



MURRAY  
CITY COUNCIL

## MURRAY CITY MUNICIPAL COUNCIL COMMITTEE OF THE WHOLE

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The Murray City Municipal Council met as the Committee of the Whole on Tuesday, April 4, 2017, in the Murray City Center, Conference Room #107, 5025 South State Street, Murray Utah.

### Council Members in Attendance:

Diane Turner, Chair	District #4
Dave Nicponski, Vice-Chair	District #1
Blair Camp	District #2
Jim Brass	District #3
Brett Hales	District #5

### Others in Attendance:

Janet Towers	Chief Admin. Officer	Jan Lopez	Council Administrator
Frank Nakamura	City Attorney	Doug Hill	Public Services Director
Pattie Johnson	Council Office	Jennifer Kennedy	City Recorder
Carlton DeFosse	Resident	Greg Poole	Consultant - Hansen, Allen & Luce, Inc.
Ethel DeFosse	Resident	Jennifer Brass	Resident
George Katz	Resident	Sally Hoffelmeyer Katz	Resident
Elliot Setzer	Resident	Larry Simer	Citizen
Susan Cohen	Resident		

Ms. Turner called the Committee of the Whole meeting to order at 5:31 p.m. and welcomed those in attendance. She appreciated Mr. Hill for sitting in as Mayor Pro Tem.

1. Approval of Minutes - None Scheduled.

2. Discussion Items

### **4.1 Waste Water Collection System Master Plan** – Danny Astill and Greg Poole

Mr. Astill said the sewer system was typically evaluated every five years for growth and projection analysis, however, it had been seven years since the last study. Consultants were hired by the city to conduct a recent study. A power point was shared by Mr. Poole to explain the results and presented a

proposed design for the city, as written in the Wastewater Collection System Master Plan Summary for 2017. (See Attachments #1 and #2).

Mr. Poole commended Mr. Astill and Murray staff for their excellent knowledge and understanding of the city's sewer system, which made a significant difference in moving forward with improvements.

The Murray sewer collection system contains over 125 miles of pipe and has over 2700 manholes. A system map was shared, which was color coded by pipe size and depicted the existing flow of waste water, branching throughout the city, ending at the Center Valley Water Treatment Facility. Any developmental changes and load increases to the north end of the city, would flow down around to the south and back up to the facility. Last summer a key project was undertaken and has already made a substantial difference for future development.

The city sewer system has experienced significant growth since the 2009 Master Plan was completed, therefore, an update was needed. In the 2009 plan, overlay zones once contemplated, were capped at a certain density and that cap is no longer there. Consequently, new proposed redevelopment densities have a potential for significant increases in sewer flows. Mr. Poole noted the key objective of the study was to provide direction for decisions, aimed at the next eight to twelve years, to assure continued safe service. Mr. Poole explained the presentation in three parts.

- **Flow Characteristics**

A typical Murray residential flow pattern was graphed similar to that of other cities, where a low flow occurs at 2:00 a.m., a first peak at 7:00 a.m. and a second peak at 8:00 p.m. A key reminder was mentioned that Murray has made good progress at eliminating infiltration and inflow (INI) as growth occurred over the years. Mr. Poole said because of that monitoring by the city, the volume of wastewater flowing to the treatment plant had not increased significantly, even though the population has increased.

Mr. Poole used a chart to explain the results of a specific storm that occurred over four days, on January 11, 2017, which included rain on top of snow and frozen ground. The charted storm was similar to a more recent spring storm because it typified what seems to happen to the flow. A diagram reflected a flow pattern seen at the treatment plant, where before a storm, normal peak flow is 5.5 million gallons per day (MGD), however, due to the storm, a high peak of 6.5 MGD was recorded, which was an increase of one million gallons per day.

Extreme inflow happens from various things, such as, gutter backup, when water rushes into manholes and when ground water tables are extremely high, pushing water into the sewer. For example, Central Weber Sewer Improvement District, in West Haven, was recently under fire when rain came on top of snow melt, exceeding ground water tables, causing basements to flood. As a result, the sewer flooded due to the number of residents pumping water out into the sewer. Mr. Poole stressed the importance of preventing this occurrence because horrendous problems occur if the sewer gets flooded. He noted pumping or dumping ground water or putting surface water into the sewer system is considered an illegal discharge.

Ms. Turner wondered what the city's sewer system boundaries were and if the system included areas up to 900 East. Mr. Poole confirmed it did, although, the Murray City sewer system did not include all of the Murray region and findings were only based on the systems map. Mr. Astill confirmed, the entrance to the sewer system ran from 900 West to 3300 South and as far as 900 East.

*Overlay Zones* - A summary was shown depicting overlay zones where abundant redevelopment is happening in the city. Growth is exciting, yet a significant future volume of waste water flow is a potential. A table was shown to explain the existing and future equivalent residential connections (ERUs). The term ERU is used to describe sewer connections, where one ERU is equal to that of a single family home, meaning one connection to a building.

The total existing ERUs in Murray is 13,250, which includes: residential, totaling 8,540 ERUs; commercial buildings, 3,540 ERUs; and public facilities, 1,170 ERUs. Mr. Astill stated larger commercial facilities, such as hospitals, require many ERUs and public buildings required several more ERUs than a residential structure. Mr. Poole confirmed and said the number of ERUs are based on load proportion needs.

Due to overlay growth in the city, future ERU conditions were described in a scenario that recommends almost doubling the number of existing ERUs to 25,710. In addition, considering new growth to other areas, not considered overlay zones, an additional 3,100 ERUs was suggested. This brings estimations, including the existing 13,250 ERUs, to a future total of 42,060 ERUs. (See Equivalent Residential Connections table in Attachment #2).

This means the average waste water flow in gallons, per day, per acre (GPAD) is approximately 600 GPAD per home. Flow from commercial ERUs, is 567 GPAD, and flow from mixed use overlay zones, is 17,500 GPAD, assuming the high density allowed. As far as flow projections, estimates would fluctuate based on peak time frames, depending on the size of the collection facility and ERU type. He noted peak loading could occur at 10:00 p.m. near 500 West due to the time it takes for wasted water to exit the city's system.

*Peaking* - Under current conditions, a total of 7.5 million gallons per day (MGD) of waste water is flowing through the system. In the future, the same components would be used for INI, as time progresses and the hope is to further reduce inflow. Therefore, in mixed use overlay zones, considering future total density, it was determined that an additional 6.6 MGD is likely, which almost doubles existing conditions and brings the total to 15 MGD.

- **Modeling and Finding Deficiencies**

A model of the new system was presented by breaking the city into segments, or service areas, which included existing color coded pipelines from the current map, now depicted in red. In order to determine a good plan and confirm future load, segments were based on similar zone type, where loading factors were applied and flow monitoring was done.

Mr. Poole noted a pipeline on Cherry Street was one of the first sewers showing signs of a heavy problem where it connected to 4800 South. The discovery was made during the study and when overlay plans were underway, and a design was in place to change the existing plan on 500 West. Flow modeling through the system confirmed the master plan and defined the problem area. Originally, the overlay was considered in 2009 as a necessary project in order to eliminate the Riverside lift station. However, with current growth, the construction was completed last summer and was extended even further to relieve flow from Cherry Street. Mr. Poole commended Murray's construction staff for resolving unexpected problems so quickly and efficiently during the project, as the contractor continued to find piping not shown on anyone's plans.

- **Master Plan Recommendations**

Based on overlay zone additions, four projects are proposed in the plan. Location, solutions and cost can be found on page four of Attachment #1.

Mr. Poole reviewed all recommendations related to the system as: continued management, implementing corrections and improvement projects. Identify inflow and infiltration sources, continue incentives for saving water and study the Center Valley Water Reclamation Facility (CVWRF) flow meter to ensure accuracy was also noted. (Attachment #1).

Mr. Hill felt the 2017 Master Plan Summary is a starting point for the city to consider a new rate structure and impact fees. Since projects are numerous, including east capital projects, as well as, Central Valley capital projects, an analyst was hired to conduct a rate study. The results will encompass new rates and the recommended improvement projects to CVWRF. Under state law, impact fee studies, although separate, are part of rate studies and must be incorporated into the process which may produce spin off suggestions not mentioned in the 2017 Master Plan Summary. The Master Plan will go to the city council for their consideration.

Mr. Camp asked about replacing the Walden Glen lift station and was it considered end of life. Mr. Astill confirmed the lift station is 40 years old and on borrowed time. It was important to replace, as recommended, because new subdivisions in the areas would be utilizing it. He noted the Cimarron lift station was replaced in 2003 as part of the west side trunk line project.

Overall the system is functioning well and Mr. Astill would provide a more detailed report regarding the state Municipal Wastewater Planning Program at the next meeting.

#### **4.2 Bicycle Lanes on 700 West – Doug Hill**

Once again, Salt Lake County has funding for improvements for bicycle facilities in Salt Lake County cities. The grant program, entitled County Active Transportation Network Improvement Program (CATNIP) provided funding in the past for bike lanes along Vine Street.

After a meeting last month with Mayor Eyre, it was decided the city would like to apply again and request funding to install bike lanes over time, along 700 West and 500 West, from the north end of the city to the south end. Preliminary studies have been done to ensure a proper fit and in most places roads are conducive, along with providing parking areas. Only a few areas are tight where parking would be restricted, such as, bridges crossing Interstate 2-15 and in industrial and commercial areas on the north end of the city.

With the funding, an expert in transportation and bike engineering design would be hired, to ensure the best layout and determine conflict points. The city would also request funding to install the first phase of a bike route between 5300 South and Winchester Street. If the grant is obtained, no matching funds are required, therefore, applying for 100% funding is anticipated and bike lanes would be available for use between 5300 South and Winchester Street in the next year.

The suggested bike route is listed on the County Wide Transportation Plan, increasing eligibility for funding. Should construction begin, the city will have essentially three bike lanes going east and west, and the new lanes would be the first north and south routes. He noted future bike lanes are also planned for 900 East going north and south, constructed by the Utah Department of Transportation, which would provide two north to south bike routes in Murray.

Mr. Camp asked if this bike lanes would eliminate the practice of semi-trucks parking along 900 East. Mr. Hill said yes.

**5. Announcements:** Ms. Lopez made the following announcements:

- Wednesday, April 12, 2017, Volunteer of the Month. Located at the Heritage Center at noon.
- April 5, 2017, Utah Associated Municipal Power Systems (UAMPS) meeting, located at the Convention Center, in St George, Utah, at noon.
- April 5-7, 2017, Utah League of Cities and Towns (ULCT), Midyear Conference in St George.
- April 13, 2017, City School Coordinating Council. Located at City Hall in the conference room at 5:15 p.m.
- April 14, 2017, grand opening and ribbon cutting ceremony for of the Cleaver Octopus, in Murray City at 3:00pm.
- May 4, 2017, Governors Leadership in the Arts Award. Located at the Cultural Celebration Center in West Valley City at noon.

**6. Adjournment:** Ms. Turner adjourned the meeting at 5:59 p.m.

**Pattie Johnson  
Council Office Administrator II**

# ATTACHMENT #1

**CITY OF MURRAY**  
**WASTEWATER COLLECTION SYSTEM MASTER PLAN SUMMARY**  
**(March 2017)**

## **INTRODUCTION**

Murray City has completed a master plan of the wastewater collection system. This master plan is part of the City's ongoing efforts to verify that existing facilities are operating correctly and in an efficient manner. The master plan is also a tool to assist the City plan for future wastewater collection needs. Murray City retained the engineering firm Hansen, Allen & Luce, Inc. (HAL) to prepare the plan.

## **EVALUATION OF THE EXISTING WASTEWATER COLLECTIONS SYSTEM**

Many residences, business and industries rely on the Murray City wastewater collection system to receive wastewater and convey it to treatment. The existing Murray City wastewater collection system consists of over 125 miles of pipeline, over 2,700 manholes and several pump stations. The pipe sizes range from 6-inch diameter to 48-inch diameter. The majority of the pipes in the system are less than 15-inches in diameter. Several pipe materials are found within the system including: concrete, reinforced concrete, PVC, HDPE, clay, asbestos cement, and tile. Much of the wastewater generated in the study area flows by gravity to the treatment facility. However, some low areas in the City require pumping.

An evaluation of the existing wastewater collection system was performed to determine the adequacy of the system. This evaluation included flowrate monitoring to determine the amount of wastewater being collected and computer modeling to determine whether the existing pipes are large enough to accommodate the flows.

### **Flowrate Monitoring**

Flowrate monitoring was conducted throughout the City as part of this study. Murray City and HAL personnel installed flow meters at key locations throughout the City to measure the amount of flow being produced in different areas. Additionally, flow data was collected from the permanently installed flowmeter at the location that all Murray City flow discharges to the Central Valley Water Reclamation Facility system. Historical data from previous flowrate monitoring studies were also collected. The data from all of these sources were evaluated to determine how much wastewater is produced by the City and to determine how much flow is generated in each area of the City.

### **Citywide Wastewater Production**

Murray City typically produces flows of 3.5 million gallons per day plus infiltration and inflow. Peak flows often occur at around 8 am and the peak flowrate is about one and a half times greater than the daily average flowrate. Low flows occurring at around 2 am and are usually about half the daily average flowrate.

## Infiltration

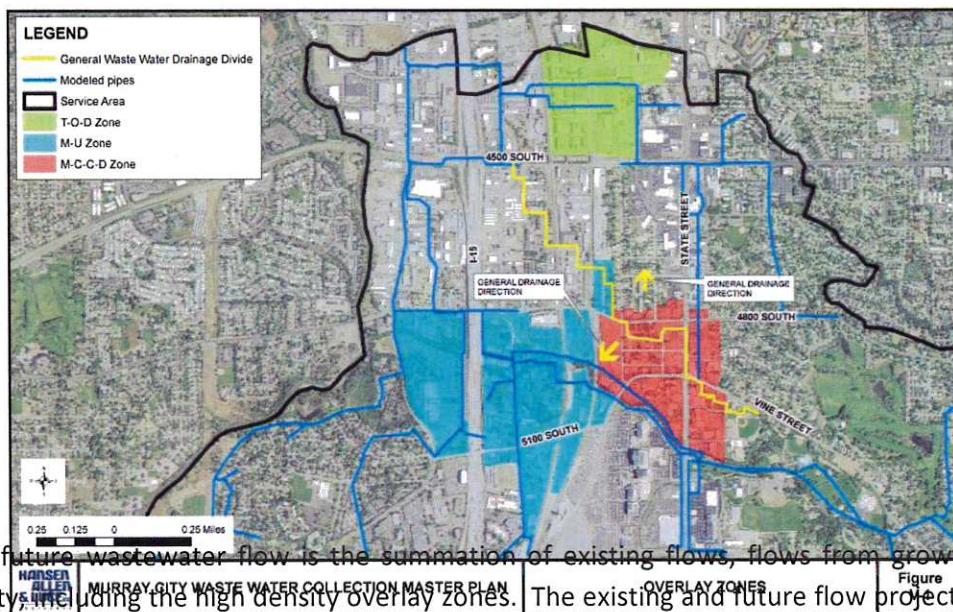
Infiltration is groundwater which enters a wastewater collection system through pipe joints, cracks in the pipe, and leaks in manholes or building connections. Infiltration rates typically fluctuate throughout the year depending on the level of groundwater. It is estimated that infiltration water enters the Murray City sewer system at an average flowrate of 800,000 gallons per day. Murray City eliminates infiltration from entering the collection system when sources of infiltration are identified.

## Inflow

Inflow is defined as surface water that enters a wastewater collection system (including building connections) through roof leaders, cellar, foundation, yard, and area drains, cooling water discharges, manhole covers, cross connections from storm drains, etc. It is estimated that inflow water enters the Murray City sewer system at an average rate of 1 million gallons per day (MGD) during storms. It is illegal to discharge storm water to the sewer system. Murray City eliminates inflow from entering the collection system when sources are identified.

## WASTEWATER FLOW PROJECTIONS

Flowrate projections were developed to predict how much wastewater the City will need to collect, convey and treat in the future. Modest growth is expected to continue throughout the City over the next several years. However, in some areas, the growth is expected to be significant. Significant growth areas have been designated as overlay zones, with a projected total development density of 100 units per acre. Figure V-1 is provided below and shows the overlay areas.



### FLOW PROJECTIONS TABLE

Loading Parameter	Modeled Projected Flow (MGD)	
	Average Daily Flow	Peak Daily Flow
<b>Existing Conditions</b>		
Existing Residential and Commercial (from indoor water use)	3.7	5.4
Infiltration Daily Flows	0.8	0.8
Inflow from Precipitation Daily Flow	1.0	1.0
<b>TOTAL</b>	<b>5.5</b>	<b>7.5</b>
<b>Future Conditions</b>		
Existing Residential and Commercial (from indoor water use)	3.7	5.4
Infiltration from Groundwater	1.0	1.0
Existing Residential and Commercial (from indoor water use)	1.0	1.0
Infiltration Daily Flows	4.5	6.6
Inflow from Precipitation Daily Flow	0.6	0.9
<b>TOTAL</b>	<b>10.8</b>	<b>14.9</b>

In the above table, it may be observed that currently, the average daily flowrate is about 5.5 MGD. However, peak flows often reach a flowrate of 7.5 MGD. In the future, it is projected that the average daily flowrate will be 10.8 MGD, with peak flowrates of about 14.9 MGD.

### MODELING

A wastewater system computer model was created to simulate operation of the waste water collection system. The projected flowrates from the table above were entered into the model, which was used to evaluate whether the sewers are adequate to handle existing and future flows. The computer model was calibrated by comparing the flow monitoring data with the data in the model to confirm agreement. The model matched closely with the field monitoring.

### Results

The model predicts that the existing wastewater system is generally capable of conveying the anticipated flows for both the existing and future scenarios. However, there are a few areas where additional infrastructure is needed.

## MASTER PLAN PROJECTS LIST

Based on the results of the modeling, a list of recommended improvement projects was prepared. This list is as follows:

### RECOMMENDED IMPROVEMENTS PROJECTS

Priority	ID	Location	Solution	Cost
1	4	Walden Glen Lift Station	Replace Lift Station	\$1,200,000
2	1	State Street - 5800 South to 6000 South	Replace pipe with new 15" diameter pipe	\$490,000
3	5	State Street, 4600 South to Rainbow	Replace pipe with new 12" min. dia. pipe	\$140,000
4	6	4600 South, State Street, 4500 South & Main Street	Divert flows away from Fairbourne Lift Station and increase capacity	\$700,000

In the table, it may be observed that the Priority No. 1 project is to replace the Walden Glen Lift Station. This is an older lift station that is wearing out and in need of replacement. Priority No. 2 and No. 3 projects are sewers which need additional capacity and these projects provide that capacity. Finally, the Priority No. 4 provides additional sewer capacity and routes flow away from the Fairbourne Lift Station. In addition to providing additional capacity, the project will result in energy savings by reducing the amount of wastewater that needs to be pumped. Estimated construction costs are also provided.

## RECOMMENDATIONS

It is recommended that the projects included in the above table be completed. Other recommendations include continuation of the flowrate monitoring program, elimination of infiltration and inflow and the continued monitoring of problem areas within the system.

Murray City has an active asset management program which includes completing detailed condition assessments of each of the sewers. It is recommended that the City continue the asset management program and provide maintenance and or repairs as indicated by the assessments.

# STATE OF UTAH

## *MUNICIPAL WASTEWATER PLANNING PROGRAM*

### SELF-ASSESSMENT REPORT

FOR

MURRAY CITY PUBLIC SERVICES

2016



UTAH DEPARTMENT of  
ENVIRONMENTAL QUALITY  
**WATER  
QUALITY**

# **Municipal Wastewater Planning Program (MWPP)**

## **Financial Evaluation Section for 2016**

Owner Name: MURRAY CITY PUBLIC SERVICES

Name and Title of Contact Person:

Justin Zollinger

Finance Director

Phone: 801-264-2669

E-mail: [jzollinger@murray.utah.gov](mailto:jzollinger@murray.utah.gov)

## **SUBMIT BY APRIL 15, 2017**

Electronic  
submission: <http://deq.utah.gov/ProgramsServices/services/submissions/index.htm>

or

Mail to: MWPP - Department of Environmental Quality  
Division of Water Quality  
195 North 1950 West  
P.O. Box 144870  
Salt Lake City, Utah 84114-4870  
Phone: (801) 536-4300

*NOTE: This questionnaire has been compiled for your benefit by a state sponsored task force comprised of representatives of local government and service districts. It is designed to assist you in making an evaluation of your wastewater system and financial planning. If you received financial assistance from the Water Quality Board, annual submission of this report is a condition of that assistance. Please answer questions as accurately as possible to give you the best evaluation of your facility. If you need assistance please call John Mackey, Utah Division of Water Quality: (801) 536-4300.*

I. Definitions: The following terms and definitions may help you complete the worksheets and questionnaire:

**User Charge (UC)** - A fee established for one or more class(es) of users of the wastewater collection and treatment facilities that generate revenues to pay for costs of the system.

**Operation and Maintenance Expense** - Expenditures incurred for materials, labor, utilities, and other items necessary for managing and maintaining the facility to achieve or maintain the capacity and performance for which it was designed and constructed.

**Repair and Replacement Cost** - Expenditures incurred during the useful life of the treatment works for obtaining and installing equipment, accessories, and/or appurtenances necessary to maintain the existing capacity and the performance for which the facility was designed and constructed.

**Capital Needs** - Cost to construct, upgrade or improve the facility.

**Capital Improvement Reserve Account** - A reserve established to accumulate funds for construction and/or replacement of treatment facilities, collection lines or other capital improvement needs.

**Reserve for Debt Service** - A reserve for bond repayment as may be defined in accordance with terms of a bond indenture.

**Current Debt Service** - Interest and principal costs for debt payable this year.

**Repair and Replacement Sinking Fund** - A fund to accumulate funds for repairs and maintenance to fixed assets not normally included in operation expenses and for replacement costs (defined above).

## Part I: OPERATION AND MAINTENANCE

Complete the following table:

Question	Points Earned	Total
Are revenues sufficient to cover operation, maintenance, and repair & replacement (OM&R) costs <u>at this time?</u>	YES = 0 points NO = 25 points	0
Are the projected revenues sufficient to cover operation, maintenance, and repair & replacement (OM&R) costs for the <u>next five years?</u>	YES = 0 points NO = 25 points	0
Does the facility have sufficient staff to ensure proper OM&R?	YES = 0 points NO = 25 points	0
Has a dedicated sinking fund been established to provide for repair & replacement costs?	YES = 0 points NO = 25 points	0
Is the repair & replacement sinking fund adequate to meet anticipated needs?	YES = 0 points NO = 25 points	0
What was the average User Charge fee for 2016? <small>Residential</small>	\$ <u>30.22</u> per month	
<b>TOTAL PART I =</b>		0

## Part II: CAPITAL IMPROVEMENTS

Complete the following table:

Question	Points Earned	Total
Are present revenues collected sufficient to cover all costs and provide funding for capital improvements?	YES = 0 points NO = 25 points	0
Are projected funding sources sufficient to cover all projected capital improvement costs for the <u>next next five years?</u>	YES = 0 points NO = 25 points	0
Are projected funding sources sufficient to cover all projected capital improvement costs for the <u>next next ten years?</u>	YES = 0 points NO = 25 points	25
Are projected funding sources sufficient to cover all projected capital improvement costs for the <u>next next twenty years?</u>	YES = 0 points NO = 25 points	25
Has a dedicated sinking fund been established to provide for future capital improvements?	YES = 0 points NO = 25 points	0
<b>TOTAL PART II =</b>		50

### Part III: GENERAL QUESTIONS

Complete the following table:

Question	Points Earned	Total
Is the wastewater treatment fund a separate enterprise fund/account or district?	YES = 0 points NO = 25 points	0
Are you collecting 95% or more of your sewer billings?	YES = 0 points NO = 25 points	0
Is there a review, at least annually, of user fees?	YES = 0 points NO = 25 points	25
Are bond reserve requirements being met if applicable?	YES = 0 points NO = 25 points	0
	<b>TOTAL PART III =</b>	

### Part IV: PROJECTED NEEDS

Estimate as best you can the following:

Cost of projected capital improvements (in thousands)	2017	2018	2019	2020	2021
	2,000	2,000	1,450	1,850	1,925

### Point Summation

Fill in the point totals from Parts I through III in the blanks provided in the Points column. Add the numbers to determine the MWPP point total that reflects your present financial position for meeting your wastewater needs.

Part	Points
I	0
II	50
III	25
<b>Total</b>	<b>75</b>

## **Municipal Wastewater Planning Program (MWPP) Collection System Section**

Owner Name: MURRAY CITY PUBLIC SERVICES

Name and Title of Contact Person:

Danny Astill

Water Superintendent

Phone: 801-270-2440

E-mail: dastill@murray.utah.gov

### **SUBMIT BY APRIL 15, 2017**

Electronic

submission: <http://deq.utah.gov/ProgramsServices/services/submissions/index.htm>

or

Mail to: MWPP - Department of Environmental Quality  
Division of Water Quality  
195 North 1950 West  
P.O. Box 144870  
Salt Lake City, Utah 84114-4870  
Phone: (801) 536-4300

Form completed by:

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May Receive Continuing Education Units (CEUs)

## Part I: SYSTEM AGE

A. What year was your collection system first constructed (approximately)?

Year 1917

B. What is the oldest part of your present system?

Oldest part 100 years

## Part II: BYPASSES

A. Please complete the following table:

Question	Number	Points Earned	Total Points
How many days last year was there a bypass, overflow or basement flooding by untreated wastewater in the system due to rain or snowmelt?		0 times = 0 points 1 time = 5 points 2 times = 10 points 3 times = 15 points 4 times = 20 points 5 or more = 25 points	0
How many days last year was there a bypass, overflow or basement flooding by untreated wastewater due to equipment failure? (except plugged laterals)		0 times = 0 points 1 time = 5 points 2 times = 10 points 3 times = 15 points 4 times = 20 points 5 or more = 25 points	0
<b>TOTAL PART II =</b>			0

B. The Utah Sewer Management Program defines two classes of sanitary sewer overflows (SSOs). Below include the number of SSOs that occurred in 2016.

Class 1- a Significant SSO means a SSO or backup that is not caused by a private lateral obstruction or problem that:

- (a) affects more than five private structures;
- (b) affects one or more public, commercial or industrial structure(s);
- (c) may result in a public health risk to the general public;
- (d) has a spill volume that exceeds 5,000 gallons, excluding those in single private structures; or
- (e) discharges to Waters of the state.

## Part II: BYPASSES (cont.)

Class 2 – a Non-Significant SSO means a SSO or backup that is not caused by a private lateral obstruction or problem that does not meet the Class 1 SSO criteria.

Number of Class 1 SSOs in Calendar year 2016 1

Number of Class 2 SSOs in Calendar year 2016 0

C. Please indicate what caused the SSO(s) in B. If needed attach the additional information to this report.

It was determined that someone had deliberately put a piece of wood shaped to barley fit inside an 8" sewer line. This block of wood became lodged in a manhole outfall line where flows are combined just before it comes into our Fairbourne Lift Station.

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D. Please specify whether the SSOs were caused by contract or tributary community, etc.

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### Part III: NEW DEVELOPMENT

A. Please complete the following table:

Question	Points Earned	Total Points
Has an industry or other development moved into the community or expanded production in the past two years, such that either flow or wastewater loadings to the sewerage system were significantly increased (10 - 20%)?	No = 0 points Yes = 10 points	0
Are there any major new developments (industrial, commercial, or residential) anticipated in the next 2 - 3 years, such that either flow or BOD <sub>5</sub> loadings to the sewerage system could significantly increase (25%)?	No = 0 points Yes = 10 points	0
<b>TOTAL PART III =</b>		0

### Part III: NEW DEVELOPMENT (cont.)

B. Approximate number of new residential sewer connections in the last year

22 new residential connections

C. Approximate number of new commercial/industrial connections in the last year

6 new commercial/industrial connections

D. Approximate number of new population serviced in the last year

36000 new people served

E. Total number of effective residential connections (ERC) served

13250 total ERC served

## Part IV: OPERATOR CERTIFICATION

A. How many collection system operators are currently employed by your facility?  
9 collection system operators employed

B. You are required to have the chief direct responsible charge (DRC) operator(s) certified at COLLECTION III.

What is the current grade of the collection DRC operator(s)? IV

C. What is/are the name(s) of your wastewater treatment DRC operator(s)?  
collection  
~~XXXXXX~~

Benjamin Ford      Danny Astill

Jayson Perkins      Randy Kenney

Troy West    Dan Lopez    Gary Gustafson

D. State of Utah Administrative Rules requires all operators, of public systems, considered to be in DRC to be appropriately certified. List all the operators in your system by their certification class. Attach additional pages if necessary.

*Not Certified*      1

Small Lagoons      \_\_\_\_\_

Collection I      \_\_\_\_\_

Collection II      1

Collection III      0

Collection IV      7

#### Part IV: OPERATOR CERTIFICATION (cont.)

E. Please complete the following table:

Question	Points Earned	Total Points
Is/are your DRC operator(s) currently certified at the appropriate grade for this facility? (see C)	Yes = 0 points No = 50 points	0
How many continuing education units has each of the DRC operator(s) completed over the last 3 years?	3 or more = 0 points less than 3 = 10 points	0
<b>TOTAL PART IV =</b>		0

#### Part V: FACILITY MAINTENANCE

A. Please complete the following table:

Question	Points Earned	Total Points
Do you follow an annual preventative maintenance program?	Yes = 0 points No = 30 points	0
Is it written?	Yes = 0 points No = 20 points	0
Do you have a written emergency response plan?	Yes = 0 points No = 20 points	0
Do you have an updated operations and maintenance manual	Yes = 0 points No = 20 points	0
Do you have a written safety plan?	Yes = 0 points No = 20 points	0
<b>TOTAL PART V =</b>		0

## Part VI: SSMP EVALUATION

A. Has your system completed its Sewer System Management Plan (SSMP)?  
No \_\_\_\_\_ Yes  \_\_\_\_\_

B. If the SSMP has been completed, has the SSMP been public noticed?  
No \_\_\_\_\_ Yes (include date of public notice) 7 April 2015

C. Has the SSMP been approved by the permittee's governing body at a public meeting?  
No \_\_\_\_\_ Yes  \_\_\_\_\_

D. During the annual assessment of the SSMP, were any adjustments needed based on the performance of the plan?  
No \_\_\_\_\_ Yes  \_\_\_\_\_ If yes, what components of the plan were changed (i.e. line cleaning, CCTV inspections and manhole inspections and/or SSO events)?  
SOP Changes  
\_\_\_\_\_

E. During 2016 was any part of the SSMP audited as part of the five year audit?  
No \_\_\_\_\_ Yes  \_\_\_\_\_ If yes, what part of the SSMP was audited and were changes made to the SSMP as a result of the audit? SOP changes since we began using City Works, work order system.  
\_\_\_\_\_

F. Has your system completed its *System Evaluation and Capacity Assurance Plan* (SECAP) as defined by the Utah Sewer Management Program?  
No \_\_\_\_\_ Yes  \_\_\_\_\_

The following are dates that the SSMP and SECAP are required to be completed, based on population. The SSMP and SECAP must be public noticed and approved by the permittee's governing body in order to be considered complete.

Requirement	Population				
	Less than 2,000	2,000 - 3,500	3,501 – 15,000	15,001 – 50,000	More than 50,000
Completion of SSMP	March 31, 2016	March 31, 2016	September 30, 2016	March 31, 2016	September 30, 2016
Completion of SECAP	Optional	September 30, 2017	September 30, 2016	March 31, 2016	September 30, 2016

## Part VII: SUBJECTIVE EVALUATION

*This section should be completed with the system operators.*

A. Describe the physical condition of the sewer collection system: (lift stations, etc. included)

Murray City's Wastewater Collection System is in good operational

condition. There are some existing trouble spot areas that have been

identified and have been included in our cleaning and corrective

action plans, ie - repair, monitor or more regular maintenance.

B. What sewerage system improvements does the community plan to have under consideration for the next 10 years?

Sewer line upgrades, pump station rehabilitation, other pump station

improvements.

Sewer line spot repairs, pipe linings and root intrusion treatments.

C. Explain problems, other than plugging, that you have experienced over the last year

Pump station failures - ie pumps / SCADA alarm & communication issues.

I & I concerns

Manhole ring & lid problems.

D. Is your community presently involved in formal planning for system expansion/upgrading? If so explain.

A new Sewer Master Plan will be completed in early 2017.

## Part VII: SUBJECTIVE EVALUATION (cont.)

G. Does the municipality/district pay for the continuing education expenses of operators?

ALWAYS   X        SOMETIMES             NO

If they do, what percentage is paid?

approximately 100 %

H. Is there a written policy regarding continuing education and training for wastewater operators?

YES \_\_\_\_\_ NO  X

I. Any additional comments? (Attach additional sheets if necessary.)

Note: from the financial section "Part II: Capital Improvements"

Any planning beyond five years should not be scored, since there are

numerous variables that can impact this including federal and/or

State regulations that cannot be seen or planned for.

## POINT SUMMATION

Fill in the point totals from Parts II through V in the blanks provided in the Points column. Add the numbers to determine the MWPP point total that your wastewater facility has generated for the past twelve months.

Part	Points
II	0
III	0
IV	0
V	0
Total	0

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.

Danny J. Castill  
Signature of Signatory Official

29 March 2017  
Date

Danny J. Castill  
Print Name of Signatory Official

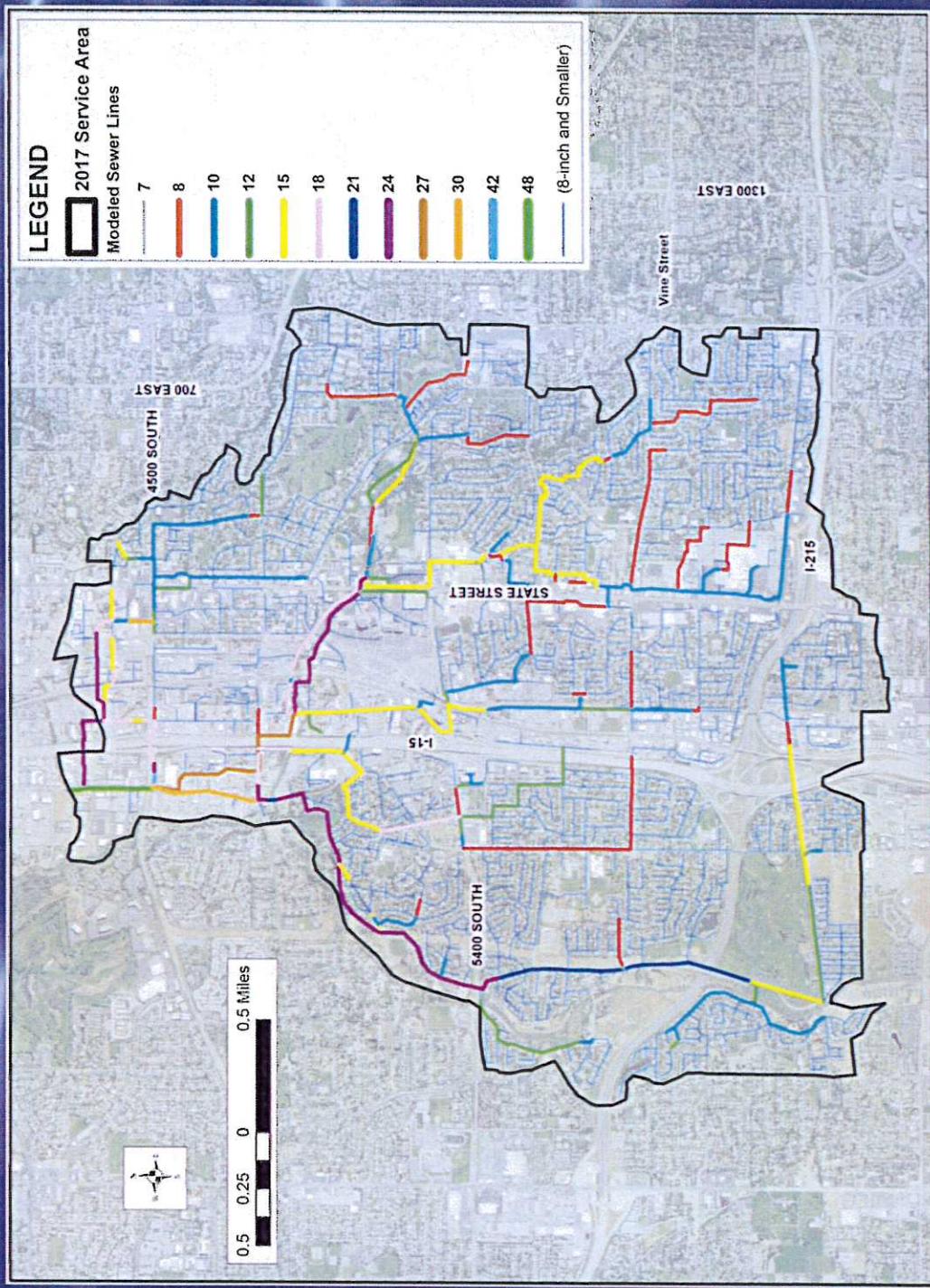
Water Superintendent  
Title

The signatory official is the person authorized to sign permit documents, per R317-8-3.4.

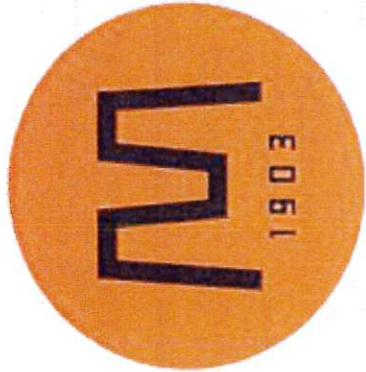


# ATTACHMENT #2

# MURRAY CITY WASTEWATER COLLECTION SYSTEM MASTER PLAN



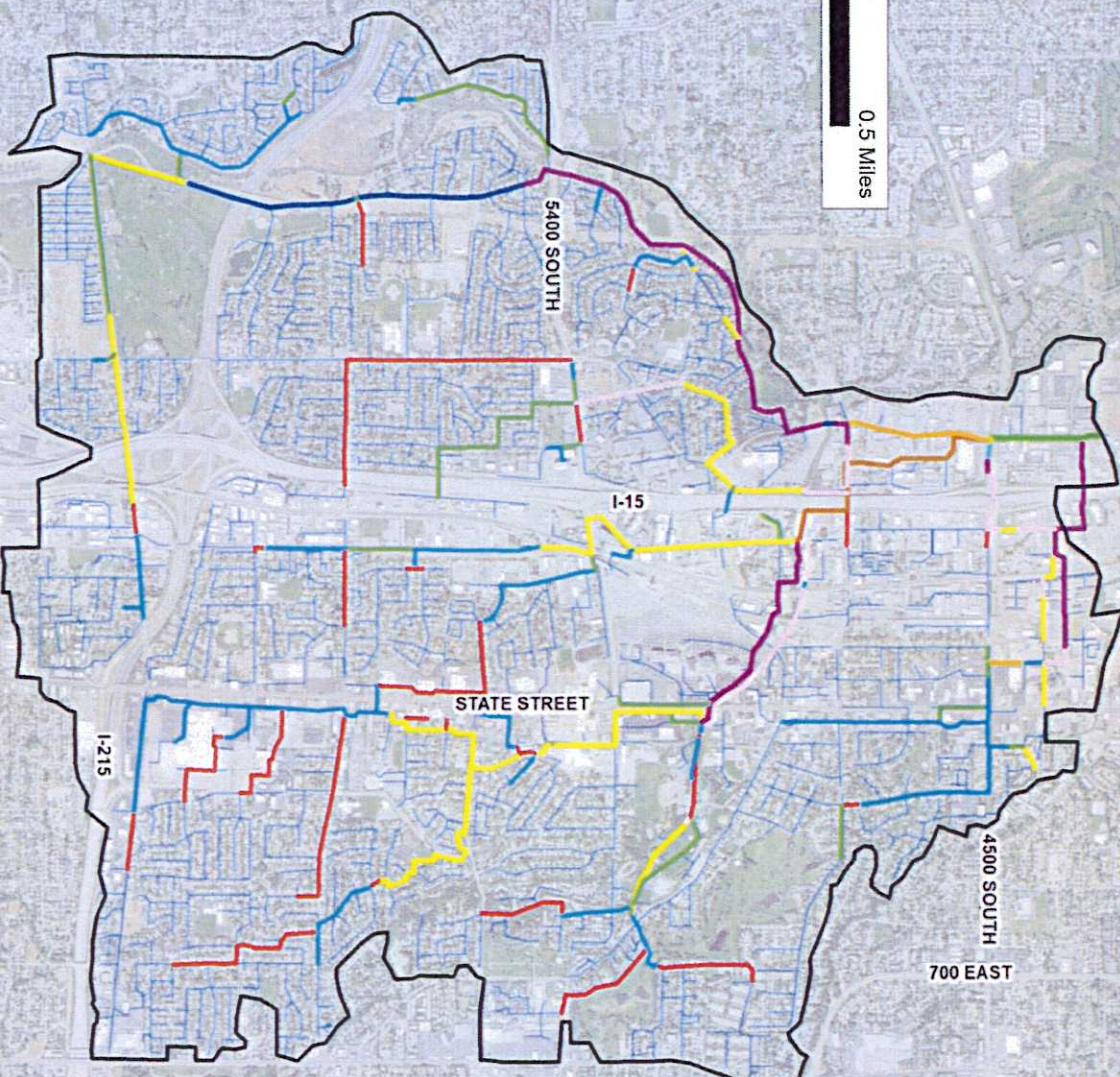
## MURRAY



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& LUCE Inc**  
ENGINEERS

# MURRAY CITY SEWER COLLECTION SYSTEM

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&  
LUCE  
INC  
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0.5  
0.25  
0  
0.5 Miles



## LEGEND

2017 Service Area  
Modeled Sewer Lines

—	7
—	10
—	12
—	15
—	18
—	21
—	24
—	27
—	30
—	42
—	48

(8-inch and Smaller)

MURRAY



# MURRAY CITY SEWER SYSTEM

---

- Significant growth and redevelopment has occurred since the 2009 master plan.
- Proposed redevelopment density has the potential to significantly increase sewer flows. (Overlay Zones)
- Key Objective – Provide direction for decisions for the next 8 to 12 years to help assure the continued safe service.



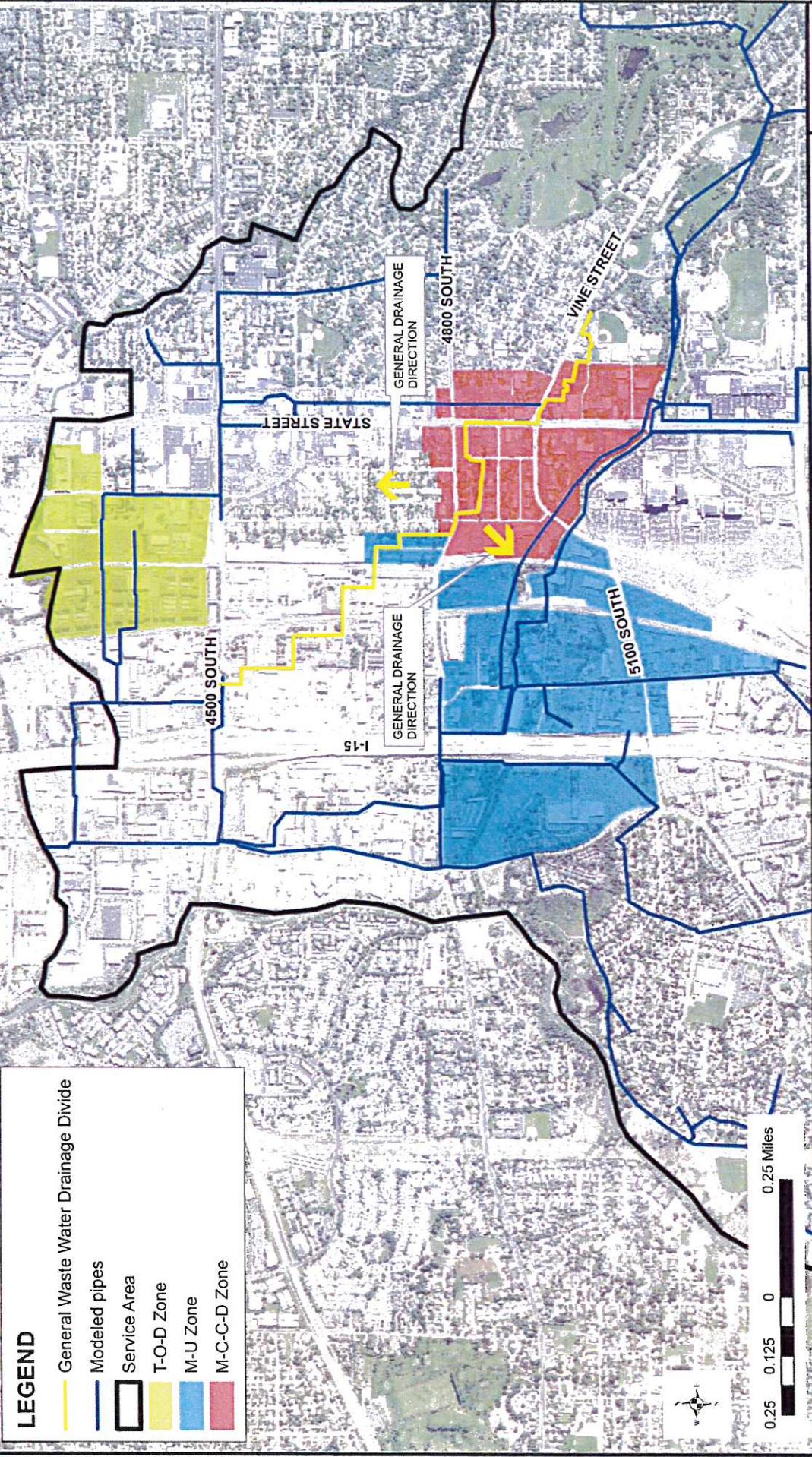
MURRAY

1903

MURRAY CITY  
WASTEWATER COLLECTION SYSTEM  
MASTER PLAN

# WASTEWATER FLOW CHARACTERISTICS

# OVERLAY ZONES



# EQUIVALENT RESIDENTIAL CONNECTIONS

Description	Number of ERUS
<b>Existing Conditions Scenario</b>	
Residential	8,540
Commercial*	3,540
Public Facilities*	1,170
Total	13,250
<b>Future Conditions Scenario</b>	
Existing Conditions	13,250
Overlay Growth	25,710
Non-Overlay Growth	3,100
Total	42,060

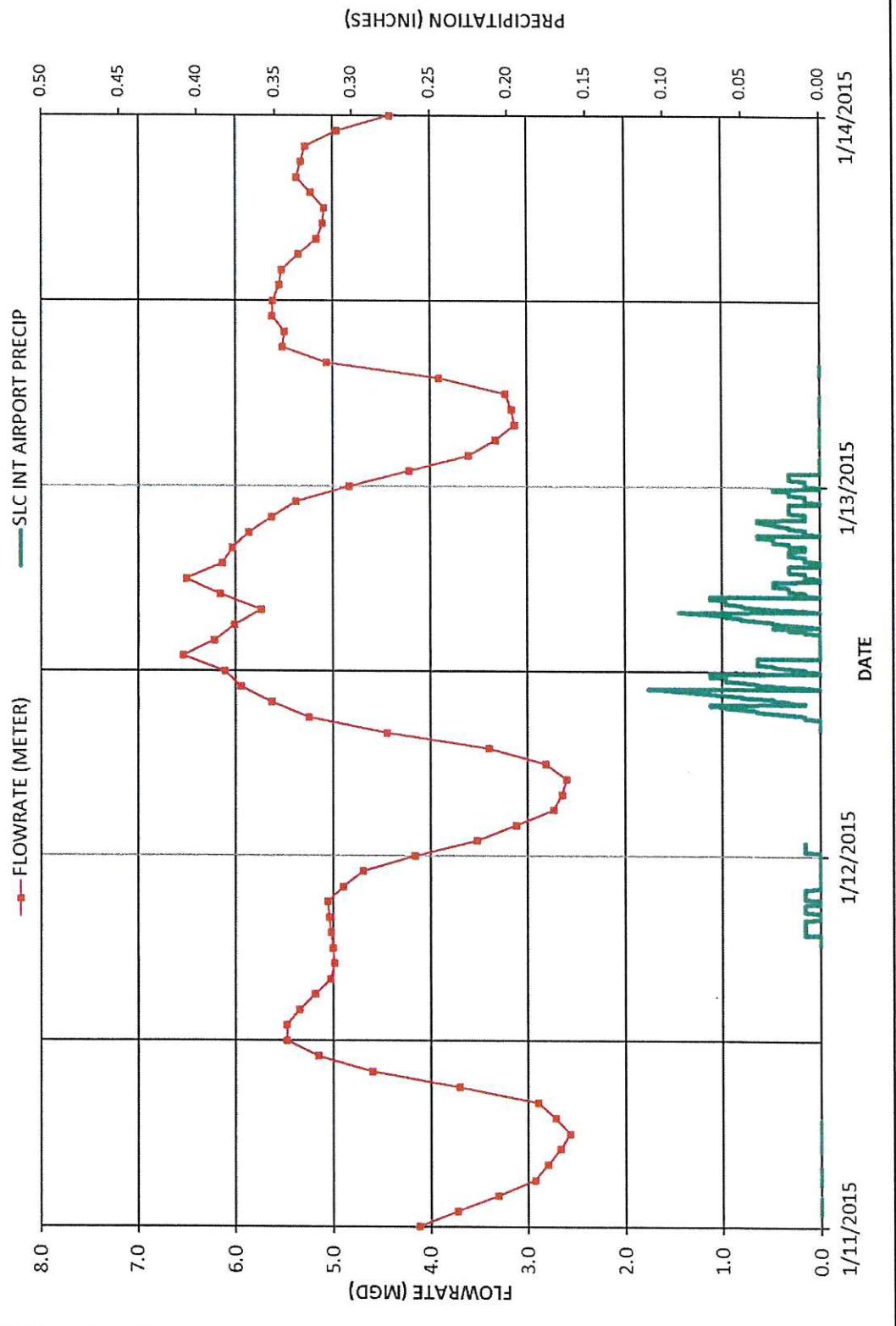
# WASTEWATER FLOWS BY LAND USE

LAND USE TYPE	Average Wastewater Flow (gpd/acre)
Residential	604
Commercial	567
Mixed Use Overlay Zones T-O-D, M-U & M-C-C-D	17,500

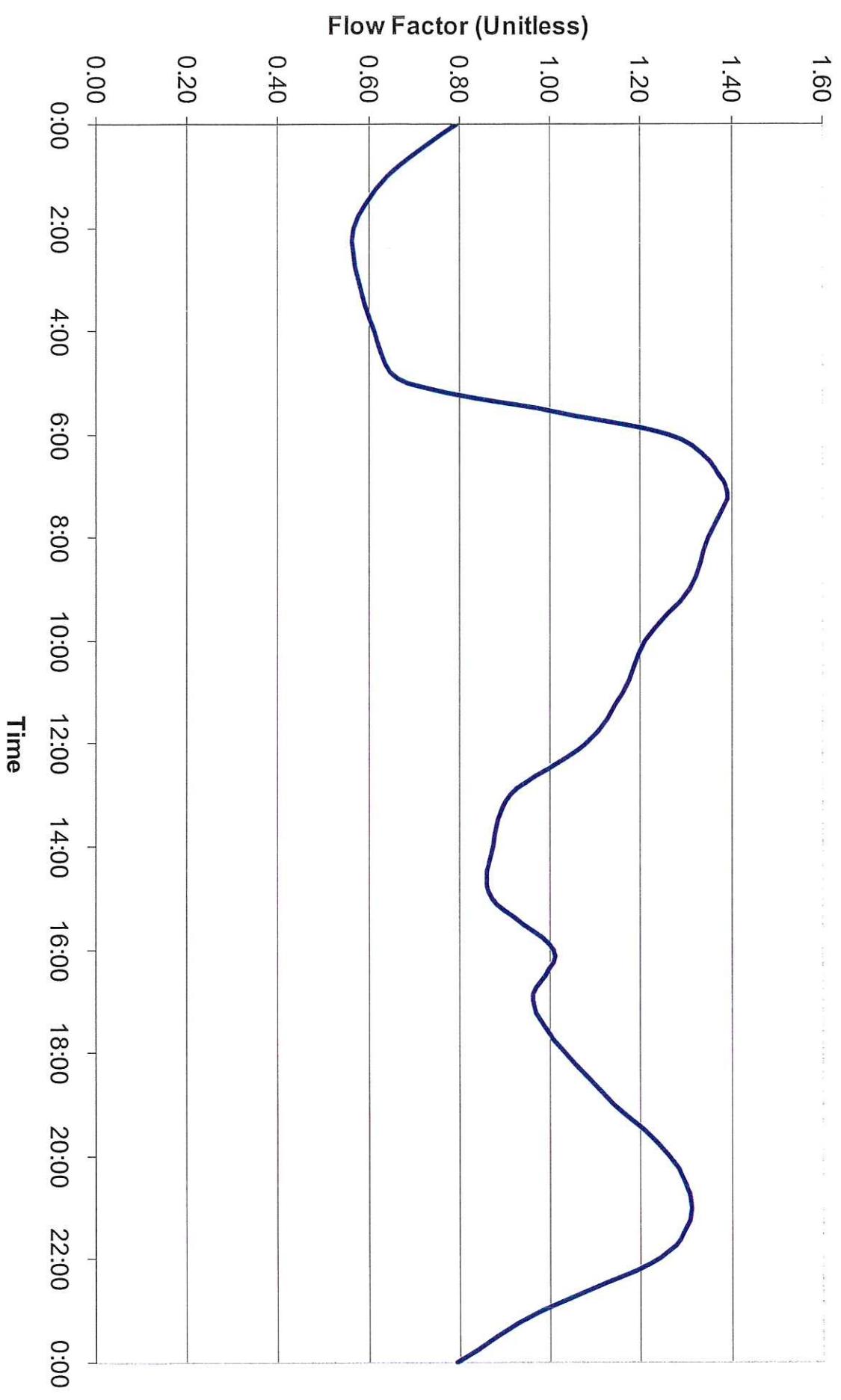
## FLOW PROJECTIONS

Loading Parameter	Modeled Projected Flow (MGD)	
	Average Daily Flow	Peak Daily Flow
<b>Existing Conditions</b>		
Existing Residential and Commercial (from indoor water use)	3.7	5.4
Infiltration Daily Flows	0.8	0.8
Inflow from Precipitation	1.0	1.0
Total	5.5	7.5
<b>Projected Future Conditions (with Overlay Zones developed at 100 units per acre)</b>		
Existing Residential and Commercial (from indoor water use)	3.7	5.4
Infiltration from Groundwater	1.0	1.0
Inflow from Precipitation	1.0	1.0
Mixed Use Overlay Zone Growth	4.5	6.6
Additional Future Loading	0.6	0.9
<b>TOTAL</b>	<b>10.8</b>	<b>14.9</b>

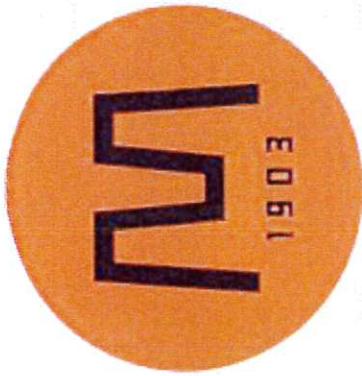
# TYPICAL FLOWS WITH RAINFALL EVENT



# Residential Wastewater Flow Pattern



MURRAY CITY  
WASTEWATER COLLECTION SYSTEM  
MASTER PLAN



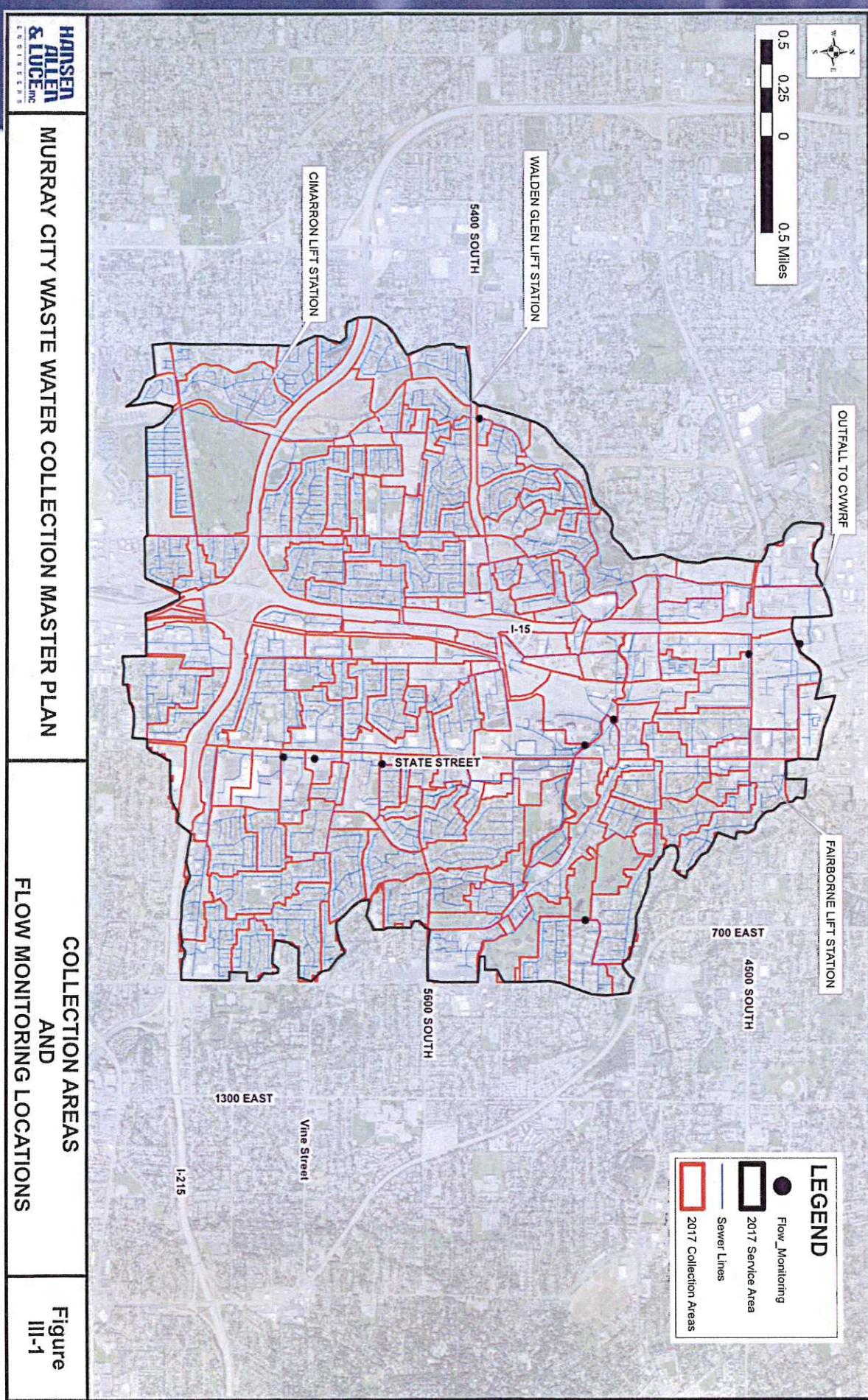
MURRAY

SEWER FLOW MODELING

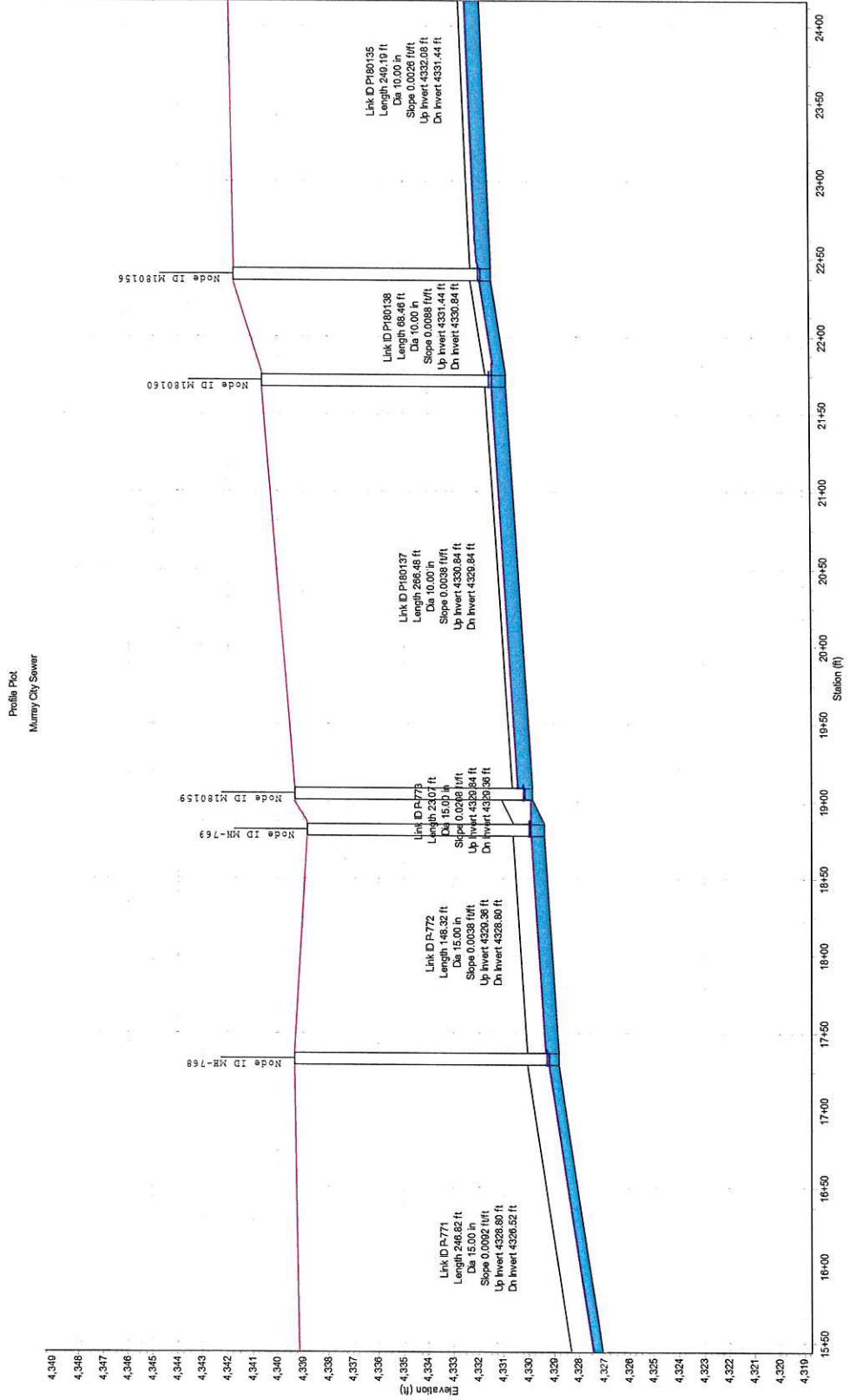
April 4, 2017

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& LUCE Inc**  
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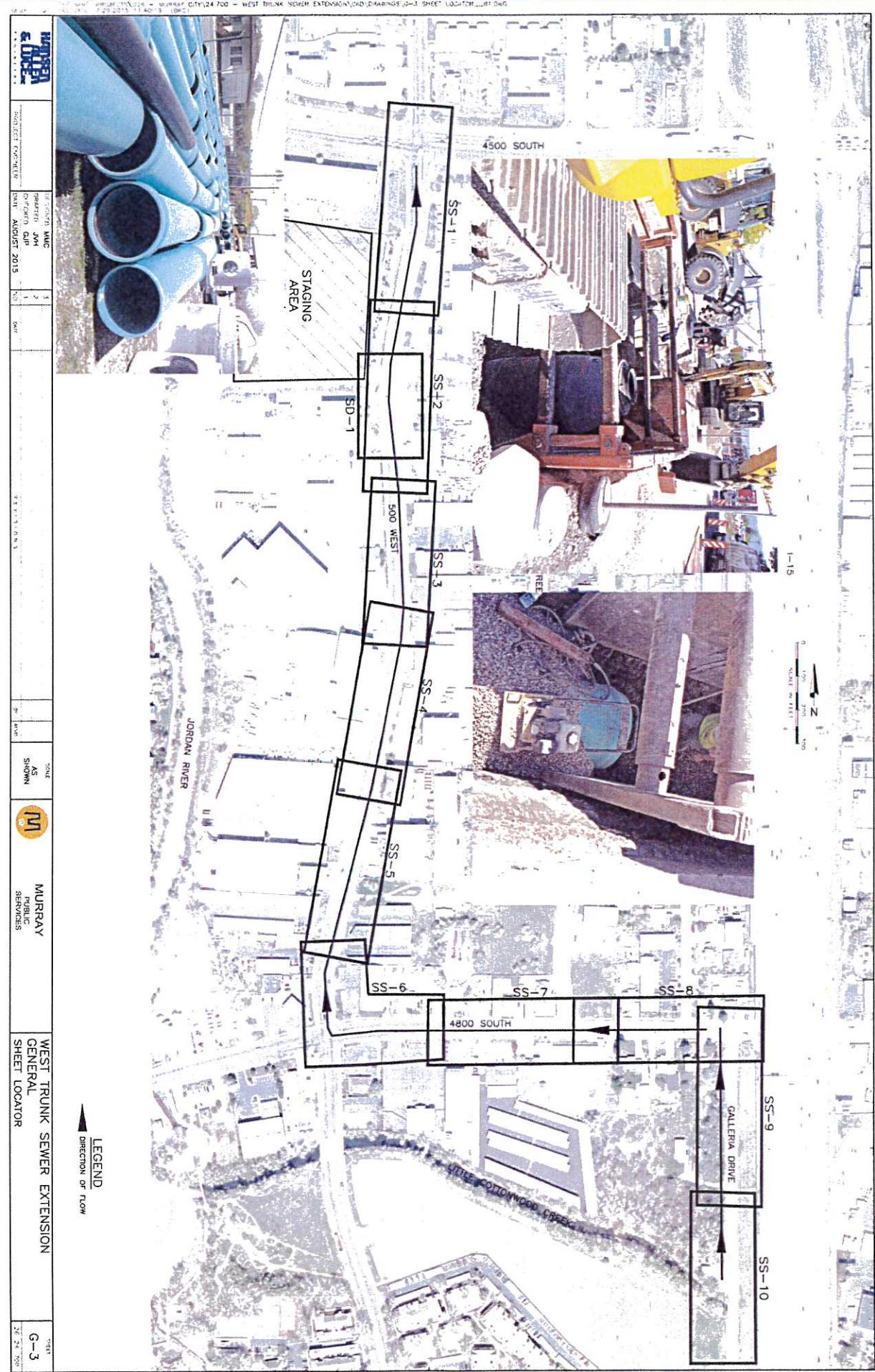
# MODELING - SEWER COLLECTION AREAS



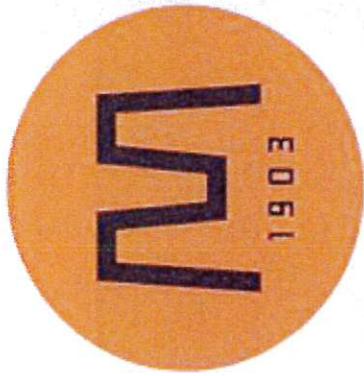
## EXAMPLE MODEL SEWER PROFILE



## 500 WEST TRUNK SEWER PROJECT



MURRAY CITY  
WASTEWATER COLLECTION SYSTEM  
MASTER PLAN



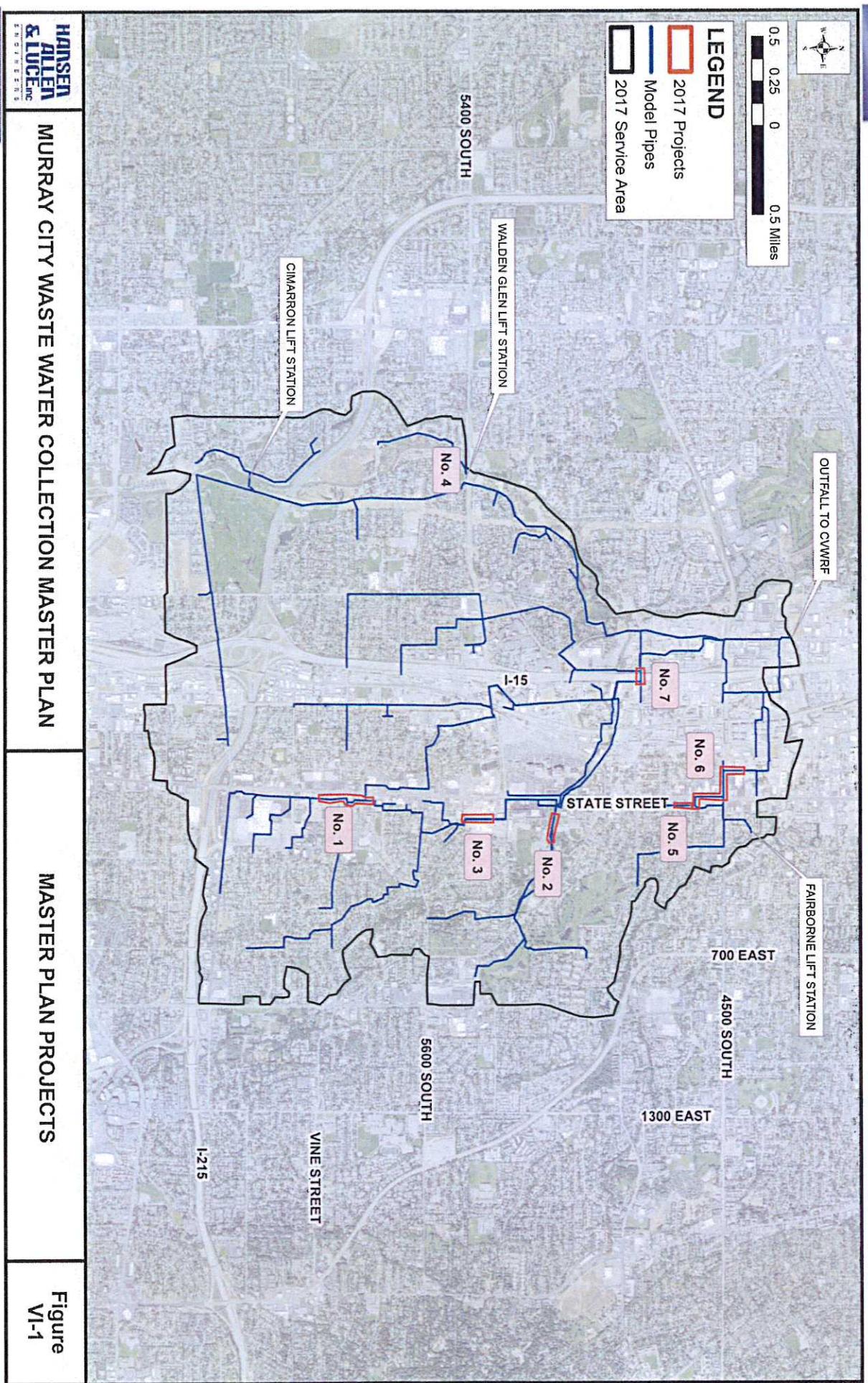
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RECOMMENDATIONS

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ENGINEERS

April 4, 2017

# MASTER PLAN PROJECTS



## IMPROVEMENT RECOMMENDATIONS

Priority	LOCATION	SOLUTION	COST
1	Walden Glen Lift Station	Replace Lift Station	\$1,200,000
2	State Street - 5800 South to 6000 South	Replace pipe with new 15" diameter pipe	\$490,000
3	State Street, 4600 South to Rainbow	Replace pipe with new 12" min. dia. pipe	\$140,000
4	4600 South, State Street, 4500 South & Main Street	Divert flows away from Fairbourne Lift Station and increase capacity	\$700,000

# RECOMMENDATIONS

- Continue the Comprehensive Asset Management program.
- Continue to implement corrections identified by the Asset Management program.
- Implement the recommended improvement projects.
- Continue to identify sources of inflow and infiltration.
- Work with the Water Department to continue offering incentives for installing water wise fixtures.
- Study the CVWRF flow meter to ensure its accuracy.