's capacity plan. Most of the excavation required for installing storage facilities at the landfill site has already been completed. Less excavation translates into further reduction of the \$50.6 million in capital costs estimated for installation of the 79 MG storage facilities identified for Alternative B2. Implementation of Alternative B2 would also provide an additional \$19.7 million savings over Alternative A1. Furthermore, since proposed storage facilities would be located at an existing landfill site community and environmental concerns (location and aesthetics) may at least be partially alleviated.

8.2 RECOMMENDATIONS FOR OPTIONS

In order to determine the feasibility for the White Oak Bayou WWTP and storage options, the Utility would need to conduct additional studies that should involve citizen group participation. For the White Oak Bayou WWTP Option, the recommended studies include:

- Detailed flow analysis for existing, interim and ultimate build-out flow conditions for the Jimerson Creek, I-430 and Maumelle areas.
- Detailed analysis for proposed treatment facility improvements required for projected flow conditions. This analysis should include an investigation of available land for purchase to expand plant capacity and an evaluation for revising the NPDES discharge permit.

- Detailed capital cost estimates for all improvements at the plant, as well as the new Maumelle Pump Station, parallel force main and larger diameter force main to the plant.
- Study to confirm that flows from the proposed Jimerson Creek and I-430 Pump Stations can be included with this option. This should include detailed capital costs of associated improvements.

For the Storage Option, the additional studies should include:

- Soil investigations including permeability evaluations for the storage area and an environmental assessment of the site in general.
- Alignment studies for the delivery line(s) conveying flow from the Twin 60 Interceptors into the storage facility.
- Evaluation of potential and existing permitting issues that, at a minimum, should include an investigation of requirements from the Arkansas Department of Environmental Quality, US Army Corp of Engineers, and the landfill operator.