



Sewerage and Water Board of New Orleans

Sewer System Evaluation
and Rehabilitation Program

Final Technical Report
Grant No. 3
Assistance ID No. XP986042-01-1

SEWERAGE & WATER BOARD of NEW ORLEANS

SEWER SYSTEM EVALUATION and REHABILITATION PROGRAM FINAL TECHNICAL REPORT - GRANT NO. 3 Assistance ID No. XP986042-01-1

GRANT BUDGET PERIOD ENDING June 30, 2004

Introduction

This Final Technical Report is submitted to Region 6 EPA pursuant to award conditions described in the EPA Assistance Agreement, Assistance ID No. XP986042-01-1. Included in this report are the following:

- Description of work completed during the reporting period
- Standard Form 5700-52A, "MBE/WBE Utilization Under Federal Grants, Cooperative Agreements, and Interagency Agreements"
- Expenditures by category during the reporting period (USEPA ACH Payment Request Form)

Description of Work Effort

To facilitate an understanding of the work to be accomplished under this grant, each work item included in the Work Plan is first described in italics, followed by the actual work accomplished during the reporting period.

Planning & Design/CMS Phase Services (MWH Contract)

MWH has been retained to serve as program manager for this program. As program manager, MWH is responsible for all activities leading to the successful completion of the Sewer System Evaluation and Rehabilitation Program. A complete description of MWH's responsibilities can be found in the original grant application.

Work Accomplished

A. Management

- The majority of management efforts (i.e., program administration/management, cost and schedule control, document control) required for this Work Plan were provided in Work Plan No. 2.
- Representatives from the S&WB and MWH staff regularly attended and participated in various public and community meetings (e.g., Lakeview Civic Improvement Association, Gentilly Terrace Homeowners Association, etc.)

B. Planning

- Identification and investigation of privately owned and operated sewage pump stations was completed. Over 100 private pump stations were identified with field visits being made to 34 pump stations. A report detailing the results of the investigations was finalized on December 20, 1999.
- Assistance to the S&WB was provided for the Gentilly basin CSES, including review of reports. Additional investigation (smoke testing and CCTV investigation of sewer lines) was subsequently performed in the Gentilly basin in order to complete the CSES work.
- Sewer inspection efforts using sonar technology were completed in the Carrollton Basin. The report presenting findings from the inspections was submitted to the S&WB on June 8, 2000.
- The Sewer Condition Classification Manual, developed as part of Work Plan Nos. 1 and 2, continued to be refined on an annual basis and distributed for use in all CCTV inspections performed for the S&WB, including those performed under the CSESs, by outside consultants and contractors, and by S&WB staff. Training in the use of the manual and in the standardized inspection techniques is provided when the manual is updated or as needed to users new to the system. The information collected as part of this effort is consistent with, and is used to populate, the investigation data in the S&WB's CassWorks maintenance management system.
- The Sewer Manhole Inspection Manual was developed for use in the investigation and design decision process. The manual is updated on an annual basis and distributed for use in all manhole inspections performed for the S&WB, including those performed under the CSESs, by outside consultants and contractors, and by S&WB staff. Training in the use of the manual and in the standardized inspection techniques is provided when the manual is updated or as needed to users new to the system. The information collected as part of this effort is consistent with, and is used to populate, the investigation data in the S&WB's CassWorks maintenance management system.
- A computerized decision process model was developed as part of Work Plan Nos. 1 and 2 to provide guidance and standardization to the selection of rehabilitation methods for sewer manholes and pipelines. The Rehabilitation Decision Support System (RDSS) is utilized by MWH, the S&WB, as well as consultants performing the CSES and design efforts to convert the CCTV inspection data into repair methods for pipelines. The RDSS is updated on an annual basis to incorporate refinements to the software program and to reflect changes in rehabilitation criteria and costs.

C. Design

- Development of standard specifications and drawing details, initiated as part of Work Plan Nos. 1 and 2, continued under Work Plan No. 3.
- Rehabilitation measures for the Central Business District/French Quarter (CBD/FQ) basin sewer manholes and gravity pipelines were developed into contract documents for

construction. Design consultants Camp Dresser and McKee, Inc. performed the design services. The preliminary design phase for this effort was performed under Work Plan No. 2. The final design phase, bid and award phase, and engineering services during construction phase were performed under Work Plan No. 3.

- The Remedial Measures Action Plan (RMAP) for the Gentilly basin was finalized on September 7, 1999.

C. Construction

- MWH provided construction management and resident inspection services. Efforts included full-time resident inspection, conducting bi-weekly progress meetings, review of contractor submittals, and processing of contractor payment requests for the following construction contracts:
 - Contract No. 3900 – East Lakeview Area Sewer Rehabilitation Manhole Rehabilitation
 - Contract No. 3901 – Lakeview Area Sewer Rehabilitation Cleaning & CCTV Inspection
 - Contract No. 3905 – West Lakeview Rehabilitation Phase 1 Pipe Lining and Repair
 - Contract No. 3908 – East Lakeview Sewer Rehabilitation No. 1 Pipe Lining and Repair
 - Contract No. 3909 – West Lakeview Area Sewer Rehabilitation Manhole Rehabilitation
- Project performance certification efforts for these projects as well as the projects included in Work Plan No. 3 funding have been conducted as part of subsequent Work Plans.

Lakeview Rehabilitation Projects

The design of the Lakeview sewer rehabilitation projects, as described in the Lakeview Remedial Measures Action Plan (RMAP) was included in Work Plan No. 1. The Lakeview sewer rehabilitation projects were initiated during calendar year 1998, with funding provided under Grant No. 1. Additional work was continued under Grant Nos. 2 and 3. The work effort included manhole and sewer rehabilitation.

Work Accomplished

The following projects were completed in the Lakeview basin as part of Work Plan No. 3:

- Contract No. 3903 – East Lakeview Area Rehabilitation Phase 2 Pipe Repair No. 1
- Contract No. 3906 – Lakeview Sewer Rehabilitation Phase 2 Pipe Repairs and Replacement No. 1
- Contract No. 3911 – West Lakeview Sewer Rehabilitation Phase 2 Pipe Repairs and Replacement No. 2

Detailed information on each of these projects can be found in **Appendix A**.

Open Cut Sewer Restoration

In response to sewer system failures, the S&WB must respond and repair collapsed pipe as quickly as possible. In addition, during the CBD CSES investigation, sewer lines were identified that were in immediate need of improvement.

The work performed under this contract consisted of furnishing all labor, material, supervision, equipment, and supplies as necessary for the restoration of gravity sewers by excavation and replacement at scattered sites throughout Orleans Parish.

Work Accomplished

- The original Work Plan included this effort. However, this effort was removed from this Work Plan.

Fold & Form Sewer Restoration

In lieu of open cut and replacement, a second option for restoration of sewers 8 – 12 inches in diameter is fold and form trenchless technology. This option is used whenever possible to minimize disruption to the environment.

The work performed under this contract consisted of furnishing all labor, material, supervision, equipment, and supplies as necessary for the restoration of gravity sewers by the fold and form lining method at scattered sites throughout Orleans Parish.

Work Accomplished

- The original Work Plan included this effort. However, this effort was removed from this Work Plan.

Cured-in-Place Pipe Sewer Restoration

Another option for restoration of sewers 8 – 30 inches in diameter is cured-in-place pipe. This lining method will also be used whenever possible to minimize disruption to the environment.

The work performed under this contract consisted of furnishing all labor, material, supervision, equipment, and supplies as necessary for the restoration of gravity sewers by the cured in place lining method at scattered sites throughout Orleans Parish.

Work Accomplished

- The original Work Plan included this effort. However, this effort was removed from this Work Plan.

Infrastructure Rehabilitation Projects

The S&WB participates in Capital Improvement Programs initiated by various departments of the City of New Orleans. The S&WB takes advantage of these programs, such as the Streets Paving Program, to evaluate and rehabilitate the wastewater collection system prior to the paving of the street. By participating in these programs, the S&WB is able to reduce the cost of sewer rehabilitation by avoiding costs associated with roadway restoration.

Grant No. 3 included the performance of TV inspections and required sewer repairs in coordination with capital improvement projects initiated by the City of New Orleans. The contractor to rebuild the streets and rehabilitate sewers was selected based on standard competitive bidding requirements meeting federal guidelines.

Work Accomplished

The following projects were completed as part of the City of New Orleans Streets Paving Program as part of Work Plan No. 3:

- DPW Project No. 92-13, Louisiana Avenue Parkway

Other DPW projects were included in the original Work Plan and were later removed from the Work Plan.

CBD Rehabilitation Projects

Following approval of the Remedial Measures Action Plan (RMAP) for the Central Business District/French Quarter Basin, design of the recommended improvements to the existing sewer system began. Construction of the improvements began during calendar year 2000, the third year of this grant. The work effort included manhole and sewer rehabilitation. This effort is a continuation of work begun under Grant No. 2. The total rehabilitation needs in the CBD/FQ area are expected to be greater than the costs budgeted in Work Plans 2 and 3. Future work plans may budget the remaining work.

Work Accomplished

The following projects were completed in the Central Business District/French Quarter (CBD/FQ) basin as part of Work Plan No. 3:

- Contract No. 3915 – Central Business District/French Quarter Area Point Repair and Line Replacement
- Contract No. 3916 – Central Business District/French Quarter Sewer Rehabilitation Phase 1 Point Repair
- Contract No. 3918 – Central Business District/French Quarter Phase 1 Manhole Rehabilitation

Detailed information on each of these projects can be found in **Appendix A**.

Schedule

- Work efforts under Work Plan No. 3 have been completed.

MBE/WBE Utilization

MBE utilization through the reporting period is provided in the MBE Final Report.

Expenditures

Expenditures through the grant period are provided in the Final Financial Status Report.

Appendix A

Service Area: Lakeview
Contract Number: 3903

Council Districts: A & D
Contract Name: East Lakeview Phase 2
Pipe Repair No. 1

Original Contract Duration (calendar days): 240

Description of Work:

The work consists of sewer line rehabilitation by excavation of 8-inch to 18-inch diameter sewer lines including 59 external point repairs, 45 external service connection repairs, and 2,860 feet of sewer service lateral replacement. The contract also provides for restoration and sewer flow control. The work sites for this contract are primarily east of the Orleans Avenue Canal.

Design Dates	
Start Preliminary Design:	9/29/97
Start Final Design:	4/6/99

Bid and Award Dates	
Advertisement Date:	12/15/99
Bid Opening Date:	1/14/00
Contract Award Date:	2/9/00

Construction Dates (Projected)	
Start Date:	6/5/00
33% Completion Date:	11/16/00
66% Completion Date:	12/31/00
End Date:	1/5/01

Construction Dates (Actual)	
Start Date:	4/20/00
33% Completion Date:	6/9/00
66% Completion Date:	7/14/00
End Date: *	3/23/01

* Contract Change Orders are summarized as follows:

Contract Status	Contract Time (Days)	Contract End Date
Original	240	12/14/00
Change Order No. 1	0	12/14/00
Change Order No. 2	+60	2/11/01
Change Order No. 3	+40	3/23/01

The contract was completed and was granted final acceptance on July 25, 2001 (Resolution No. R-160-2001).

Service Area: Lakeview
Contract Number: 3906

Council Districts: A & D
Contract Name: Lakeview Phase 2 Pipe
Repairs and Replacement No. 1

Original Contract Duration (calendar days): 330

Description of Work:

The work consists of the rehabilitation by cured-in-place pipe lining of approximately 30,070 feet of existing sanitary sewer lines from 8-inch to 21-inch diameter, 5,200 feet of existing sewer service lateral replacement, 85 external point repairs, approximately 5,750 feet of 8-inch to 15-inch replacement sewer, 340 service connection repairs, 33 internal point repairs, 25 internal obstruction removals, restoration, including sewer flow control, labor, equipment, tools and materials. The project is generally located in northwest Orleans Parish, bounded by Lake Pontchartrain, 17th Street Canal, City Park Avenue, the Orleans Avenue Outfall Canal, Harrison Avenue, Canal Boulevard, I-610, and Pontchartrain Boulevard. Some portions of pipe replacement are in the area adjacent known as East Lakeview.

Design Dates	
Start Preliminary Design:	4/6/99
Start Final Design:	6/7/99

Bid and Award Dates	
Advertisement Date:	4/12/00
Bid Opening Date:	5/12/00
Contract Award Date:	6/21/00

Construction Dates (Projected)	
Start Date:	10/1/00
33% Completion Date:	5/22/01
66% Completion Date:	7/2/01
End Date:	9/1/01

Construction Dates (Actual)	
Start Date:	9/5/00
33% Completion Date:	11/30/00
66% Completion Date:	3/9/01
End Date: *	11/21/01

* Contract Change Orders are summarized as follows:

Contract Status	Contract Time (Days)	Contract End Date
Original	330	8/1/01
Change Order No. 1	+121	11/30/01
Change Order No. 2	-9	11/21/01

The contract was completed and granted final acceptance on April 24, 2002 (Resolution No. R-041-2002).

Service Area: Lakeview
Contract Number: 3911

Council Districts: A & D
Contract Name: West Lakeview Phase 2 Pipe
Repairs and Replacement No. 2

Original Contract Duration (calendar days): 330

Description of Work:

The work consists of the rehabilitation by cured-in-place pipe lining of approximately 25,865 feet of existing sanitary sewer lines from 8-inch to 30-inch diameter, 4,700 feet of existing sewer service lateral replacement, 110 external point repairs, approximately 6,415 feet of 8-inch to 15-inch replacement sewer, 215 service connection repairs, 21 internal point repairs, 25 internal obstruction removals, restoration, including sewer flow control, labor, equipment, tools and materials. The project is generally located in northwest Orleans Parish, bounded by Lake Pontchartrain, 17th Street Canal, City Park Avenue, and the Orleans Avenue Outfall Canal.

Design Dates	
Start Preliminary Design:	4/6/99
Start Final Design:	6/7/99

Bid and Award Dates	
Advertisement Date:	4/12/00
Bid Opening Date:	5/26/00
Contract Award Date:	8/28/00

Construction Dates (Projected)	
Start Date:	12/1/00
33% Completion Date:	4/9/01
66% Completion Date:	7/18/01
End Date:	10/28/01

Construction Dates (Actual)	
Start Date:	11/6/00
33% Completion Date:	1/26/01
66% Completion Date:	3/30/01
End Date: *	11/21/01

* Contract Change Orders are summarized as follows:

Contract Status	Contract Time (Days)	Contract End Date
Original	330	10/2/01
Change Order No. 1	0	10/2/01
Change Order No. 2	0	10/2/01
Change Order No. 3	+50	11/21/01

The contract was completed and granted final acceptance on April 24, 2002 (Resolution No. R-042-2002).

Service Area: Central Business District/French Quarter
Contract Number: 3915

Council Districts: B & D
Contract Name: Central Business District/French Quarter Point Repair and Line Replacement

Original Contract Duration (calendar days): 210

Description of Work:

The work consists of 15 external mainline point repairs, 113 external service or lateral line point repairs, and 210 feet of 8-inch pipe replacement, including sewer flow control, labor, equipment, tools and materials. The project is generally located in Orleans Parish, bounded by Felicity Street to the east, the Mississippi River to the south, Third Street to the west, and Claiborne Avenue to the north.

Design Dates	
Start Preliminary Design:	2/8/99
Start Final Design:	6/28/99

Bid and Award Dates	
Advertisement Date:	8/16/00
Bid Opening Date:	9/15/00
Contract Award Date:	10/27/00

Construction Dates (Projected)	
Start Date:	1/8/01
33% Completion Date:	6/16/01
66% Completion Date:	7/16/01
End Date:	8/5/01

Construction Dates (Actual)	
Start Date:	1/8/01
33% Completion Date:	4/13/01
66% Completion Date:	5/4/01
End Date:	10/31/01

*Contract Change Orders are summarized as follows:

Contract Status	Contract Time (Days)	Contract End Date
Original	210	8/5/01
Change Order No. 1	+87	10/31/01

The contract was completed and was granted final acceptance on January 16, 2002 (Resolution No. R-005-2002).

Service Area: Central Business District/French Quarter
Contract Number: 3916

Council Districts: B & D
Contract Name: Central Business
District/French Quarter
Phase 1 Point Repair

Original Contract Duration (calendar days): 210

Description of Work:

The work consists of 12 external mainline point repairs, 119 external service or lateral line point repairs, including sewer flow control, labor, equipment, tools and materials. The project is generally located in Orleans Parish, bounded by Earhart Boulevard to the east, the Mississippi River to the south, Felicite Street to the west, and Claiborne Avenue to the north.

Design Dates	
Start Preliminary Design:	2/8/99
Start Final Design:	6/28/99

Bid and Award Dates	
Advertisement Date:	8/16/00
Bid Opening Date:	9/15/00
Contract Award Date:	10/27/00

Construction Dates (Projected)	
Start Date:	1/8/01
33% Completion Date:	6/6/01
66% Completion Date:	7/16/01
End Date:	8/5/01

Construction Dates (Actual)	
Start Date:	1/8/01
33% Completion Date:	3/30/01
66% Completion Date:	5/4/01
End Date:	10/31/01

*Contract Change Orders are summarized as follows:

Contract Status	Contract Time (Days)	Contract End Date
Original	210	8/5/01
Change Order No. 1	+87	10/31/01

The contract was completed and was granted final acceptance on January 16, 2002 (Resolution No. R-006-2002).

Service Area: Central Business District/French Quarter
Contract Number: 3918

Council Districts: B & D
Contract Name: Central Business District/French Quarter Phase 1 Manhole Rehabilitation

Original Contract Duration (calendar days): 150

Description of Work:

The work consists of the rehabilitation of approximately two hundred and twenty (220) sanitary sewer manholes, including sewer flow control, labor, equipment, tools and materials. The project is generally located in Orleans Parish, bounded by Earhart Boulevard to the east, the Mississippi River to the south, Third Street to the west, and Claiborne Avenue to the north.

Design Dates	
Start Preliminary Design:	2/8/99
Start Final Design:	6/28/99

Bid and Award Dates	
Advertisement Date:	11/15/00
Bid Opening Date:	12/15/00
Contract Award Date:	1/12/01

Construction Dates (Projected)	
Start Date:	6/12/01
33% Completion Date:	9/14/01
66% Completion Date:	10/4/01
End Date:	11/8/01

Construction Dates (Actual)	
Start Date:	4/16/01
33% Completion Date:	6/15/01
66% Completion Date:	7/6/01
End Date:	10/19/01

*Contract Change Orders are summarized as follows:

Contract Status	Contract Time (Days)	Contract End Date
Original	150	9/12/01
Change Order No. 1	+37	10/19/01

This contract was completed and was granted final acceptance on March 20, 2002 (Resolution No. R-014-2002).