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VIA ELECTRONIC CORRESPONDENCE

February 6, 2015

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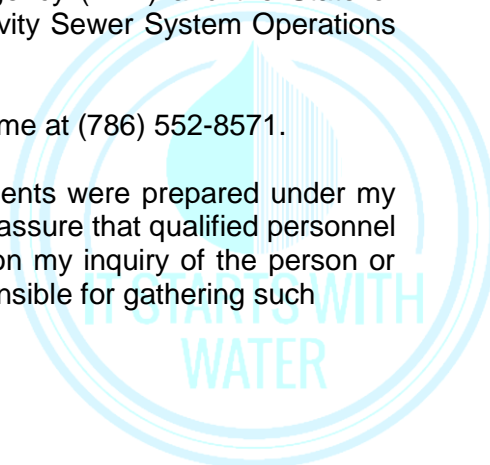
**RE: Consent Decree (Case: No. 1:12-cv-24400-FAM)
Reference DOJ Case No. 90-5-1-1-4022/1
Section VI – Gravity Sewer System Operations and Maintenance Program Submittal,
Paragraph 19(e)**

Dear Sir/Madam:

In accordance with the provisions of Paragraph 19(e) of the above referenced Consent Decree, on behalf of Miami-Dade County, the Miami-Dade Water and Sewer Department (MDWASD) submits to both the United States Environmental Protection Agency (EPA) and the State of Florida Department of Environmental Protection (FDEP) the Gravity Sewer System Operations and Maintenance Program.

Should you have any questions regarding this matter, please call me at (786) 552-8571.

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 such



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.

Sincerely,



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Attachment: Gravity Sewer System Operations and Maintenance Program

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CMOM Program

Gravity Sewer System Operations and Maintenance Program



February 6, 2015

Prepared by

**The Miami-Dade County Water and Sewer Department and
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Management (CD PM/CM) Team**

Prepared for

United States Environmental Protection Agency and
Florida Department of Environmental Protection

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Gravity Sewer System Operations and Maintenance Program

PREPARED FOR:

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				Name/Position	Signature
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00. Acronyms/Glossary

00.01 Acronyms/Abbreviations

<i>Table 00.1 Abbreviations Used in the GSSOMP</i>	
Abbreviation	Description
APTTC	Adequate Pumping Transmission & Treatment Capacity Program
CCTV	Closes Circuit Television
CD	Consent Decree
CD PMCM Team	The Consent Decree Program Management and Construction Management Team
CIP	Cast iron pipe
CMOM	Capacity, Management, Operations, and Maintenance
County	Miami Dade County
CWA	Clean Water Act
DIP	Ductile iron pipe
Division	MDWASD Wastewater Collection and Transmission Line Division
E&R	Evaluation and Review Section of the WWCTLD
EAMS	Enterprise Asset Management System
FDEP	Florida Department of Environmental Protection
FOG	Fats, Oils, and Grease
GIS	Geographic Information Systems
GPDIM	Gallon per day per inch diameter mile
GSS	Gravity sewer system
GSSOMP	Gravity Sewer System Operations and Maintenance Program
IMS	Information Management System or Inventory Management System
I/I	Inflow and Infiltration
IT	Information Technology
LF	Linear foot
LOS	Level of Service
KPI	Key Performance Indicator
M&R	Maintenance and Repair Section of the MDWASD WWCTLD
MDWASD	Miami Dade County Water and Sewer Department
MGD	Million gallons per day
MOM	Management, Operations, and Maintenance
NAPOT	Nominal Average Pump Operating Time
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
OOL	Ocean Outfall Legislation
PE	Polyethylene
PCCP	Prestressed concrete cylinder pipe
PM	Performance Measure
PMCM	Program Management and Construction Management
Program	Consent Decree Program or Program Management and Construction Management Services Program
PSIP	Pump Station Improvement Program
PVC	Polyvinyl chloride
QA/QC	Quality Assurance/Quality Control
R&R	Rehabilitation and repair
RAP	Remedial Action Plan

Table 00.1	
Abbreviations Used in the GSSOMP continued	
Abbreviation	Description
RCP	Reinforced concrete pipe
RCCP	Reinforced concrete cylinder pipe
RDII	Rainfall Induced Infiltration and Inflow
RER-DERM	Miami-Dade County Department of Regulatory Economic Resources, Division of Environmental Resource Management
SCADA	Supervisory Control And Data Acquisition
SOP	Standard operating procedure
SORP	Sewer Overflow Response Plan
SPP	Spare Parts Program
SSES	Sanitary Sewer Evaluation Survey
SSO	Sanitary Sewer Overflow
WCTS	Wastewater Collection and Transmission System
WO	Work Order
WPA	Wellfield Protection Area
WPO	Wellfield Protection Ordinance
WWCTLD	MDWASD Wastewater Collection and Transmission Line Division
WWTP	Wastewater treatment plant
VCP	Vitrified clay pipe
VSC	Volume Sewer Customer
VSCO	Volume Sewer Customer Ordinance

00.02 Glossary

Building Backup: A wastewater release or backup into a building or private property that is caused by blockages, flow conditions, or other malfunctions in Miami-Dade's wastewater collection and transmission system (WCTS). A wastewater backup or release that is caused by blockages, flow conditions, or other malfunctions of a Private Lateral is not a Building Backup.

Capacity Management Operations and Maintenance (CMOM): A program of accepted industry practices to properly manage, operate and maintain sanitary wastewater collection, transmission, and treatment systems, investigate capacity constrained areas of these systems, and respond to sanitary sewer overflow (SSO) events.

Closed-circuit Television (CCTV): Technology by which MDWASD inspection crews and/or its outside contractors use a video camera to visually inspect the internal condition of pipes and sub-surface structures.

Consent Decree (CD): The Consent Decree, Case: 1:12-cv-24400-FAM, negotiated between Miami-Dade County, Florida (Defendant), the Florida Department of Environmental Protection and the U.S. Environmental Protection Agency (Plaintiffs).

Environmental Protection Agency (EPA): United States Environmental Protection Agency and any of its successor departments or agencies.

Fats, Oils, and Grease (FOG) Control Program: "FOG" refers to fats, oils and grease, which are generated by residents and businesses processing or serving food and other products. A FOG Control program aims to prevent FOG accumulation in sewer systems.

Force Mains: Any pipe that receives and conveys, under pressure, wastewater from the discharge side of a pump. A force main is intended to convey wastewater under pressure.

Geographic Information System (GIS): A system consisting of hardware, software, and data that is designed to capture, store, and analyze geographically-referenced information.

Gravity Sewer Line or Gravity Sewer: Pipes that receive, contain, and convey wastewater not normally under pressure but are intended to flow unassisted under the influence of gravity.

Gravity Sewer System Operations and Maintenance Program (GSSOMP): The Consent Decree stipulated CMOM deliverable that sets forth the protocols and procedures associated with the operations and maintenance gravity sewer system.

Infiltration: As defined by 40 CFR § 35.2005(b)(20) shall mean water other than wastewater that enters the WCTS (including sewer service connections and foundation drains) from the ground through such means as defective pipe, pipe joints, connections, or manholes.

Inflow: As defined by 40 CFR § 35.2005(b)(21) shall mean water other than wastewater that enters the WCTS (including sewer service connections) from sources such as, but not limited to, roof leaders, cellar drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, cooling towers, storm water, surface runoff, street wash waters, or drainage.

Inflow and Infiltration (I/I): The total quantity of water from inflow, infiltration, and rainfall-induced infiltration and inflow without distinguishing the source.

Lift Station: A facility in the WCTS (not at the wastewater treatment plants (WWTPs)) comprised of pumps which lift wastewater to a higher hydraulic elevation, including all related electrical, mechanical, and structural systems necessary to the operation of the lift station.

Manhole or Junction Box: Part of the gravity sewer system. A structure which provides a connection point for gravity lines, private service laterals, or force mains, as well as an access point for maintenance and repair activities.

Miami-Dade: Miami-Dade County, Florida, including all of its departments, agencies, instrumentalities such as the Water and Sewer Department and the Department of Regulatory and Economic Resources, and any success thereto.

NPDES: The National Pollutant Discharge Elimination System (NPDES) authorized under Section 403 of the Clean Water Act (CWA).

Private Lateral: The portion of a sanitary sewer conveyance pipe that extends from a single-family, multifamily, apartment or other dwelling unit, or commercial or industrial structure to which wastewater service is or has been provided up to the property line of such structure

Consent Decree Program Management and Construction Management Team (CD PMCM or PMCM): The professional services consulting team competitively selected by the County to support MDWASD in the implementation of the requirements of the CD.

Prohibited Bypass: The intentional diversion of waste streams from any portion of a treatment facility which is prohibited pursuant to the terms set forth at 40 CFR § 122.41(m).

Public Document Repository (PDR): The Miami-Dade Water and Sewer Department located at 3071 SW 38th Ave and the Miami-Dade Water and Sewer Department's website, <http://www.miamidade.gov/water>.

Sanitary Sewer Overflow (SSO): Any discharge of wastewater to waters of the United States or the State from Miami-Dade's WCTC through a point source not permitted in any NPDES permit, as well as any overflow, spill, or release of wastewater to public or private property from the WCTS that may or may not have reached waters of the United States or the State, including all building backups.

Sewer Overflow Response Plan (SORP): The SORP provides structured guidance, including a range of field activities to choose from, for a generalized uniform response to overflows.

Sewer System: The WCTS and the WWTPs.

Supervisory Control and Data Acquisition (SCADA) System: A system of automated sensory control equipment that monitors the operation of a portion of the lift stations within the collection system. The SCADA system is designed to convey alarms when predetermined conditions occur. Monitoring parameters may include, but are not limited to, power failures, high

wet well levels, pump failures that could potentially cause overflows, excessive pump runtimes, or other alarm set points as may be determined by system operators.

Wastewater Collection and Transmission System (WCTS): The municipal wastewater collection, and transmission system including all pipes, force mains, gravity sewer lines, pump stations, manholes, and appurtenances thereto, which are owned or operated by the Miami-Dade designed to collect and convey municipal sewage (domestic, commercial, and industrial to Miami-Dade's WWTPs.

Wastewater Treatment Plant (WWTP): Devices or systems used in the storage, treatment, recycling, and reclamation of municipal wastewater and include all facilities owned, managed, operated, and maintained by Miami-Dade, including but not limited to the North District WWTP, the Central District WWTP, and the South District WWTP, and all components of those plants.

Wellfield Protection Area (WPA): All areas defined by Section 24-43, "Protection of public potable water supply wells" of the Miami-Dade County Municipal Code as Wellfield Protection Areas by paragraph (3) "Maps of Cones of Influence, the West Wellfield Interim protection area, and the South Miami Heights Wellfield Complex," or as it may be amended. The wellfield protection areas are designed to set a protective boundary around the County's public potable water supply wells.

Wellfield Protection Ordinance (WPO): Section 24-43, "Protection of public potable water supply wells" of the Miami-Dade County Municipal Code.

Volume Sewer Customer (VSC): Any entity or municipality serviced on a bulk basis (at a wholesale rate) by Miami-Dade within the territorial limits of Miami-Dade County, and currently includes the municipalities of Bal Harbour, Bay Harbor Islands, Coral Gables, Florida City, Homestead, Hialeah, Hialeah Gardens, Medley, Miami Beach, North Miami, Opa Locka, North Bay Village, North Miami-Beach, Surfside, and West Miami.

Volume Sewer Customer Ordinance (VSCO): Section 24-42.2, "Sanitary Sewer System Collection and Transmission Systems" of the Miami-Dade County Municipal Code.

01. Introduction

The Miami-Dade Water and Sewer Department (MDWASD) prepared this Gravity Sewer System Operation and Maintenance Program (GSSOMP) plan in compliance with Section 19 (e) of the Consent Decree (CD) between Miami-Dade County (County) and the plaintiffs, the United States of America, the State of Florida (State), and the Florida Department of Environmental Protection (FDEP), adjudicated by the United States District Court for the Southern District of Florida in Case No. 1:12-cv-24400-FAM. The CD requires the County to develop, submit, finalize, and implement plans for the continued improvement of its WCTS and WWTPs to eliminate, reduce, prevent, or otherwise control SSOs; to correct effluent limit violations; and to properly manage, operate, and maintain its WCTS and WWTPs.

01.01 Summary of the Gravity Sewer System

MDWASD's gravity sewer system (GSS) consists of over 16.2 million feet of gravity sewer main¹ with an additional 11.9 million feet of gravity laterals, 97,000 feet of gravity interceptors, and 1,000 feet of inverted siphons. The total number of linear feet of gravity and force main pipe owned and maintained by MDWASD is over 33.2 million. Over 80,000 manholes connect these pipes from the customer to one of the County's three (3) wastewater treatment plants (WWTPs). Nearly 1,050 pump stations divide the MDWASD wastewater collection and transmission system (WCTS) into over 1,040 sewage drainage basins. The average length of a gravity main branch is approximately 5,000 feet. The Wastewater Collection and Transmission Line Division (WWCTLD) is responsible for the operation and maintenance for wastewater collection and transmission lines within MDWASD's service area. In addition to the gravity sewer assets owned and maintained by MDWASD, the WCTS serves fifteen wholesale municipal customers, known locally as volume sewer customers (VSCs).

A summary of the GSS by pipe size, pipe material, and pipe age is provided below². The GSS consists of 6-inch to 78-inch sewer pipe. The vast majority of sewer pipe is 8-inches. Currently, the allowable minimum size for the design of new gravity mains is 8-inches. Standard lateral

¹ "2013 Sewer System Evaluation Survey and Night Flow Reports." MDWASD WWCTLD. January 2014.

² "2011 CMOM Self Assessment." MDWASD. May 2011.

pipe size in the right-of-way is 6-inches. At the time of preparation of this document, the MDWASD geographic information system (GIS) did not have data attributes for pipe material for over 87% of the system. The MDWASD is in the process of updating the GIS information, and will complete the gathering of data under other CD CMOM programs to be implemented.

Table 01.1
Gravity Sewer Assets by Size

Size Category	Gravity Sewers (miles)	% of Total
8-inches and less	2,624	86.4%
9-inches to 18-inches	366	12.1%
19-inches to 36-inches	32	1.0%
Larger than 36-inches	14	0.5%
Not determined	0	0%
Totals	3,036	100.0%

Table 01.2
Gravity Sewer Assets by Material

Pipe Material	Gravity Sewers (miles)	% of Total
Vitrified clay pipe (VCP)	41	1.3%
Reinforced Concrete Pipe (RCP)	1	0.0%
Unreinforced Concrete Pipe (CP)	2	0.0%
Ductile Iron Pipe (DIP)	78	2.6%
Cast Iron Pipe (CIP)	1	0.0%
Polyvinyl chloride pipe (PVC)	274	9.0%
Not determined	2,639	87.1%
Totals	3,036	100.0%

Table 01.3
Gravity Sewer Assets by Age

Age Category	Gravity Sewers (miles)	% of Total
0 to 25 years	825	27.2%
26 to 50 years	1,338	44.1%
51 to 75 years	263	8.7%
76 years and over	135	4.4%
Not Determined	475	15.6%
Totals (PVC)	3,036	100.0%

01.02 Regulatory Drivers

Compliance with the requirements of the Clean Water Act (CWA) is the primary regulatory driver for the GSSOMP. The County negotiated the terms of the CD with EPA and FDEP in response to violations of the CWA, which consisted of unpermitted discharges of untreated sanitary sewage into waters of the United States from the MDWASD WCTS.

In addition, two (2) local ordinances currently drive much of the operations and maintenance of the gravity sewer system: Miami-Dade County Municipal Code Section 24-42.2, the Volume Sewer Customer Ordinance (VSCO) and Section 24-43, the Wellfield Protection Ordinance (WPO). The VSCO stipulates the requirements to control and reduce capacity and rainfall related SSOs through the control of infiltration and inflow (I/I). The WPO is designed to protect public drinking water supplies from sanitary sewer discharges through comprehensive proactive cleaning and inspection programs coupled with an aggressive maintenance and repair program.

01.02.1 Consent Decree

To support realization of the goal of reducing, preventing, or otherwise controlling SSOs and Prohibited Discharges to waters of the United States, the CD, Section 18, requires MDWASD to continue programs initiated under previous CDs, and Section 19 stipulates the development of CMOM³ programs across all areas of the wastewater, collection, transmission, and treatment systems, including: pump stations, force mains, gravity sewers, and wastewater treatment plants. CD Section 18 “existing” CMOM programs and Section 19 “new” CMOM programs are listed below. The CD Programs listed in ***bold italics*** have direct impact on elements and requirements of the GSSOMP.

1. 18 (a) Adequate Pumping, Transmission and Treatment Capacity Program (APTTC);
2. ***18 (b) Pump Station Remote Monitoring Program (PSRM);***

³ The MDWASD wastewater system has not experienced a capacity related SSO since 2002, and accordingly, the CD focuses on Management, Operations, and Maintenance, or MOM, related programs, but uses the familiar acronym of CMOM throughout the document.

- 3. 18 (c) WCTS Model;**
- 4. 18 (d) Spare Parts Program (SPP);**
- 5. 18 (e) Volume Sewer Customer Ordinance (VSCO) Program;**
- 6. 19 (a) Fats, Oils, and Grease (FOG) Control Program;**
- 7. 19 (b) Sewer Overflow Response Plan (SORP);**
- 8. 19 (c) Information Management System (IMS) Program;**
- 9. 19 (d) Sewer System Asset Management Program (SSAPM);**
10. 19 (e) Gravity Sewer System Operations and Maintenance Program (GSSOMP);
11. 19 (f) Pump Station Operations and Preventative Maintenance Program (PSOPMP);
- 12. 19 (g) Force Main Operations, Preventative Maintenance and Assessment / Rehabilitation Program;**
13. 19 (h) WWTP Operations and Maintenance Program; and
- 14. 19 (i) Specific Capital Improvements Projects.**
- 15. 19 (j) Financial Analysis Program**

CD Section 19 (e) lists FOG, roots, and/or debris obstructions as the root-causes of continued SSOs within the system. The sub-paragraphs of 19 (e), require specific actions to develop a preventative CMOM program plan for the GSS. The GSSOMP must include the following:

- Development of written preventative operations and maintenance (O&M) schedules and procedures;

- Evaluation and recommendation of effective hydrogen sulfide and corrosion control measures;
- Development of prioritization criteria for evaluating the GSS;
- Establishment of inspection procedures for GSS easements;
- Development of a schedule for the maintenance of GSS easements;
- Creation of a staffing and funding plan sufficient to complete the required MOM activities;
- Integration of SSO related geospatial data into the County's Geographic Information Systems (GIS) platform;
- Develop an inventory management system; and
- Develop monthly reports summarizing equipment problems and status of work orders.

In addition to the specific requirements of Section 19, the CD references specific guidance tools (see Section 15) which support the incorporation of industry CMOM "best-practices" in municipal wastewater utility operations. Industry CMOM best-practices are those core WCTS management attributes commonly found in highly performing utilities and often include adoption of asset and life-cycle-cost management concepts through implementation of preventative and predictive management policies and procedures. Reductions in reactive and emergency maintenance and repair activities leading to reductions in SSOs demonstrate the effectiveness of these best-practices. The CD requires concurrent development and implementation of the fifteen (15) separate management programs listed above. The programs' inherent interdependencies require an interdisciplinary and integrated approach to wastewater system management, operations, and management.

01.02.2 Local Requirements

Two local ordinances, Miami-Dade County Municipal Code Section 24-42.2, the VSCO, and Section 24-43, the WPO, currently drive the allocation of non-emergency resources for the WWCTLD. Upon EPA/FEDP's approval of the GSSOMP and Commission approval of required VSCO language allowing so, MDWASD will transition from the existing GSS O&M program to

the new program requirements included in the GSSOMP. MDWASD will continue to comply with all applicable regulatory requirements, such as the WPO.

The current VSCO regulates MDWASD and the wholesale sewer customers who discharge into MDWASD's WCTS. The municipal wholesale Volume Sewer Customers (VSCs) include:

- Bal Harbour
- Bay Harbour Islands
- Coral Gables
- Florida City
- Homestead
- Hialeah
- Hialeah Gardens
- Medley
- Miami Beach
- North Miami
- North Bay Village
- North Miami Beach
- Opa Locka
- Surfside
- West Miami

The manner in which the VSCs manage, operate, and maintain their systems has a direct impact on MDWASD's WCTS conveyance and wastewater treatment capacities as well as MDWASD's WCTS operations and maintenance activities. I/I and FOG originating from the VSC service areas can substantially impact MDWASD's system. The VSCO applies a maximum allowable I/I limit for all connected WCTSs. This standard is 5,000 gallons per day per inch diameter per mile (GPDIM). The VSCO stipulates system inspection, reporting, and repair completion schedule to help minimize the impact of I/I system-wide.

The other potential impact on the MDWASD WCTS from the VSCs is FOG. FOG is regulated County-wide by the Miami-Dade County Regulatory and Economic Resource (RER) Department's Division of Environmental Resources Management (DERM), the County's regulatory and compliance enforcement arm. The FOG Control compliance and enforcement program currently addresses FOG sourced from restaurants. MDWASD promotes a FOG awareness campaign to County residents through handouts, door tags, a website, and other activities meant to educate residents of the impact of FOG on the system.

01.02.2.1 VSCO Requirements

The MDWASD WCTS is currently subject to the requirements of the VSCO by RER – DERM; however, as mentioned previously, MDWASD will transition to the requirements included in the EPA/FDEP approved GSSOMP. The VSCs will continue to comply with the VSCO and any

subsequent amendments. The VSCO requires the VSCs to evaluate and inspect the full length of the GSS for I/I sources within five years of adoption. Every 10-years, each VSC must complete subsequent full-length evaluations of the WCTS. MDWASD completed the initial 5-year evaluation cycle and the initial 10-year evaluation cycle on schedule and within the requirements of the VSCO.

Upon completion of the WCTS I/I evaluation screenings and listing of the WCTS segments potentially impacted by I/I, a Sanitary Sewer Evaluation Survey (SSES) must be conducted in the listed areas and defects repaired within four (4) years of initial report submittal. The ordinance sets the benchmark for SSES and rehabilitation at a level of 5,000 gallons per day per inch diameter mile (5,000 GPDIM) for the entire system.

01.02.2.2 WPO Requirements

The WPO, Section 24-43 of the Miami-Dade Municipal Code, regulates activities which occur within designated “wellfield protection areas” (WPAs), or areas in close hydrogeological proximity to the public raw drinking water supply wells. The regulated WPO activity, or use, having the greatest impact on the WCTS is the requirement to monitor the potential impact of raw sanitary sewage on the wellfields. The WPO is currently being amended to allow the use of new technology and improved operation and maintenance procedures.

The proposed amended WPO addresses potential exfiltration from the WCTS to the wellfields through defects in the WCTS. The WPO requires the evaluation of all sewer pipes contained within the County’s Wellfield Protection Areas, as defined by “Cone of Influence” maps adopted and maintained by the County. The evaluations must be performed for all sanitary sewer pipes in the wellfield protection areas every five (5) years. Any structural, joint, or pipe connection defects must be reported, evaluated, and repaired within one year of report submittal. In addition, the exfiltration rate for all new sewer pipes above the surrounding groundwater table must be determined and certified by a registered professional engineer.

01.03 Miami-Dade County Organization

The County operates under Home-Rule Authority granted by the Florida State Constitution. The unincorporated areas of Miami-Dade County are governed by the 13 member Board of County Commissioners (Commission). The County government provides major metropolitan services countywide and city-type services for residents of the unincorporated areas. Miami-Dade County has a Mayor who oversees the day-to-day operations of the County. The County is organized into 25 Departments, each led by a Director appointed by the Mayor.

01.03.1 Water and Sewer Department Organization

Two (2) Deputy Directors manage the MDWASD under the authority of the Director; the Deputy Director of Operations and the Deputy Director of Regulatory Compliance and Capital Improvements. Under the Operations Deputy Director, four (4) Assistant Directors manage Water Systems Operations, Wastewater Systems Operations, Maintenance and Support Services, and Finance. The Assistant Directors of Regulatory Compliance and Planning and Engineering and Capital Improvement report to the Deputy Director of Regulatory Compliance and Capital Improvements.

The MDWASD operates as an enterprise fund. Thus the sale of bonds, grants awards, user and permitting fees, and waste and sewer rates provide the revenue to fund its staff of nearly 2,500 and its \$465 million annual budget in Fiscal Year (FY) 2014-2015, the last budget year with an approved budget.

01.03.1.1 Wastewater Collection and Transmission Line Division Organization

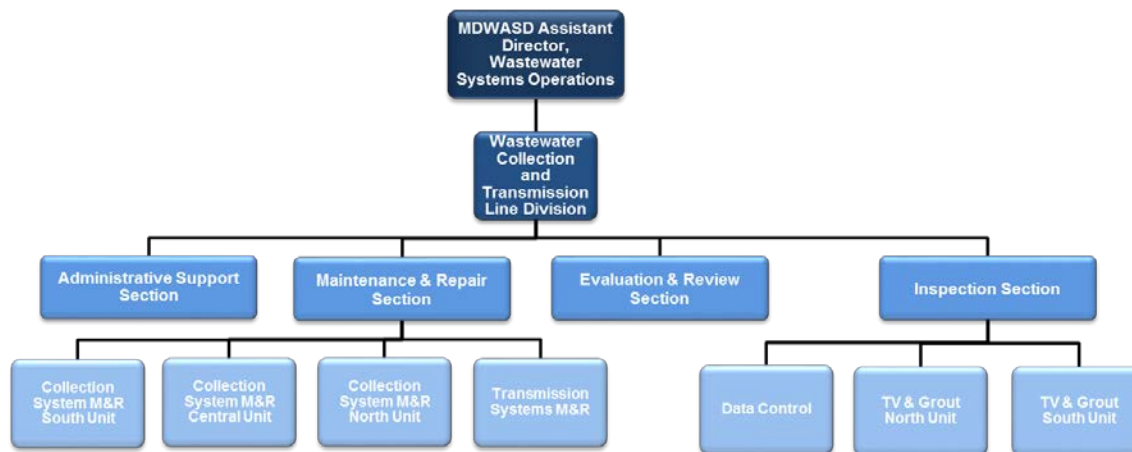
Four (4) functional Sections conduct the work of the WWCTLD: Administration, Evaluation and Review (E&R), Inspections, and Maintenance and Repair (M&R). The Inspections Section has two (2) subsections: TV & Grout North Unit and TV & Grout South Unit, and the M&R Section has four (4) units: Collection Systems M&R North, Central and South Units and the Transmission Systems Unit.

01.03.2 WWCTLD Section Responsibilities

The O&M responsibilities for the WWCTLD fall under two categories: emergency/reactive and preventative activities. The WWCTLD labels emergency/reactive work as unscheduled O&M activity and preventative work as scheduled O&M activity.

Four sections report to the Division Chief, as shown in Figure 01.1 below. They include the Maintenance & Repair Section, Evaluation and Review Section, the Inspection Section, and the Administrative Support Section. Each of these sections and its responsibilities are discussed below.

Figure 1.1
Wastewater Collection and Transmission Line Division Table of Organization



Maintenance & Repair (M&R) Section: Responding to SSOs and interruptions in service are unplanned, of short duration, and require immediate attention. This work is generally carried out or managed by the M&R Section. Typically, work orders (WOs) are generated from outside of the group in response to a complaint or observations by the public or others outside of the WWCTLD.

The M&R Section is primarily responsible for conducting the repairs programmed by the Evaluation and Review Section. A WWCTLD Assistant Superintendent manages the work of the M&R, organized into nine crew types:

- Repair Crews

- Cleaning Investigation Crews
- Manhole Repair Crews
- Lateral Investigation Crews
- A Restoration Crew
- Transmission Repair Crews
- Valve Repair Crews
- Air Release Valve Crew
- A Repair Shop

The M&R Section manages an additional condition category, known as a “hot spot.” Hot spots are areas that experience repeated calls to the WWCTLD to clear blockages or other service issues. Once established as a hot spot area, the WWCTLD’s SSO Review Process generates an action plan and an accelerated schedule to clean the pipe, pipe segment, or manhole on a regular basis until no additional service calls have been made in a three-year period. The WWCTLD classifies work arising out of this process as scheduled.

The WWCTLD investigates the root cause of blockages, interruptions to service and SSOs. These investigations typically occur after the GSS asset has been repaired and can often require a cooperative and/or collaborative effort between the WWCTLD and DERM to identify potential suspect sources of FOG and/or debris.

Inspection Section: The Inspection Section identifies pipeline, pipe joint, lateral, and manhole defects through investigation and inspection. This Section is managed by a Division Assistant Superintendent organized into five crew types:

- TV & Grout Crews
- A Smoke Test Crew
- A Large Diameter Inspection Crew
- Flow Meter Crews
- A Repair Shop

Section workload falls under several categories and include: basin-wide I/I screening, flow isolation studies; flow monitoring; SSEs; gravity system cleaning and inspections; grouting; WPO Required Inspections; and support requests from other MDWASD Divisions or County or municipal Departments.

Evaluation & Review (E&R) Section: The E&R Section develops and schedules corrective actions and most rehabilitation or replacement work for the Division. From the results of the inspections conducted primarily by the Inspection Section, WOs are generated in the office and placed on the crews' work schedules. The E&R Section determines which work will be completed in-house and which work will be completed by annual or on-call contractors. Most in-house repair and restoration work is scheduled by the E&R Section and completed by the M&R Section.

The E&R Section reviews and codes gravity line CCTV videos and manhole inspection, smoke test, dyed water test, and other reports and recommends restorative action. The E&R Section typically prepares Night Flow Monitoring, SSES, WPO Compliance, and other Division reports for approval by the Chief Superintendent.

Administrative Section: The Administrative Section provides administrative and accounting support to the other Sections and directly to the Division staff.

Other Duties: The WWCTLD interacts with other MDWASD Divisions and Departments on a continual basis. The WWCTLD communicates with MDWASD's Pump Station Division on an as-needed basis. Additionally, the pump station operators track daily pump runtime, or NAPOT. Rising NAPOT run times can indicate upstream GSS issues which need to be investigated. The WWCTLD may occasionally work with the pump station operators to develop action plans to control additional increases in the pump station's NAPOT.

Monitoring of PS SCADA data serves several purposes. In addition to the NAPOT trending described above, these data are monitored to identify anomalies against the baseline, support nighttime flow monitoring, differentiate between I/I and capacity related issues, and support WCTS computer model refinement.

01.04 The Gravity Sewer System Operations and Maintenance Program

The considerations necessary for the development of GSSOMP include the regulatory drivers listed in the previous sub-sections, industry "best-practices" in gravity sewer system operations

and management, the other existing and new CMOM Programs, and the local business needs of MDWASD. The designed interdependencies between regulatory requirements and the other CMOM Programs necessitate a process of implementation through phasing, and adoption of a continuous improvement process as new CMOM Programs are implemented. The resultant Program and its interdependencies are detailed in this document.

02. Purposes and Goals of the GSSOMP

PURPOSES: To establish written processes and procedures to address SSOs, particularly those caused by FOG, roots and/or debris obstructions, as they relate to the Gravity Sewer System.

To maximize opportunities to achieve the Goal by enabling continuous performance improvement through adoption and implementation of the policies, procedures, processes, performance measures, and the Staffing and Funding Plan contained in the GSSOMP.

OBJECTIVE: To assist MDWASD in complying with the Clean Water Act, Florida Statutes Chapter 403, all applicable federal and state regulations, and the terms and conditions of the NPDES Permits.

GOAL: To reduce, minimize, prevent, or otherwise control SSOs and Prohibited Discharges related to the Gravity Sewer System.

The GSSOMP will utilize specific strategies designed to support the Purpose, Objective, and Goal.

Strategy: Transition the focus of the Wastewater Collection and Transmission Line Division from predominately code compliance and reactive activities to scheduled preventative O&M activities.

Strategy: Tie annual and planning period budgets to performance as measured by adopted performance measures.

Strategy: Establish an Interim Staffing and Funding Plan to initially and adequately resource GSSOMP required activities to enable achievement of the desired Levels of Service.

Strategy: Rely upon the inherent organizational interdependencies and anticipated system-wide uniformity of processes and procedures created through the implementation of existing and emerging CMOM programs, e.g., the FOG Control Program, the IMP CMOM Program, the SORP CMOM Program, etc., to avoid duplication of effort and to capitalize on economies of scale.

For example, rely upon the IMS Program to set the standards for the maintenance of data and manage Work Order records, rely upon the Spare Parts Program to establish the protocols for maintaining the Critical Spare Parts and Equipment List; and rely upon the Sewer System Asset Management Program to develop the methodologies to extend the life cycle of WWCTLD assets.

Strategy: Develop Recommended Supportive Actions which identify the support required, the efficiency gained by the support, the responsible party, and the required delivery date for the requested deliverable.

Strategy: Prioritize WTCL Division O&M activities consistent with industry best practices.

Strategy: Develop gravity sewer system-wide performance measures / key performance indicators (KPIs) as well as pump station basin level performance measures.

Strategy: Exploit the data collection, storage, and reporting capabilities MDWASD has developed to facilitate the management, operations, and maintenance of the WWCTLD.

Strategy: Develop KPI dashboards and GIS layers to disseminate performance data to wide audiences.

Strategy: Recommend adoption of a phased approach to GSSOMP plan development and implementation in recognition of the benefits and efficiencies to be realized by taking advantage of the various CMOM programs' interdependencies and in recognition of the offset CMOM development and implementation schedules.

Strategy: Adopt written procedures for periodic review of and updates to the GSSOMP, including updates to the Staffing and Funding Plan.

This document contains the initial phase of the GSSOMP plan and a schedule of specific recommendations intended to transition this program into subsequent phases.

02.01 GSSOMP Document Organization

The GSSOMP plan document is organized to meet both the requirements of the CD as well as the business needs of the WWCTLD. The GSSOMP plan organization is listed in Table 02.1. Where required, the corresponding CD section reference is listed adjacent to the section name.

Table 02.1
Location of CD Requirements in GSSOMP

Consent Decree Section	GSSOMP Section
	Acronyms/Glossary
	01 - Introduction
Section 19	02 - Purposes and Goals of the GSSOMP
Section 19	03 - Phased GSSOMP Plan Development / Procedures for Review
Section 19 and Section 19 (c) x	04 - Performance Measures
Section 19 (e) iii	05 - Prioritization for Evaluating the Gravity Sewer System
Section 19 (e) i	06 - Preventative Operations and Maintenance Schedules and Procedures
	07 - Operations and Maintenance Procedures for Unscheduled Work
Section 19 (e) iv	08 - Inspection of Easements
Section 19 (e) v	09 - Schedule for the Maintenance of Easements
Section 19 (e) ii	10 - Potential Sulfide and Corrosion Control Options
Section 19 (e) vi	11 - Staffing and Funding Plan
Section 19 (e) vii	12 - Data Attributes for Miami-Dade County's Mapping Program
Section 19 (e) viii	13 - Inventory Management System
Section 19 (e) ix	14 - Reports Listing Equipment Problems & Work Order Status Over the Prior Month
	15 - References
	Appendices

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03. Phased GSSOMP Plan Development

GSSOMP development and implementation will be phased to ensure cohesiveness and proper integration of the GSSOMP with other CD required CMOM programs currently under development. The GSSOMP relies upon the management and implementation efficiency gained through incorporation of specific knowledge area policies, procedures, activities, technologies, and tools inherent to other CMOM programs.

03.01 Implementation Plan and Schedule

Program implementation is discussed throughout this document and a summary implementation strategy is included in Appendix B - GSSOMP Implementation Plan, Schedule, and Periodic Updates. Portions of the GSSOMP will be implemented immediately, e.g., O&M activities that currently have sufficient resource allocations: Night Flow Monitoring and regulatory compliance system assessments. The dependencies on other yet to be developed and implemented new CMOM Programs and the disparity between the required EPA/FDEP submittal dates not only demonstrate a need for a phased implementation approach but the need to consolidate all new CMOM Program implementation schedules. Upon EPA/FDEP approval of other CMOM Program documents, MDWASD will propose submitting a consolidated implementation plan and schedule to include all CMOM programs. This will facilitate the task of tracking implementation for all CMOM programs, individual CMOM elements, required resources, and schedules.

Implementation of the GSSOMP is contingent upon distinct CD controlled and non-CD controlled predecessors. These include, but are not limited to:

- Submittal of the IMS, the SORP, the FOG Control, and the Sewer System Asset Management CMOM Programs
- Completion of, or updates to, existing CMOM Programs, i.e. Adequate Pumping, Transmission and Treatment Capacity, Pump Station Remote Monitoring (SCADA), the WCTS Model, Spare Parts, and the VSCO Programs.

- EPA/FDEP approval of the IMS, the SORP the FOG Control, and the Sewer System Asset Management CMOM Programs;
- Completion of the Miami-Dade GIS Updates and addition of accurate pipe materials and size information;
- Implementation of the IMS CMOM Program and WWCTLD access to the new IMS systems upon which the Prioritization, Performance Measures, Work Order Tracking, GIS Data Attributes, Inspection of Easements, the Monthly Equipment and WO Status Reports, and the Staffing and Funding Planning show dependency;
- Passage of the VSCO amendment by the County Commission to allow the WWCTLD to transition from VSCO compliance to GSSOMP required O&M activities; and
- Allocation and acquisition of GSSOMP Staffing and Funding Resources to augment the WWCTLD's existing resources to expand its preventative O&M activities beyond compliance to local regulatory compliance tasks and reduce backlogs of GSS maintenance and repair WOs.

03.02 GSSOMP Review and Revision

The CD Section 19 requires written procedures for periodic review and revision of the eight new CMOM programs. This GSSOMP plan document will be reviewed periodically to determine if the implementation of the program document is enabling MDWASD to meet its goals and objectives.

Internal Key Performance Indicators / Performance Measure evaluations will be conducted by the WWCTLD Chief Superintendent to assess the efficacy and/or relevancy of the selected performance measures with respect to achieving the GSSOMP objective. The GSSOMP document will be modified as needed to better enable MDWASD to meet the Performance Measures identified in Section 04 - Performance Measures. The Performance Measures may also be modified to better suit the business needs of the County. Material changes to the

GSSOMP will be submitted to the EPA/FDEP for review and approval and documented in the Annual Report submitted to EPA/FDEP.

An internal GSSOMP relevancy and effectiveness evaluation will be conducted by the WWCTLD Chief on an annual basis. Performance measures will be evaluated once more, and lessons learned will be noted during these reviews to enable MDWASD to continuously improve the GSSOMP and other affected programs. The annual review will also include a review of the effect of other CMOM Programs, changing conditions, revisions to regulatory requirements and other factors that may impact the GSS. After the Program matures, less frequent evaluations may be recommended. The results will be documented in the Annual report to EPA/FDEP.

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04. Performance Measures

04.01 Purpose of Performance Measures

Performance measures (PMs), which compare actual performance against an established performance standard, benchmark, target, or Level of Service (LOS), help identify the relative health of specific operational areas. PMs include a subset of measures termed Key Performance Indicators (KPIs). KPIs measure the relative health of the GSS by comparison of actual system performance to system LOS targets. System managers use PMs to justify, allocate, and/or reallocate resources to underperforming areas; plan and develop budgets for additional resources; evaluate and document the effectiveness of different practices and procedures. In addition to efficiently conveying system and sub-system performance to wide audiences, system managers use PMs to make comparisons of systems across time and geography. MDWASD will implement use a PM target system to evaluate GSS O&M activity progress towards achieving the CD goal. Accordingly, MDWASD established the second Purpose of the GSSOMP, to enable continuous GSS O&M performance improvement.

The use of written or electronic summaries, handouts, monthly bill inserts, computer desktop “dashboards,” geospatial mapping, and other tools, allow the comparison of actual performance across a broad range of system activities against established target levels. These tools are an effective way to convey system performance results to broad audiences. They provide “snapshot” performance, e.g., performance at a particular place and time, and can be used to establish trends by summarizing and/or comparing performance over time.

Generally, since PMs, also referred to as performance indicators, are reported against an established benchmark or goal, they can be disseminated and understood by broad audiences with little additional instruction. When the PMs are normalized (e.g., unique or local system scale characteristics are removed, such as system length or pipe size), PMs from a variety of different environments can be accurately compared. This normalization will allow MDWASD to compare performance across its large service area of over 1,040 independent pump station drainage area basins.

04.02 MDWASD's Gravity Sewer System PMs

MDWASD will adopt written PMs and KPIs to meet County transparency objectives and to ensure that MDWASD's successes are properly documented and reported. The KPIs will assess the overall effectiveness of the gravity sewer O&M program and will enable MDWASD to make adjustments in the program to achieve the established LOS, also referred to as the MDWASD performance goal or target. Table 04.1 presents the KPIs specified by the CD and MDWASD's target performance level for each which MDWASD will employ to measure, track, and report performance of the GSS.

Table 04.1
CD Stipulated GSS System Key Performance Indicators and Targets

KPI	Method	MDWASD Target ¹
SSOs per mile of Gravity Sewer	# of SSOs/ total miles GS in system	Annual Reduction
SSOs per pump station basin	Document # of SSOs per PS basin	Annual Reduction
Number of manholes inspected	Document # of manholes inspected	10% of total number per year
Linear feet of Gravity Sewers Inspected	Document linear feet of GS inspected	10% of total length per year
Number of inverted siphons inspected	Document # of inverted siphons inspected	20% per year
Number of manholes cleaned	Document # of manholes cleaned	10% of total number per year
Linear feet of Gravity Sewers Cleaned	Document linear feet GS cleaned	10% of total length per year
Number of inverted siphons cleaned	Document # of inverted siphons cleaned	20% per year

04.03 Performance Measures Applied at Sewer District and Pump Station Levels

KPIs which measure system-wide performance are excellent tools for utility managers, regulatory agencies, and the general public. However, to improve and plan effective deployment of the WWCTLD's resources which will efficiently increase system reliability, reduce or eliminate SSOs, reduce I/I and blockages, and track root-causes of unscheduled repairs, a localized

¹ For calculating performance on activities tracked by % of the GSS, repeated activities on the same asset will be counted in the total in the same manner as new activities.

system of measurement is desirable. Adopting basin-specific PMs will provide MDWASD with meaningful data that will allow them to take preventative actions to meet these needs.

The WWCTLD's service areas are divided into three roughly independent areas which generally correspond to MDWASD wastewater treatment sewersheds: the North; Central; and South Districts. The GSS is comprised of over 1,000 sub-sewersheds, or basins. These unique characteristics allow performance evaluations of the GSS to be broken down into a number of subsets to monitor and track performance, identify under-resourced areas, identify basin or District performance trends, validate corrective action effectiveness, etc. The following list of PMs are designed to provide more basin-specific data to support the O&M operations of the WWCTLD.

Table 04.2 summarizes the PMs that MDWASD considers useful and/or necessary to track and evaluate the performance of the GSS. The KPIs in Table 04.1 are the CD required KPIs and are generally applied at the system-wide level. The PMs listed in Table 04.2 that can be applied at the system and/or basin level. Tracking these PMs will begin when the data and IMS developed Standard Performance Reports become available through implementation of the IMS CMOM.

Table 04.2
GSSOMP Performance Measures and Targets

Proposed PM	Method	MDWASD Targets ²
SSOs:		
SSOs per 100 miles of Gravity Sewer	# of SSOs/(total miles/100) GS in system	Annual Reduction
% SSOs by Cause	Document cause of SSOs	Monitor
% of SSOs due to Capacity Related Issues	# of capacity related SSOs / total # of SSOs	Annual Reduction
Inspection And Maintenance Targets:		
% of Manholes Inspected ⁴	# of MH inspected/total # of MHs	10% of total number per year
% of Manholes Cleaned ⁴	# of MH Cleaned/total # of MHs	
% of GSS Cleaned ⁴	LF of GSS Inspected / total LF of GSS	10% of total length per year

² For calculating performance on activities tracked by % of the GSS, repeated activities on the same asset will be counted in the total in the same manner as new activities.

Table 04.2
GSSOMP Performance Measures and Targets continued

Proposed PM	Method	MDWASD Targets ²
% of Gravity Sewer Inspected ³	LF of CCTV/ total LF of GS	10% of total length per year
% of WPO Area sewers inspected	LF WPO sewer inspected/Total LF WPO sewer	20% of total length of GSS in WPA
% of WPO Areas inspected via new or emerging technologies	LF of WPO area GSS inspected via new or emerging technologies / total LF of GSS in WPO areas	5% of GSS in WPAs per year
% of GSS below the GPDIM ⁴ standard.	# of basins with a GPDIM below 5,000	
Repairs		
Ratio of reactive/emergency work to preventative work	# of reactive/emergency work / # of preventative or scheduled work over rolling 12 month period	Annual Reduction
% of total maintenance and repair work as unscheduled/reactive/emergency	# of maintenance and repair WOs attributed to unscheduled/reactive/emergency work	Annual Reduction
% of Annual Scheduled work completed by initial or regulatory deadline	# of annual In-house scheduled repair Work Orders closed by the originally scheduled or regulatory deadline, whichever is shorter/total annual scheduled work for period	Annual Increase
% of annual WPO Area defects repaired by regulatory deadline	# of WPO area defects repaired by the regulatory deadline / total number of annual WPO defects identified	100%
Contracted work. Number of days to complete and validate effectiveness of repair.	Measured number of days from date of initial summary report submittal containing the defect to the date the repair's effectiveness is validated	Monitor

The PMs are designed to facilitate performance evaluation GSS O&M activities, both systematically and on a basin-by-basin basis. They are intended to be tools to demonstrate continuous improvement or highlight the need for additional attention in specific areas, and are therefore not intended to represent regulatory requirements or an analysis of regulatory compliance.

³ Excluding portions of GSS in WPO regulated Wellfield Protection Areas

⁴ GPDIM, gallons per day per inch diameter mile. In this reference, results of semi-annual average night flow monitoring (gallons per day) divided by the sum of pipe diameter times the pipe length for all pipes in the basin.

04.04 MDWASD Periodic Review of Performance Metrics

The PM target system is designed to be challenging but achievable when sufficient resources are dedicated to the O&M of the gravity sewer system. It is also designed to be flexible. Since one purpose of the GSSOMP is to achieve continuous improvement, the WWCTLD's management team will periodically evaluate each performance measure and may revise or change PMs based on relevancy and value to the successful implementation and management of the GSSOMP. Similarly, the PMs may drive modification of other elements of the GSSOMP to meet desired LOS defined by the PM targets.

The WWCTLD's management team will review the PMs periodically to assess trends and needs for adjustments to preventative maintenance schedules and staffing and funding levels. A semi-annual review will be conducted and program modifications made as needed to meet overall system goals.

The review team consists of:

- The WWCTLD Chief Superintendent, approver, accountable manager
- The WWCTLD Assistant Superintendents, contributing managers
- The WWCTLD Engineer, contributor
- The Unit Supervisors from each maintenance District, contributors

04.05 Communicating PM Results

The intended audience for communication of performance results includes: the public; all levels of the County, including County management and leadership; and regulatory agencies. Correspondingly, an appropriate reporting platform for PMs are color coded system health dashboards and annual reports. The intended audience for the District- and basin- level PMs are MDWASD managers and WWCTLD leadership.

MDWASD may present KPI/PM summaries of widest interest through its website or through other public outreach documents to showcase its progress towards meeting these goals, as annual summaries, and to illustrate performance year over year. At a minimum, the PMs included in these formats will include all CD required GSS KPIs.

04.06 Recommended Supportive Actions

The KPI evaluation approach requires reports and/or dashboards, directly available through the IMS user interface, that calculate and convey information on the KPIs/PMs listed in Table 04.1 and Table 04.2. The IMS user interface should allow flexible reporting and querying functionality to support the evaluation of the GSS from a variety of perspectives, i.e., system-wide; district-wide, and/or basin by basin. The process to create queries and reports should be simple, straightforward, and intuitive to support consistent use of the products. The recommended supportive actions to obtain this reporting functionality are listed below.

Table 04.3
Recommended Actions and Responsibilities – Performance Measures

Action	Efficiency Achieved	Responsible Party	Completion Date
Provide data connection between SCADA system and IMS to allow access to relevant SCADA data	<ul style="list-style-type: none"> • Data accessible for viewing and reporting at any IMS connected workstation • Provides platform for development of reports 	<ul style="list-style-type: none"> • IMS Implementation Team 	<ul style="list-style-type: none"> • To be completed under the IMS CMOM Program
Develop report and query templates in the IMS to calculate the listed PMs. These reports should be capable of drilling down to Service District, Pump Station Basin, or equipment piece, as appropriate and should be simple, straightforward, and intuitive enough to self-promote consistent use.	<ul style="list-style-type: none"> • Reduces staff effort, allowing them to be deployed to more efficient tasks • Allows close to real-time reporting • Relies on data in IMS • Improves report accuracy • Reports are accessible • Reports are archived in IMS 	<ul style="list-style-type: none"> • IMS Implementation Team 	<ul style="list-style-type: none"> • To be completed under the IMS CMOM Program
Develop color “Dashboards” which graphically display performance data	<ul style="list-style-type: none"> • Supports Transparency • Provides User with real-time or near real-time data • Reduces staff effort to address Public Information requests 	<ul style="list-style-type: none"> • IMS and GIS Implementation Teams 	<ul style="list-style-type: none"> • To be completed by the GIS Program • To be completed by the IMS Program

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05. Prioritization for Evaluating the Gravity Sewer System

Prioritization provides a process to identify, evaluate, and manage O&M activities in a cost and resource effective manner; MDWASD currently prioritizes its GSS evaluation efforts. This section provides details of the prioritization process currently used by WWCTLD in evaluating the GSS and the proposed transition to or addition of the GSSOMP requirement.

The WWCTLD screens system-wide I/I levels over 100% of the GSS twice annually through its Night Flow Monitoring Program. The Division performs a SSES in each basin having demonstrated high I/I levels, those which exceed 5,000 GPDIM, on a 10-year cycle.

In addition, systems which have assets in the WPAs, or cone of influence areas, and represent approximately one-quarter of the GSS, are cleaned and inspected on a five-year cycle. When the resources recommended by the GSSOMP become available, the WWCTLD will add a concurrent and parallel cleaning and inspection program for the remaining three-quarters of the GSS on a 10-year cycle. Under the current screening and evaluation approach, the I/I screening process and the requirements of the VSCO and the WPO drive prioritization.

The WWCTLD will be transitioning to a more rigorous evaluation prioritization system to address all regulatory requirements. The evaluation priority list developed and discussed below will guide the sequence of evaluation from the current program to the proposed GSSOMP program over this transition period and beyond.

The WWCTLD operates in three districts (North, South, and Central), which roughly correspond to the service areas of the three WWTPs. Pump station collection service areas, known as pump station basins, are independent sub-collection systems and comprise over 99% of the GSS, therefore; prioritization within the service districts will be generally assigned by individual basins.

The prioritization system is designed to provide an objective methodology to identify sub-groups of basins that have a higher number of critical characteristics than others, and thus, require priority consideration in the scheduling and sequencing of WWCTLD evaluation activities.

05.01 Prioritization Criteria

The prioritization criteria were developed to be specific to MDWASD's GSS and represent characteristics and/or conditions unique to MDWASD's system. Table 05.1 presents a summary of the prioritization criteria and examples of the data sources that support the priority.

05.02 Basin Prioritization System Critical Characteristics

The issues which compete for the time and resources of the WWCTLD define the priorities of the Division. Below, and in order of priority to the WWCTLD and MSWASD, are listed the priorities and the critical characteristics of the priority that the Division will use in the new prioritization system. Following the critical characteristic summary for each is a short description of how the prioritization will be applied. The first priorities are associated with Emergency Activities and require immediate response.

1st - Public Health and Welfare.

1st - SSO and Interruptions of Service History.

- 1. Priority CIP List:** The high ranking for this priority only applies when an imminent CD Appendix D Priority CIP Project is scheduled to be initiated in a basin and special provisions are required to maintain the integrity of the GSS during construction. Priority will be assigned on a Basin basis.

Construction clearance coordination requests are not subject to the evaluation prioritization process unless the scope and size of the related construction project is similar to a Priority CIP project, where special provisions are required to maintain the integrity of the GSS.

- 2. Known Problem Areas:** This criterion will be utilized when knowledge of significant problems exists in a subject basin. This knowledge may arise as institutional knowledge, observations during normal O&M activities, or have indicated evidence of defects provided by other priority criteria or sources. The priority will be assigned "By-Asset," or

by pipe segment, manhole, or inverted siphon, and will be used to differentiate rehabilitation priority between basins with similar other priorities

3. Rising Nominal Average Pump Operating Time (NAPOT) and High Annual Monthly Average (HAMA) Trends:

The NAPOT tool can provide valuable insight into the performance characteristics of each pump station in the WCTS. NAPOT represents a SCADA based calculation used primarily to determine Adequate Transmission Capacity in the WCTS. NAPOT and HAMA are summarized by MDWASD in the monthly Pump Station Operating Time report which is identified by Pump Station number.

The CD defines NAPOT as “the average of daily average pump operating time for all months falling within the previous 365 days, divided by one less than the total number of pumps installed in that station.’

HAMA is defined as: “the largest value within the last twelve (12) Months of the monthly daily average pump operating time for each Pump Station.”

NAPOT provides monthly snap shots of each Pump Station’s performance. In NAPOT and/or HAMA trending analyses, the MDWASD engineer does not necessarily review individual NAPOT values, but reviews series of values in tables or graphs from past monthly reports to identify trends of steady, declining, or rising NAPOT. If an identified trend cannot be explained, the WWCTLD Evaluation & Review Section can issue a work order to investigate.

The historical record also allows operators to look at the NAPOT in terms of any period they may choose, e.g., the dry or wet seasons. By identifying “normal” operating ranges and comparing them to the anomalies, the MDWASD engineer can identify potential GSS maintenance needs prior to the occurrence of SSOs, blockages, interruptions to service, or hitting regulatory NAPOT levels, all of which can trigger the dedication of a tremendous amount of resources. Early defect detection can initiate investigations before a problem matures and often can be addressed through an inexpensive

maintenance activity. The cost of deferring or avoiding the issue grows as the issue matures. Thus, a resourced and active NAPOT evaluation program has the potential to avoid SSOs and expensive reactive repairs and extend the life of the asset by targeting performance trends rather than SSOs or system breakdowns which can save tax payer money and promote additional private investments in the community.

By nature, NAPOT trending is proactive, but the window to remain proactive may be short. Therefore, the ranking for this priority is high, and does not fit into an annual scheduling model. Priority is basin-based, and is evaluated on a case by case basis, and typically requires a dedicated crew for a short period of time.

4. **Wellfield Protection Areas (WPAs):** Every 5-years the WPO requires MDWASD to conduct CCTV inspections to evaluate pipe joint integrity, pipe structural conditions, and manhole connection integrity for all gravity sewer pipes within the WPAs. A proposed modification to this language allows evaluations by other technologies as well. Rehabilitation must be completed within one-year from submittal of the report identifying the defect. Priority will be Basin-based and will be assigned in reverse order from time of last evaluation.
5. **VSCO SSES Requirements and Anticipated I/I Screening Approach:** Currently, MDWASD and the VSCs are required to evaluate, identify, and reduce I/I in the GSS on a 10-year cycle. The requirements include the evaluation of the total length of the GSS and all manholes. The WWCTLD has complied with this requirement through a night flow measurement screening process. VSCO SSESs have been conducted for those basins exceeding the maximum performance measure of 5,000 GPDIM.

According to proposals being considered for Commission approval, MDWASD will not be subject to the current VSCO requirements once MDWASD transitions to the EPA/FDEP approved GSSOMP plan; however, WWCTLD may elect to adopt a transitional I/I Screening Approach similar the current VSCO SSES screening methodology as part of its GSSOMP required activities. The ranking of this priority, will at that time, be subject to

modification. Priority will be Basin-based and will be assigned in descending order from the highest basin GPDIM value recorded.

6. **VSCO / I/I Related Rehabilitation:** The 2004 version VSCO requires rehabilitation of all I/I related defects discovered during the VSCO SSES process. Rehabilitation must be completed within 4 years of annual report submittal.

The internal WWCTLD goal is to correct 100% of the identified defects in the designated four-year window, and thus, priority is Basin-based in descending order from the highest basin GPDIM to lowest for the VSCO SSES basins with the earliest required completion date.

According to proposals being considered for Commission approval, MDWASD will not be subject to the current 2014 VSCO requirements once MDWASD transitions to the EPA/FDEP approved GSSOMP plan; however, MDWASD may elect to adopt a transitional I/I Related Rehabilitation approach similar to the VSCO Related Rehabilitation as part of its GSSOMP required activities. The ranking of this priority, will at that time, be subject to modification.

The internal WWCTLD goal would remain to correct 100% of the identified defects in the designated repair window, which will be five-years from the date of WO creation, and thus, for basins not subject to regulatory schedules, priority is Basin-based in descending order from the highest basin GPDIM to lowest for the basins with the earliest initially scheduled completion dates.

Table 05.1
GSSOMP Prioritization Criteria

Rank	Priority Criterion Description	Tools Used to Evaluate Priority	IMS/GIS Functionality Required
1	Priority CIP List	<ul style="list-style-type: none"> • Consent Decree CIP List 	<ul style="list-style-type: none"> • See Table 05.2
2	Known Problem Areas	<ul style="list-style-type: none"> • Visual Inspections • CCTV Inspections <ul style="list-style-type: none"> ○ FOG ○ Roots • Repair Frequency • CCI Calls outs • Known Basin Issues (PS Downtime) • Hot Spots • Known FOG Control Enforcement • WCTS model • SSO Review Process 	<ul style="list-style-type: none"> • See Table 05.2
3	Rising NAPOT Trends (PSIP Related)	<ul style="list-style-type: none"> • Pump Station Runtimes • SCADA Data <ul style="list-style-type: none"> ▪ Current ▪ Historical • Flow Monitoring 	<ul style="list-style-type: none"> • See Table 05.2
4	WPAs	<ul style="list-style-type: none"> • Time since last evaluation <ul style="list-style-type: none"> ▪ 5-yr Inspection Cycle ▪ CCTV/Repairs List ▪ Defect notations • Low Voltage Inspections or similar technology • Work Order System 	<ul style="list-style-type: none"> • See Table 05.2
5	2015 and Transitional VSCO SSES Requirements Anticipated I/I SSES Screening Approach	<ul style="list-style-type: none"> • GPDIM • Night Flow data <ul style="list-style-type: none"> ➢ Wet Season ➢ Dry Season • Total Basin pipe linear footage • Pipe size • Work Order System • Flow Monitoring • SCADA Customized Reports 	<ul style="list-style-type: none"> • See Table 05.2
6	2015 and Transitional VSCO Related Rehabilitation	<ul style="list-style-type: none"> • GPDIM • SSES Reports • VSCO 4 year Project List • Due Date of VSCO required repairs 	<ul style="list-style-type: none"> • See Table 05.2
6	I/I Related Rehabilitation	<ul style="list-style-type: none"> • GPDIM • SSES Reports • WWCTLD 5- year Project List <ul style="list-style-type: none"> ➢ Due Date of required repairs 	<ul style="list-style-type: none"> • See Table 05.2
7	Pump Station Improvement Projects (PSIP)/CD Pump Stations (PS)	<ul style="list-style-type: none"> • PS Flow • SCADA Data • PS Runtimes <ul style="list-style-type: none"> ➢ NAPOT • I/I Priority Reports 	<ul style="list-style-type: none"> • See Table 05.2

Table 05.1
GSSOMP Prioritization Criteria continued

Rank	Priority Criterion Description	Tools Used to Evaluate Priority	IMS/GIS Functionality Required
		<ul style="list-style-type: none"> • PS Downtime • Root Cause 	
8	Hydrograph Rainfall Derived I/I (RDII) Spike and Peak Flow Hydrograph pipe sections	<ul style="list-style-type: none"> • Work Order System • Documentation of RDII 	<ul style="list-style-type: none"> • See Table 05.2
9	Pipe Size, Large Diameter	<ul style="list-style-type: none"> • 5-year inspection cycle • GIS • ≥24 inch Diameter • Rain event/ Pump station hydrograph review • WCTS model 	<ul style="list-style-type: none"> • See Table 05.2
10	Hydrogen Sulfide/Corrosion	<ul style="list-style-type: none"> • Know hydraulic transition points • Known Inverted Siphon • History • PS Out-of-Service • D/S Repair Work 	<ul style="list-style-type: none"> • See Table 05.2

7. Warranty Inspections. Warranty inspections represent the last opportunity MDWASD has to identify and address construction issues in recently donated infrastructure before taking full O&M responsibilities over from the Contractor. Identification and repair of construction related defects during the warranty period can avoid continued and unnecessary asset deterioration, and, it places the responsibility for repair on the Contactor, avoiding the use of MDWASD M&R resources to repair them. Inspections can help extend the life and reduce the life-cycle cost of an asset.

8. Pump Station Improvement Program (PSIP) Basin: the PSIP consists of managing the upgrades to the MDWASD Wastewater Collection and Transmission System (WCTS) that includes sanitary sewer collection system, pump stations and force mains upgrades. Basins with pump stations to be upgraded under the PSIP require additional evaluation to ensure I/I, debris, FOG, or other issues from the collection system do not further contribute to high NAPOT at the pump station. Priority will be assigned on a Basin basis.

- 9. Hydrograph Rainfall Derived I/I (RDII) Spike and Peak Flow Hydrograph pipe sections.** Pipe sections identified to be conduits for RDII will receive priority ranking. This process will be further developed after GSSOMP adoption and will be based off of recommended Inflow Surveys. The responsible parties will be WWCTLD's additional flow monitoring crew. Priority will be Basin-based and will be assigned based on documentation of RDII in the Basin.
- 10. Pipe size.** Larger pipe diameters (≥ 24 in) convey high flows from large populations and thus the potential consequences resulting from an out-of-service large diameter pipe are significant. The WWCTLD currently maintains annual contracts for the cleaning and inspection of MDWASD's large diameter pipes, which are on a five-year cleaning and inspection cycle. Priority for this criterion is low and will be Basin-based. Only 35 Basins have large diameter pipe. Priority is assigned in reverse order of last inspection.
- 11. Hydrogen Sulfide and/or Corrosion:** Odor complaints, observations from maintenance, staff, and past repairs related to hydrogen sulfide are flags to activate this criterion. This priority is assigned on an asset-basis.

05.03 Prioritization Process

Upon EPA/FDEP's approval of the GSSOMP, allocation of additional resources, and implementation of the IMS prioritization data management requirements and the GIS-based prioritization tool described in this Section, application of the prioritization approach will begin. After deployment, the WWCTLD Chief will evaluate the effectiveness of the criteria and modify as needed to enable WWCTLD to best meet performance targets.

Once developed by the IMS CMOM Program, the WWCTLD will implement the GIS based prioritization tool that displays the criteria graphically in the GIS. Managing the priorities of over 16 million linear feet of gravity pipe, close to 1,050 pump station basins, and over 80,000 manholes can be overwhelming. The objectives of WWCTLD's prioritization approach are:

1. To encourage utilization through simplification of the prioritization process and

2. To provide a consistent process that enables effective use of resources and funding in compliance with the requirements of the CD, MDWASD's business requirements, and industry best practices.

The prioritization tool concept is one of simplicity, usability, and functionality. The prioritization system will be designed to have simple qualifying criteria, i.e, "yes/no" flags or numerical ranges, driven by GIS polygon overlays. If a basin or an asset qualifies for inclusion under a particular priority, a GIS polygon covers the basin graphically. After all prioritization criteria are applied, the priority for evaluation will be assigned to each basin by the total number of matching priority characteristics.

From the color-coded maps developed in GIS, the priority areas will be ranked by the number of priority criteria map overlays, or criteria matches, covering each basin. Each basin will be tagged with its priority criteria matches to create the corresponding Annual GSS Evaluation Priority Data Report table. The table will be exported to the IMS to support resource scheduling for preventative O&M. The data requirements to accomplish these tasks are summarized in the next sub-section.

05.04 Recommended Supportive Actions

To provide the tools for successful implementation of the prioritization process requires that the proper data are available in the GIS and the resultant Annual GSS Evaluation Priority Data Report table can be transferred to the IMS. The following table lists the GIS data overlays required to develop the prioritization functionality in the GIS.

Table 05.2.
Recommended Actions and Responsibilities

Action	Prioritization Criteria	Responsible Party	Completion Date
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Develop GIS layers corresponding to the prioritization criteria listed in this section:</p> <p style="text-align: center;">Basin Boundary Map base</p> <p style="text-align: center;">GSS Atlas Map base</p>	<ul style="list-style-type: none"> • GPDIM range Overlays 	<p>IMS Implementation Team</p>	<p>In compliance with the coordinated CMOM Implementation schedule</p>
	<ul style="list-style-type: none"> • VSCO SSESs Completed by Basin, 10-yr rolling calendar Overlay 		
	<ul style="list-style-type: none"> • Wellfield Protection Area – Cone of Influence Map Overlay 		
	<ul style="list-style-type: none"> • SSO History Overlay, by Basin and Asset 		
	<ul style="list-style-type: none"> • Interruption of Service Incident Overlay, by Basin and Asset 		
	<ul style="list-style-type: none"> • VSCO and I/I Basin Rehabilitation required Overlay 		
	<ul style="list-style-type: none"> • Rainfall Derived I/I – Known areas Overlay 		
	<ul style="list-style-type: none"> • Rising NAPOT Trends 		
	<ul style="list-style-type: none"> • Basins included in PSIP Map Overlay 		
	<ul style="list-style-type: none"> • Priority CIP List Overlay, by Basin on Priority CIP List 		
	<ul style="list-style-type: none"> • Basins containing Large Diameter Pipe Overlay 		
	<ul style="list-style-type: none"> • Pipe Material attributes 		
	<ul style="list-style-type: none"> • Blockage History Overlay, by Basin and by Asset 		
	<ul style="list-style-type: none"> • Hot Spot Overlay, by Basin and by Asset 		
	<ul style="list-style-type: none"> • Hydrogen Sulfide/Corrosion History Map Overlay, by Basin 		
	<ul style="list-style-type: none"> • Hydraulic transition points, by Basin Overlay 		
	<ul style="list-style-type: none"> • WPAs Evaluated by alternate technologies Overlay, by basin 		
	<ul style="list-style-type: none"> • GSS Map Atlas 		
<ul style="list-style-type: none"> • CIP Priority Projects Map Overlay 			

06. Preventative Operations and Maintenance Schedules and Procedures

Upon EPA/FDEP's approval of the GSSOMP, Commission adoption of modified VSCO language, and allocation of the required resources, the WWCTLD will transition and expand its preventative O&M focus to include additional activities. Throughout this process, MDWASD is committed to meeting all requirements of the ordinance described in Section 01 of this document for as long as they remain in force.

The WWCTLD executes its GSS preventative maintenance program on a by-basin basis rather than by asset, line segment, geographic area, or other basis. A basin corresponds to the collection system service area for the local sanitary sewer pump station, which typically is independent of other basins. This O&M approach provides a rational and clear division of the GSS assets. The WWCTLD preventative operations and maintenance activities summarized in the GSSOMP include a wide range of activities the Division either:

- Routinely executes;
- Currently executes but infrequently; and/or
- Does not currently perform or has not performed recently.

The GSSOMP consolidates each type of activity and summarizes the resources necessary to continue or expand existing activities, perform other activities on a consistent basis, and adopt new activities consistent with CMOM principles.. The frequencies which these activities occur are discussed in the body of this section. These activities include:

- I/I Screening, night flow metering translated in terms of GPDIM
- Flow Isolation surveys
- Smoke Testing
- Sewer System Cleaning and Inspection
 - Construction, Warranty Inspections
 - Cleaning gravity mains
 - Low voltage leak detection and system assessment technologies
 - Inverted siphons – cleaning and inspection
 - CCTV Inspections
 - Manhole inspections
 - Service laterals – I/I screening
 - Root control
 - Pipe joint pressure grouting

- Flow Monitoring
 - Smart Cover monitoring
 - Strategic flow metering
 - Nominal Average Pump Operating Time trend analysis
 - SCADA monitoring
- Reporting
 - Periodic regulatory reports
 - GSS performance reports
 - Maintenance activity records

06.01 Night Flow Monitoring

MDWASD screens basins for I/I based through analysis of nighttime low data obtained from SCADA and temporary flow meters strategically installed in basins. The WWCTLD conducts night flow monitoring for the entire system twice per year, once during wet season and once during dry season

The night flow monitoring program was developed out of the requirements of the VSCO and has become a critical tool to identify I/I in the GSS. After the transition period, night flow monitoring will remain an important part of the GSS O&M program.

Under the VSCO, collection system rehabilitation must reduce I/I to below a level of 5,000 gallons per day per inch mile (GPDIM), and the WWCTLD uses this value as the trigger level for conducting SSESs. The WWCTLD calculates the average low night flow GPDIM for the wet season and the dry season. Basins with an average GPDIM greater than 5,000 are/may be scheduled for SSES. During the transition period and into full GSSOMP implementation, the WWCLTD Chief will evaluate the effectiveness of SSES trigger value (5,000 GPDIM) and may elect to modify it to meet GSSOMP and WWCTLD objectives.

06.02 Sewer System Evaluation

The WWCTLD currently evaluates GSS performance for approximately 75% of the GSS over a 10-year cycle period. The remaining quarter of the GSS is located within WPAs. Per the requirements of the WPO, the WWCTLD evaluates, cleans, and inspects these areas on a 5-year cycle. As the GSSOMP moves into and beyond the transition period, the evaluation prioritization list strategy, presented in Section 05, will guide the sequence for evaluation. The

results of the evaluation will be used to categorize the ongoing maintenance frequency, and/or identify repair or replacement needs for system components.

The WWCTLD crews pre-clean all pipe segments prior to CCTV inspection. Cleaning and inspections observations are logged in the field by the TV Technician, including any defects or issues, and are subsequently identified and coded into the CCTV evaluation database, currently Granite XP¹ by the Evaluation and Review Section staff. After evaluation, the WWCTLD Engineer creates the Division's Work Orders (WOs) in IMS and schedules maintenance, repair, rehabilitation, and/or capital improvements. When conducted under the requirements of the VSCO, MDWASD must repair or rehabilitate defects identified through SSES within four-years of the initial report submission. During the transition period and beyond, a five-year repair schedule will be adopted. The schedule will upon submittal of the annual and rolling five-year budget planning period. Defects related to exfiltration in the WPAs are required to be repaired within one year of submission.

06.02.1 Sewer Cleaning

Cleaning is the most critical element of the preventative maintenance program for the GSS. The purpose of regularly scheduled cleanings is to remove the accumulation of deposits or debris which could adversely impact the design capacity of the sewer pipe. This cleaning process removes the deposition layer to maintain original hydraulic capacity and prevent larger debris from becoming blockages, which might result in overflows or surcharges.

WWCTLD performs cleaning on an accelerated schedule in "hot spot" areas, line segments that have had more than one blockage, SSO, or interruption to service in the last 3 years. Once a hot spot has zero service callouts for a period of three years, the asset is removed from the hot spot list.

Monthly spill review meetings discuss and identify the root-cause of blockages, interruptions to service, and SSOs. Areas with a higher potential for flow restrictions due to roots, grease or

¹ The current version Granite XP does not have the capability to export results to the IMS. The WWCTLD desires this functionality in future versions of the software.

debris accumulation, or hot spots are scheduled for more frequent cleanings to reduce the likelihood of overflows.

WWCTLD uses a variety of equipment to perform GSS cleaning. The technique and equipment used depends on the condition of the sewer and accessibility. All tools and equipment required to perform the cleaning as well as maintain safety of the job site are carried on the trucks.

Typically, WWCLTD employs hydraulic cleaning using jetting equipment and vacuum trucks. The hydraulic cleaning process is capable of removing tough blockages and severe buildup of grease, roots or sludge in the sewer lines. The vacuum truck efficiently removes debris from the downstream manhole.

All GSS cleaning records are maintained in IMS which enables tracking of the following information:

- Date, time and location of cleaning activity
- Specific lines cleaned (using upstream and downstream manhole numbers)
- Equipment used
- Cleaning crew and team leader
- Problems identified and/or other follow up actions necessary

Appendix A provides the Standard Operating Procedure (SOP) for GSS Cleaning.

06.02.2 Cleaning of Inverted Siphons

The MDWASD has three inverted siphons in the GSS. Inverted siphons are constructed low points in the sewer to allow for the sewer to pass below another object, such as rivers, canals, and creeks. These sewers have two or more parallel pipes. These inverted siphons were designed to be self-cleaning and have rarely experienced problems. Outside contractors inspect the inverted siphons on a 5-year cycle.

06.02.3 Inspections

GSS components are inspected to identify structural defects, identify sources and magnitude of infiltration, blockages and possible causes of SSOs. The following are the primary techniques

used by MDWASD for inspection of GSS components: CCTV inspections of gravity sewers, smoke testing, low voltage leak detection, air testing of sewer joints, and manhole inspections. During any inspection, personnel will promptly report any observed SSO to their supervisor.

Cleaning and inspection observations are coded and logged in the field by the TV Technician into the CCTV evaluation database, currently Granite XP², by the Evaluation and Review Section staff. After evaluation, the WWCTLD Engineer creates the Division's Work Orders (WOs) in IMS and schedules maintenance, repair, rehabilitation, and/or capital improvements.

When conducted under the requirements of the current VSCO, the WWCTLD must repair or rehabilitate defects identified through SSES within four-years of the initial report submission. During and after the transition period, a five-year repair schedule will be adopted for defects identified outside of the ordinance-protected areas. The repair schedule will begin upon submittal of the repair WO. Defects related to exfiltration in the WPAs are required to be repaired within one year of submission.

The CCTV Inspection database fields include the following:

- date, time and location of inspection
- specific pipe segments inspected (using upstream and downstream manhole numbers)
- inspection crew
- observation of pipe condition using the MDWASD-developed coding system
- problems identified

Appendix C provides the SOP for CCTV inspection.

New technologies, Low Voltage Leak Detection: New technologies are consistently evaluated by the WWCTLD. Those showing promise in the conditions unique to the County are often evaluated further and are put into service alongside existing technologies to better evaluate their

² The current version Granite XP does not have the capability to export results to the IMS. The WWCTLD desires this functionality in future versions of the software.

suitability. Most recently, a low voltage leak detection technology has been put into limited service.

In the WPA, a primary function of MDWASD is the prevention of exfiltration from the GSS due to its proximity to the cone of influence for raw water wells. In compliance with the WPO, MDWASD performs visual inspections with CCTV in the WPAs. In 2014, the WWCTLD began utilizing a low voltage leak detection system developed for sanitary sewer systems to more accurately identify leaks in pipe segments.

06.02.4 Manhole Inspections

Manholes provide access to the GSS for inspection and maintenance. The WWCTLD inspects all gravity mains and manholes during sewer system evaluations. Manhole inspections document the condition of the manhole and the pipe connections.

In late 2014, the WWCTLD began experimenting with digital manhole inspection which may overcome the limitations of manual and visual manhole inspections. This type of inspection uses 360° cameras to provide full depth and full circumferential observation of manholes to more accurately identify and document manhole conditions.

Manhole material, visible conditions (missing cover, evidence of corrosion, cracks in grout), evidence of surcharging, existing debris, FOG accumulation, and physical characteristics including depth, number and direction of upstream and downstream pipes and pipe diameter are currently logged on a paper manhole inspection form. If repairs are required, a work order is generated.

The IMS CMOM Program will translate this paper form into an integrated electronic manhole inspection data collection form for use in the field and office and will populate a manhole inspection database archive. Implementation of this technology will follow the CMOM implementation plan.

Appendix A provides SOPs for manhole inspection.

06.02.4.1 Service Laterals

MDWASD maintains public service laterals, which extend from the property line to the sewer main. The property owner is responsible to clear blockages from house to gravity main, and the WWCLTD is responsible to repair defects in the same manner.

The inspection crew inspects the gravity main, predominately via CCTV inspections, where lateral conditions are screened. Clear flowing water represents a potential I/I defect and the WWCTLD's "Suspect Lateral Protocol" is followed. In the suspect lateral screening process, the camera remains still for up to 3 minutes to observe whether any type of sanitary source is indicated (solids, soapy water, grey water, etc.). If after this time, the water remains clear, the location is flagged as a suspect lateral for further investigation. The Suspect Lateral Investigation Crew evaluates suspect laterals. The WWCTLD conducts full replacement of laterals and does not perform point repairs as a matter of policy.

06.02.5 Root Control

Roots can be a significant cause of sewer blockages by either directly blocking flow, interrupting flow paths, causing a physical "hang-point" for debris, or by providing a medium onto which FOG can adhere. Regardless of the cause, these blockages have the potential to cause SSOs. MDWASD uses mechanical and chemical procedures for root control and removal. When a cleaning crew encounters significant root intrusion, the cleaning crew will flag the location and de-rooting activities will be scheduled.

06.03 Flow Monitoring

WWCTLD conducts on-going hydraulic monitoring in the GSS to collect system performance data for review and assessment of operating conditions. Analysis of the flow data alerts WWCTLD to potential problems before they become issues. MDWASD utilizes a variety of data collection devices and trend analyses to evaluate system performance and identify solutions:

WCTS Hydraulic Model. The WCTS hydraulic model can be an excellent source of data to predict possible flow conditions resulting from different combinations of input parameters. A comprehensive update to the WCTS model is underway as part of the existing CMOM

programs. Once the model updates have been completed and validated, the WWCTLD will explore opportunities to incorporate model output in predictive activities focused on avoiding surcharges or blockages.

Smart Covers. Smart manhole covers are level sensors and alarms that are mounted directly onto existing manhole covers. The device allows for continuous monitoring of the level conditions in the manhole and provides a user defined alarm. The alarm can be set to alert WWCTLD staff of a high water level or to monitor trends in water levels to prevent potential SSOs. The data is downloadable and remotely viewable so staff can monitor the impacts of rainfall and other factors on system performance.

It is a goal of WWCTLD to deploy Smart Covers to all “hot spots” to closely monitor and provide data to better assess these areas. This goal will be initially met in FY 2015, when a manhole at each of the existing 78 hot spot locations will be retrofitted with a Smart Cover. The additional information collected will help WWCTLD staff to identify reasons why the area may be having recurring issues so that they can be resolved. In the four years since pilot deployment of nine Smart Covers, hundreds of SSOs have been avoided.

Flow Monitoring. Flow monitoring occurs in several different manners and for several different purposes including: Night Flow Monitoring; Flow Isolation Surveys; Inflow Surveys; and Strategic Flow Metering using a combination of SCADA and flow meter data.

SCADA. The MDWASD Pump Station Division monitors critical operational data at each pump station in the WCTS via a SCADA system. The SCADA data relevant to the WWCTLD is flow, time, and water level.

NAPOT Trend Monitoring. WWCTLD will evaluate NAPOT data and SCADA hydrographs for pump stations to identify anomalies that may indicate issues in the collection system upstream of the pump station.

MDWASD has over 1,000 pump stations; each having a routine range within which it operates. If anomalies occur, such as a sudden rise in water levels in the wet well or longer pump run times during a dry period, then a GSS incident may

be building, such as a ruptured sewer pipe. WWCTLD will review data and analyzes NAPOT trends; if unexplained anomalies in the trends are observed, WWCTLD staff will investigate the issue for resolution.

Flow Metering. The Flow Meter Crew deploys and maintains flow meters throughout the GSS to supplement and validate data retrieved by the SCADA system.

Twice yearly the WWCTLD uses flow metering to support the VSCO Night Flow Monitoring where SCADA data are known to be unavailable or the pumps are variable frequency. The WWCTLD deploys flow meters to conduct flow isolation studies when it is necessary to pinpoint the source of flow in a basin with several branches. The Division also conducts Inflow Studies, low flow period flow monitoring coupled with other rainfall hydrographs or other data. These studies help identify capacity versus I/I issues and to differentiate and quantify I/I and RDI/I.

MDWASD Sewer Design Standards require sewers be designed to pass the 2-year, 24-hour (4.5-inches in 24-hours) storm event. Based on flow monitoring review, RDII surcharges may be able to be differentiated from system capacity related surcharges. Knowledge of potential root-cause aids in directing the appropriate resources for follow-up and prioritized based the WWCTLD's prioritization criteria.

06.04 Reporting

The WWCTLD currently develops reports annually documenting the monitoring, assessment, screening, as well as scheduled maintenance activities, work orders and logs for repairs. All activities are saved on MDWASD servers. The IMS CMOM Program will provide the technology to save and access these reports from within the IMS.

The WWCTLD staff develops periodic reports that summarizes compliance with the VSCO and WPO. The VSCO annual report documents the evaluation of night flow and SCADA data for screening excessive I/I for each basin. Sections also include summaries of basins with current year SSES completion due dates (basins with GPDIM > 5,000), results of and recommendations resulting from the SSES, and defect and repair log for the current year.

The WPO has a similar report, prepared on a five-year cycle, which indicates the results of the CCTV survey. Defects are listed and repairs accomplished are documented. Repairs must be made within a one-year period from submittal of the report.

Upon approval of the GSSOMP by EPA/FDEP and implementation of the other enabling measures, MDWASD will cease reporting on the VSCO requirements and will follow the reporting requirements included in the Consent Decree.

06.05 Supporting Programs

FOG is a significant cause of sewer blockages that lead to SSOs. RER-DERM is responsible for implementation of the FOG Control Program. DERM regulates the discharge of FOG from food service businesses through a pretreatment program. The FOG Program also includes an education campaign to inform residents, commercial, and industrial customers of the problem of FOG.

07. Operations and Maintenance Procedures for Unscheduled Work

This section describes WWCTLD's reactive/emergency or unscheduled work procedures, which typically requires responding to reports of blockages, interruptions to service, or other non-overflow, unplanned maintenance needs in the GSS. Specific protocols for managing and reporting SSOs will be described in MDWASD's CD required Sewer Overflow Response Plan (SORP) CMOM Program. Currently, the WWCTLD staff refers to SSO procedures contained in the SSO Contingency Plan which describes specific procedures and protocols for responding to SSOs.

07.01 Corrective Maintenance

Most unplanned callouts are non-emergency but time critical and are typically identified through customer calls or during other maintenance activities. For callouts originating from outside the WWCTLD, a Trouble Investigation Unit is dispatched to investigate reported problems within the GSS. If repairs or other corrective measures are required, the Unit will refer the problem to the appropriate WWCTLD Section or unit to make the repairs. Corrective maintenance may include the following, depending on the nature of the issue:

- Cleaning to eliminate flow restrictions – using hydraulic or jet washing, vacuum truck debris removal, root cutting;
- Application of biodegradable or enzyme degreasing products directly into affected manholes;
- Spot repair or pipe replacement of broken or damaged pipe;
- GSS inspection to assess repairs needed;
- Temporary by-pass pumping to return service while repairing line; and/or,
- Replacing a failed or missing manhole cover.

07.02 Scheduling Repairs

The WWDTLD classifies SSOs, interruptions to service, and blockages as unscheduled work. The Division refers to repair work that can be scheduled in the future but is not associated with an existing regulatory or ongoing program, e.g. the WPO or PSIP, as scheduled non-program

work. Scheduled, non-program work ranges from components determined to be poorly functioning to immediate repairs on failing or poorly performing assets. In some cases the GSS assets require major capital replacement. Highest response priorities are emergencies where the environment or public health and welfare are at risk. Scheduling of other repairs is completed by the Evaluation and Review Section. The WWCTLD Engineer bases the repair response on criticality of the asset, the size of the area impacted, potential for the situation to worsen if repair is delayed, and considers in-house versus contract repairs based on these factors.

07.03 Tracking and Recording Repairs

At the time of the initial report, the Communication Center Incident staff member receiving the complaint initiates a WO in the IMS for the address given and classifies the problem based on information given. Each WO receives increasing levels of detail related to the problem and probable solution at each subsequent stage of repair (Trouble Investigation Unit evaluation; the WWCTLD Maintenance and Repair Section inspection and/or repair, the Evaluation and Review Section analysis, etc.), ultimately resulting in a completed repair and a closed WO. By the time the Work Order is closed, location data, asset number, repair(s) required, time to repair, responsible crew, required follow up is captured in the original WO or in child WOs initiated by the WWCTLD crew.

08. Inspection of Easements

The vast majority of easements in the MDWASD WCTS are located on private, developed residential lots, where access is extremely difficult due to private fencing and the installation of structures over the easements over long periods of time. Encumbered easements are the norm, not the exception. The WWCTLD has been extremely successful in accessing easements when necessary to make system repairs by working with homeowners to coordinate work schedules and minimize impacts to existing private property.

In contrast, the vast majority of large diameter interceptor pipe and inverted siphon alignments are in the public right-of-way. County right-of-ways are routinely maintained by County forces or contracted landscape crews, and large diameter pipes and inverted siphons are inspected on a five-year cycle. There are no aerial gravity sewer crossings in the WCTS, and due to the flat geography, interceptors do not follow meandering stream alignments, but follow the gridded street patterns. When gravity sewer canal, creek, or stream crossings are necessary, they generally follow the public right-of-way.

08.01 Inspections and Reporting

Upon EPA/FDEP's approval of the GSSOMP and after the IMS CMOM Program has implemented the appropriate technology, WWCTLD crew members will document easement accessibility in conjunction with other field activities, such as responses to SSO events, interruptions of service, and Sanitary Sewer Evaluation Surveys to satisfy the CD requirement for routine easement inspections. The primary purpose of these observations will be to scan, from public right-of-way, obvious signs of existing or past SSO occurrences.

The IMS CMOM Program will include an easement accessibility checkbox on the electronic field WO forms to document easement accessibility at a particular location. In the WO form's comment box, the crew supervisor will document observed extraordinary conditions. Since encumbered easements are the norm in the County, examples of extraordinary conditions may include open pits with GSS assets exposed, open manholes with a hose in the manhole, observed active discharges, or surface signs of waste materials on the surface near manholes,

etc. In these cases, if possible at the time, digital photographs will be taken, or the observation will be reported to the WCTLD Chief for appropriate response.

Easement maintenance will occur on an as-needed basis to access the sewer system for legitimate maintenance and repair activities.

08.02 Observance of Active SSOs

Any observed, active SSOs shall be documented on the field WO form and promptly reported in accordance to the SORP or the interim SSO Contingency Plan.

08.03 Recording Evidence of SSO Since Last Inspection

Any observed evidence of previous SSOs that have occurred since the last documented easement observation will be documented on the electronic field WO form and promptly reported to the Unit supervisor.

08.04 Easement Access: State Statutes and Local Ordinances

MDWASD's right to access sewer easements is protected under Florida Statutes and are referenced below. The County's ordinance protects MDWASD's easements from construction of permanent structures. The following statutes and ordinance relate to easement access:

Florida Statutes, Title XL: Real and Personal Property, Chapter 704: Easements (http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=0700-0799/0704/0704.html)

Miami-Dade County Code of Ordinances: Easements Not to be Adversely Affected by Permits http://miamidade.fl.eregulations.us/code/coord_iii_ch33_arti_sec33-24

09. Schedule for the Maintenance of Easements

The inspection and maintenance schedule for easement is as follows:

Table 09.1
Easement Maintenance Schedule

Easement Type	Maintenance Frequency
Interceptor Sewer Easements (≥ 24 -inch) and inverted siphons	Visual inspection in conjunction with large diameter cleaning and inspection 5-year cycle. Maintain only as required to access GSS components for service or to prevent an imminent incident related to easement and the GSS.
Sewers Main easements, including Easements within creek crossings, canal crossings and easements with stream bank encroachment toward gravity sewers, manholes and inverted siphons	MDWASD accepts that vast majority of easements are encumbered, and it is not cost effective or good customer relations policy to remove encumbrances without need for access. Therefore, maintenance will occur only as needed to access the GSS components during maintenance and repair activities.

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10. Potential Sulfide and Corrosion Control Options

GSS construction materials are an important component of a corrosion control plan. Vitrified clay pipe (VCP) and plastic pipes such as polyvinyl chloride (PVC), and polyethylene (PE) are resistant to sulfide corrosion. Ductile iron pipe (DIP), cast iron pipe (CIP), pre-stressed concrete cylinder pipe (PCCP), reinforced concrete cylinder pipe (RCCP), reinforced concrete pipe (RCP), concrete manholes, and brick and mortar manholes are present in the WCTS and are susceptible to corrosion. The information contained in this section is applicable to all piping materials with the exception of plastic pipes and VCP.

MDWASD takes steps to control hydrogen sulfide damage in its installed large diameter/interceptor pipe inventory. Most large diameter gravity pipes and manholes made of materials susceptible to corrosion have been retrofitted with non-corrosive lining systems to avoid concrete deterioration.

10.01 Hydrogen Sulfide and Corrosion Control Options and Recommendations

Twenty-four months after receipt of EPA/FDEP approval of the GSSOMP and after allocation of financial resources, MDWASD will conduct an engineering evaluation of corrosion control options with recommendations suited to the unique environmental conditions found in the WCTS. The WWCTLD may elect to update a previously conducted corrosion control evaluation and provide new or updated recommendations. The evaluation's recommendations will be incorporated into the GSSOMP by reference.

The WWCTLD Chief is responsible for initiating the hydrogen sulfide and corrosion control options evaluation.

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11. Staffing and Funding Plan

The Staffing and Funding Plan will establish the basis for performance-based annual and rolling five-year budgetary planning horizons for the management, operations, and maintenance of the MDWASD gravity sewer system. Until such a time as the performance measures and performance targets have been developed and implemented by the IMS CMOM Program, the annual and rolling five-year budget planning process will adhere to the GSSOMP Interim Staffing and Funding Plan. The current budget proposal for Fiscal Year 2015 – 2016 (FY2015/16) is used as the budget baseline in this Plan. GSSOMP recommended activities and funding levels begin in Year 1 and corresponds to FY2015/16.

Once implemented, the Staffing and Funding Plan will utilize the performance measurement systems to objectively plan and adjust resource and funding levels to meet the adopted performance measure targets. An objective approach, based on documented performance compared to established performance measures enhances the repeatability, consistency, and transparency of the budgeting process while helping to minimize subjective funding decisions.

The approach to establishing interim staffing and resource levels is to estimate required resources by qualitatively identifying recommended WWCTLD activities and resource requirements in light of the CD required GSSOMP performance elements. Annual budgets are developed to enable MDWASD to adequately operate and maintain the expanding GSS service area and to extend the in-service life of the GSS and other MDWASD assets. The Interim Staffing and Funding Plan recommends an aggressive initial Year 1 investment in O&M, Capital, and outsourced maintenance and repair resource funding followed by steady increases of 5% annually.

The first section of the Interim Staffing and Funding Plan contains substantial background discussion of required resources and the nature of the adequate characteristics for each resource class. The remaining sections summarize the staffing and funding requirements to meet those resource needs.

The Staffing and Funding Plan details presented below contain present and transitional recommendations. The Staffing and Funding Plan approach will require revision as performance measures are implemented and evaluated for success. Since performance measures may be evaluated annually, MDWASD may also elect to review the Staffing and Funding plan on an annual basis. Moreover, the implementation of other CMOM Programs will affect the Staffing and Funding Plan for the GSSOMP.

11.01 WWCTLD Background

Each year the WWCTLD develops a Staffing and Funding Plan to reflect the required resource levels needed to successfully execute the required O&M activities. As development in the County continues, the size of the GSS (number of pipe segments, manholes, and pump stations) consistently increases as systems are donated to MDWASD ownership.

11.01.1 Appropriate Resource Characteristics

Ensuring appropriate WWCTLD resources are available to execute the preventative, reactive, and emergency activities required is an essential element to the pursuit of the goal of reducing, minimizing, preventing and/or controlling sanitary sewer overflows and prohibited discharges to waters of the United States. These resources should be properly scaled but fully staffed, trained, certified, equipped, supported and located strategically throughout the County.

11.01.1.1 Personnel

Establishing and maintaining the appropriate number and diversity of field crews (e.g., TV and Grout, Pipe Repair, Manhole Repair, Evaluation and Review Crews, etc.) is one of the most important strategies to reduce or control SSOs. Ensuring each crew is fully staffed is equally important. In considering the staffing levels required to be “fully staffed,” consideration for absenteeism, vacation, sick time, short term or long term disability, and/or jury duty is necessary.

11.01.1.1.1 Training

Regular and appropriate training reduces injury and other safety related incidents, reduces “re-work,” exposes crews to the “state-of-the-art” in the industry, develops crew members’ ability to

effectively utilize the MDWASD’s IMS tools, reinforces and exposes staff to other industry “best practices,” expands the knowledge-base of all crew members, provides a means to qualify staff for increasing levels of responsibility, and increases overall productivity.

11.01.1.1.2 Certification

The merits of certification parallel those of training, but require examination and regular continuing education to maintain the certification. These requirements help establish and maintain consistent levels of training, education, and GSS O&M knowledge for the leaders of WWCTLD crews, units, and sections.

Effective managers and supervisors demonstrate leadership through their on-the-job experience and continuation of their education. Professional third-party certification or State licensure provides one of the best strategies to confirm supervisory and management candidates have demonstrated and verified appropriate WCTS knowledge and experience. The State of Florida FDEP requires licensure for Water and Wastewater Treatment Plant operators and Drinking Water Distribution System operators.

Although FDEP does not require licensure for Wastewater Collection System operators, more than half of Florida’s Counties required Operator certification, and over half of the other States require Wastewater Collection System Operator certification or licensure. Certification and training may be obtained through local and national professional associations. The Water Environment Federation (WEF), the leading recognized water and wastewater industry professional association in the United States, offers certification and training materials, and many of the organization’s State chapters offer certification. Table 11.1 summarizes the FW&PCOA Wastewater Collection Operator certification qualifications.

Table 11.1
FW&PCOA WWCO Certification Qualifications

WWCO Level	Qualifications
Class “C”	18 years of age, provide evidence of having a high school diploma or equivalent, must have 2,080 hours of “hands-on” experience, must furnish documentation of having completed the FW&PCOA Class C Training Course, must pass the Class C written exam.

Table 11.1
FW&PCOA WWCO Certification Qualifications continued

WWCO Level	Qualifications
Class “B”	Must have a FW&PCOA Class C Certification, must have accumulated 3 years (6,240 hours) of actual “hands-on” experience, must furnish evidence of having an up-to-date Standard First Aid or CPR card, must furnish documentation of having completed the FW&PCOA Class B Training Course, must pass the Class B written exam.
Class “A”	Must have a FW&PCOA Class B Certification, must have accumulated 5 years (10,400 hours) of actual “hands-on” experience, must furnish evidence of having an up-to-date Standard First Aid or CPR card, must furnish documentation of having completed the FW&PCOA Class A Training Course, must pass the Class A written exam.
All Levels	Detailed description of the “hands-on” job duties being used for qualification
All Levels	A supervisor’s verification of qualification to be certified at the Level indicated and a recommendation for certification.
All Levels	Self-verification of the validity of the statements and information in the Certification application.

11.02 Resources

The resources required to execute the activities of the WWCTLD generally include: field crews; administrative staff; offices facilities; storage yards; maintenance and repair facilities; the Stores Division; On-Call/Demand or GSS Repair and Replace or Refurbish Contracts; liaison with the Pump Station Division, DERM, the Public Works Departments of the County and municipalities within the MDWASD service area, the Engineering and Construction Management Division, the Internal Services Department, fleet services, County Human Resources support, and ultimately the County Commission. This section presents only those resources within the control of the WWCTLD.

11.02.1 Personnel

The WWCTLD’s FY 2014 staff by job category is summarized in Appendix D1, and includes 194 budgeted positions, twelve of which were unfilled during most of the fiscal year. Appendix D2 contains full job descriptions and the salary bands for each job classification. Table 11.2 provides a breakdown of WWCTLD staff by organizational section: Administration; Evaluation and Review; Maintenance & Repair; and Inspections.

Table 11.2
FY 2014 WWCTLD Budgeted Staff Numbers by Section

Description	Chief Superintendent/ Administration	Evaluation and Review	Maintenance and Repair	Inspection	Total # and (% of overall staff)
Chief	1	0	0	0	1 (0.5%)
Asst. Superintendent	0	0	1	1	2 (1.0%)
Administrative Support	4	0	1	0	5 (2.6%)
Accounting	1	0	3	1	5 (2.6%)
Engineering	0	1	0	0	1 (0.5%)
Supervision	0	0	4	2	6 (3.1%)
Evaluation and Review	0	3	0	0	3 (1.5%)
Repair Crews	0	0	69	0	69 (35.6%)
Investigation Crews	0	0	26	0	26 (13.4%)
Valve Crews	0	0	10	0	10 (5.2%)
TV & Grout Crews	0	0	0	33	33 (17.0%)
Flow Meter Crew	0	0	0	7	7 (3.6%)
Smoke Test Crew	0	0	0	8	8 (4.1%)
Large Diameter Inspection Crew	0	0	0	7	7 (3.6%)
Restoration Crew	0	0	6	0	6 (3.1%)
Data Control	0	0	0	2	2 (1.0%)
Repair Shop	0	0	1	2	3 (1.6%)
Totals	6 (3.1%)	4 (2.1%)	121 (62.4%)	63 (32.4%)	194 (100%)

The Inspection Section contains ten crews organized in two units, the North Unit and the South Unit. Maintenance & Repair currently utilizes four units, North, South, Central, and Transmission. The Transmission Unit crews provide O&M support for force mains and valves and are not included in the GSSOMP. The WWCTLD crew breakdowns are provided below in Table 11.3.

Table 11.3
FY 2014 WWCTLD Field Crews

Crew Name	Inspection Section	Maintenance & Repair Section
TV & Grout	4	0
Flow Meter	1	0
Large Diameter Inspection	1	0
Repair Shop	2	0
Smoke Test	2	0
Cleaning and Investigation	0	3
Lateral Investigation	0	1
Manhole Repair	0	3
Repair	0	10
Restoration	0	1
Transmission ARV	0	1
Transmission Valve	0	1
Transmission Repair	0	3
Total	10	23

11.02.2 Equipment

The equipment allocated to the WWCTLD is presented in Appendix C. In addition to the listed equipment, the Evaluation and Review team utilizes a dedicated infrastructure condition assessment database, Granite XP, to evaluate and store the CCTV videos and assessments. The Granite XP database resides on a dedicated server.

11.02.3 Contracted Resources

The WWCTLD has the following GSS revolving contracts with outside contractors (Table 11.4):

Table 11.4
WWCTLD GSS Revolving Maintenance & Repair Contracts

Contract Type	
Open Cut (Dig & Replace)	Large Diameter Cleaning
Section liner installation (Sectionals)	Sidewalk Repair
Location and Adjusting Castings (Manhole frames and Covers)	Inverted Siphon Cleaning, Inspection, and repair
Capital Improvements Projects	Emergency Repairs, Large Diameter
Manhole Rehabilitation (MH Rehab)	

11.03 WWCTLD Activities

A number of factors influence, or trigger, the type, scale, and manner in which the WWCTLD conducts GSS O&M activities. These include influences from multiple Programs and organizational protocols. A partial list of programs which influence the activities and scheduling of activities for the WWDTLD include:

- Required regulatory SSES screening
- Required regulatory annual CCTV and SSES
- Other reporting
- Required regulatory repair schedules
- Required regulatory scheduled system evaluations
- 10-yr cleaning and CCTV inspections for Non-WPA
- PSIP support
- NAPOT support
- Pre/post repair flow documentation
- FOG
- SORP
- WCTS Hydraulic Model support
- Hot spot accelerated cleaning
- Smart cover flow depth monitoring

11.04 WWCTLD Productivity

The productivity report for the most recent available year is presented in Appendix F - WWCTLD Productivity Reports. The initial report provides a snapshot of recent performance and serves as the baseline when documenting year-to-year performance trends. When electronic document functionality becomes available, annual performance summaries will be accessible through Appendix F. Until that time annual performance reports will be appended to previous years' reports in Appendix F. The adopted annual performance targets for cleaning and CCTV inspection in the WPA¹ are 20% of the total length of the GSS located in the WPAs. The annual target for the remainder of the system will be to clean and inspect 10% of the total remaining

¹ Wellfield protection areas (WPAs) are the defined geographical limits of areas subject to the Wellfield Protection Ordinance (WPO)

length of the GSS. The latter target is a new GSSOMP PM target and meets existing local regulatory requirements.

11.05 Future Resources and Funding

To achieve equilibrium between available resources and preventative, reactive, and emergency O&M activities, the WWCTLD proposes that the GSSOMP initially adhere to an interim five-year O&M and Capital budget program. WWCTLD's FY2015/16 initial budget proposal includes an additional 56 new positions, 47 of which are GSS related, and 30 pieces of new or replacement equipment to address the existing backlog of regulatory compliance inspections and repairs. In addition, the GSSOMP includes recommendations for additional resources in the 2015 – 2016 budget year, to meet the LOS commitments consistent with the CD adopted performance targets. A description of these recommendation are summarized in Table 11.5.

The County separates the budgets of the O&M resources from capital expenses. The WWCTLD's Operations and Maintenance Budget contains labor costs, general administration (G&A) costs, and other costs directly charged to the Division. The Renewal and Replacement (R&R) budget includes all capital equipment, capital improvement construction projects, and large purchase tools, supplies, and materials. On-call or I/I construction contracts fall into an additional budgetary category.

In establishing planning period budgets, the Division considers the previous year's labor expenditures coupled with the coming years' anticipated workloads and submits a Request or an Additional Budgeted Position form for each WWCLTD Unit needing staff augmentation. The form also list of equipment made necessary by adding the additional positions; these equipment lists correlate to the R&R budget requests. Through the development of the GSSOMP plan, the WWCLTD identified additional, previously unidentified resource needs in direct response to the activities due to the adoption of CMOM O&M strategies.

Appendix G summarizes the requested WWCTLD and GSSOMP recommended supplemental resources, details of the WWCTLD's initial FY2015/16 Proposed Budget, the GSSOMP recommended supplemental resources, the R&R budgets and descriptions, and a summary of

Table 11.5
GSSOMP Recommendations for Augmentation of WWCTLD Resources -----

<p>A fully equipped Flow Meter Crew to complete the following tasks: maintain and manage the 85+ Smart Covers currently being deployed, provide additional Flow Isolation Study and Inflow Survey capabilities, and conduct conductivity monitoring in the Tidally Influenced Areas..</p>
<p>Two fully equipped TV & Grout Crews to provide cleaning, CCTV, and SSES capabilities on sections of the GSS that are not located in the WPA and are not surveyed as part of the VSCO ordinance, to support the Cleaning and CCTVing PM Target It is possible some basins have not been inspected in decades. The second crew will primarily provide Warranty Inspections in support of Task 4.1 CIP Priority Projects by inspecting a sample of new GSS capital projects prior to the end of the 1 year warranty period. Both crews will perform grouting repairs in the GSS.</p>
<p>A new Manhole Inspection Crew to be deployed with TV & Grout Crews to perform pilot testing of new high resolution manhole inspection via a truck mounted camera/scanner and evaluation software.</p>
<p>Two fully equipped Maintenance & Repair Repair Crews to address the additional defects discovered during the additional CCTV inspections and/or SSESs.</p>
<p>The two Repair Crews will be supported by a Cleaning Investigation Crew to provide assistance in pre-cleaning and inspecting the GSS in the area of the pipe segments to be repaired. This crew will also respond to Smart Cover level alerts and will support cleaning of those areas as well as those identified by rising NAPOT trends.</p>
<p>An additional M&R Lateral Investigation Crew will be created to support assessment of the additional suspect laterals anticipated to be identified by the additional TV & Grout Crew and to provide other support for the M&R Repair Crews.</p>
<p>Two fully equipped Evaluation and Review Specialists to conduct evaluation and review on the additional CCTV and metering data collected.</p>
<p>An Engineer 2 in the Evaluation and Review Section to monitor and evaluate Smart Cover level or trending alarms, monitor and evaluate PS NAPOT hydrograph trending and basin flow and level hydrographs to identify potential blockages, flow constrictions, capacity issues, and/or RDII issues</p>
<p>A Water and Sewer Maintenance Planner/Scheduler to schedule warranty inspections and monitor warranty deadlines related to the \$139M CIP Program Task 4.1 Collection System projects; coordinate, monitor the schedule of, and track other GSS capital projects to forecast potential impacts on the GSS; forecast and schedule construction clearances associated required or avoid temporary system outages during construction; coordinate and provide schedule support to conduct the additional GSSOMP activities; and other resource scheduling tasks as may be required.</p>

recommended annual On-call M&R contracts. Total Year 1 funding requirements for each are summarized and extended out and indexed over the five-year budget planning horizon. Appendix G will be updated annually with the current and rolling five year budget proposals and

resource requests and will contain the performance measure rationale for deviations from the planning and proposed budgets.

Table G.1, Appendix G, presents WWCTLD's FY2015/16 Proposed Budget new staff requests and the GSSOMP recommended supplemental staff. Descriptions of the FY2015/16 R&R requested items and the GSSOMP non-labor recommendations are summarized in Tables G.6 and G.7. Tables G.7, G.8, and G.9 summarize FY2015/16 WWCTLD combined recommended resources. Table G.13 states the recommendations for the On-call Contractor contracts, and the training recommendations represent Year 1 of the initial five year planning horizon. **Section 11.06 - Funding Requirements** presents the recommended funding levels.

11.05.1 Certification

The WWCTLD supports and envisions FW&PCOA Wastewater Collection Operator certification of its supervisors and superintendents. Table 11.6 summarizes the current and proposed staff positions qualifying for Certification.

Table 11.6
WWCLTD Positions Recommended for Wastewater Collection System Operator Certification

	FW&PCOA WWCO Class	Number qualified, existing staff	Number qualified, proposed new staff	Total
W&S Chief	A	1	0	1
W&S Assistant Superintendent	A	2	0	2
Water Distribution Supervisor	B	6	0	6
Sewer Collection System Supervisor	C	8	2	10
Pipefitter Supervisor	C	18	8	26
TOTAL		35	7	45

11.06 Funding Requirements

Table 11.7 summarizes the total recommended FY2015/16 budget and represents the sum of WWCLTD's initial FY2015/16 Proposed Budget, the GSSOMP recommended resources additions, the R&R budget, and the recommended On-Call Contractors contract values.

Table 11.7
Summary of GSSOMP Recommended WWCTLD FY2015/16 Proposed Budget Additions

Budget Cost Category ²	FY2015/16
WWCTLD Requests for New Budgeted Positions	\$ 3,051,666
FY2015/16 Proposed Budget ³	\$ 25,057,263
On-call Contracts	\$ 22,169,885
R&R Budgets	\$ 8,770,389
GSSOMP Year 1 Augmentation of Resources	\$ 6,426,671
	O&M \$ 4,330,368
	Equipment \$ 2,096,303

Table 11.8 presents the budgetary summary under the customary budget headings of O&M, R&R, and I/I Contracts (On-call or Demand Contracts).

Table 11.8
Summary of GSSOMP Recommended WWCTLD FY2015/16 Budget by O&M, R&R and On-Call

Budget Cost Category ⁴	FY2015/16
O&M Items	\$ 32,439,297
R&R Items	\$ 10,866,692
On-call Contracts	\$ 22,169,885

Table 11.9 summarizes the GSSOMP's initial recommendation for total rolling five-year WWCTLD planning budgets, allocated across the three categories above.

² Summary of the totals from the previous tables.

³ Including addition of FY2014/15 Labor Costs to FY2015/16 Labor; Line Item was TBD in budget proposal.

⁴ O&M Items: The WWCTLD FY2015/16 Proposed Budget (O&M) plus the recommended Year 1 GSSOMP staffing.

R&R Items: GSSOMP Equipment Costs (Table G.9) plus the R&R budget.

Table 11.9
Recommended 5-yr WWCTLD O&M, R&R, and On-call Contractor Budgets⁵

Cost Areas	FY2015/16	FY2016/17 ⁶	FY2017/18	FY2018/19	FY2019/20
O&M Items	\$32.4M	\$34.1M	\$35.8M	\$37.6M	\$38.1M
R&R Items	\$10.9M	\$11.4M	\$12.0M	\$12.6M	\$13.2M
On-call Contracts	\$22.2M	\$23.3M	\$24.4M	\$25.7M	\$26.9M

This initial period is the interim period, or the budgetary periods before implementation of the strategies contained in the GSSOMP, e.g., performance measure based resourcing and budget development, and those of the other CMOM programs. During the interim period, rolling five-year total annual budgets, based on and indexed to the FY2015/16 GSSOMP recommended budget, should be developed and maintained. These initial budgets should only be altered if the WWCTLD Chief determines they remain insufficient to complete the annual O&M activities adopted by the GSSOMP, or if assumptions used in the development of the GSSOMP budgets are invalidated, based on regulatory or performance influences.

11.07 Staffing and Funding Implementation Schedule

The development of a performance based Staffing and Funding Plan relies on the implementation of other CMOM Programs. The schedule for the performance measure-based budgeting process is dependent upon implementation of the other CMOM tools, procedures, and protocols. **Section 03 - Phased GSSOMP Plan Development** discusses the recommended programmatic implementation approach and summary of initial schedule. Appendix B will hold the most current updated implementation schedule and GSSOMP milestone list

⁵ Summary assumes Year 1 of the GSSOMP corresponds to FY2015/16.

⁶ Indexed at 5% per year

12. Data Attributes for Miami-Dade County's Mapping Program

Section 19 (e), paragraph vii requires:

“Data attributes for Miami-Dade’s mapping program allowing program data to be compared in Miami-Dade’s IMS against other pertinent data such as the occurrence of SSOs, including repeat SSO locations and permit violations”

This Section specifies which attributes are necessary to meet this requirement. After approval by EPA/FDEP and according to the implementation schedule contained in the approved IMS CMOM Program document, the IMS CMOM Program will be responsible for making the technology available to the WWCTLD staff. In addition to the specifically required items listed below, the IMS CMOM Program will provide the tools and technology access in support of the other IT/IMS/GIS/SCADA requirements described in the GSSOMP, or the IMS CMOM Program will specifically address the IT/IMS/GIS/SCADA requirements of the GSSOMP and develop a plan and schedule for the provision of these products in its implementation schedule.

12.01 GIS Program Support

1. A SSO layer having the following abilities:
 - a. Map locations and number of SSOs
 - i. Summarize each by SSO cause
 1. FOG
 2. Roots
 3. Debris
 4. Construction
 5. Capacity
 6. Wet Weather
 7. Other
 - ii. Summarize each by severity
 1. Discharge to Waters of the US
 2. Discharge to other surface waters
 3. Discharges that do not reach other surface waters
 - b. [Not explicitly listed in the provided text]
2. Pipe Material Identification layer
 - a. A high percentage of the pipe construction materials have not been determined.
 - b. A layer or attribute which indicates pipe segments with unidentified materials will help direct identification efforts and
3. Annual Performance Measures layers

- a. Rolling annual data maintained
- b. Scale
 - i. Summarize entire GSS system at small scale
 - ii. Drill down to basin level as scale increase
- c. Performance Measures
 - 1. SSOs/100 miles of gravity sewer pipe
 - 2. SSOs by Severity
 - 3. SSOs by type
 - 4. % of GSS inspected over last 12 months
 - 5. % of GSS Cleaned over last 12 months
 - 6. System GPDIM Performance index (SGPI)
 - 7. Number of Basins with Basin GPDIM Performance Index greater than 1
 - 8. % of Unscheduled WOs
 - 9. Percent of Contractor WOs closed and validated
 - 10. Percent of In-house WOs closed and validated
- d. Color codes
 - i. Achieves Performance Measure Goal by >10% - BLUE
 - ii. Performance is between 0% and + 10% of Goal – GREEN
 - iii. Performance is between 0% and -10% of Goal – Yellow
 - iv. Performance misses goal by over 10% - RED
- e. Provides functionality to compare performance over time

13. Inventory Management System

The inventory management system is currently integrated as part of the IMS. It provides confidence that MDWASD has sufficient resources for parts, equipment and facilities to support the field operations and maintenance activities that are conducted by the WWCTLD

13.01 Critical Parts and Equipment

Parts requiring continuous and immediate availability to support emergency repairs are defined as critical parts. Examples of critical parts are pipe, couplings, gaskets, fittings, manhole rings and covers, and repair clamps of various sizes and materials which match, by size and type, GSS installed assets.

The equipment required to successfully perform emergency repairs is defined as critical equipment. Examples of critical equipment include: backhoes; equipment trucks and trailers; portable lights and generators; small tools required to install critical parts; GSS Asset Maps; submersible pumps and hoses; Vactor® trucks or tank trailers; well point systems; etc.

13.02 List of Critical Equipment

Equipment includes the tools, equipment, vehicles, machinery, software, and databases MDWASD tracks its critical equipment to ensure it is properly maintained and always available when needed. It also allows MDWASD to properly monitor and inventory all the tools and spare parts. A list of critical equipment list is provided in Appendix C.

13.02.1 Location of Critical Equipment

The WWCTLD maintains three maintenance facilities strategically located within its service area that provide support collection system maintenance crews. These facilities are located at 36th Street & South Miami Heights Maintenance Yard and the Carol City Facility. The WWCTLD operates a maintenance yard at each of these sites for storing equipment and gravity sewer system spare part inventories.

13.03 List of Critical Spare Parts

The WWCTLD tracks its critical spare parts inventories to ensure the parts are always available in sufficient quantity. It also allows MDWASD to properly monitor and inventory all the tools and spare parts. Appendix C contains a list of critical GSS spare parts.

Primary critical spare parts inventories are maintained in the Stores Division store rooms until transferred to one of the maintenance yards or transferred to WWCTLD trucks. WWCTLD maintenance yards are located at each of the three maintenance facilities: 36th Street; South Miami Heights; and the Carol City Facility. For large diameter pipe (≥ 36 -inch), the WWCTLD maintains a nominal but sufficient number of pipe sections in inventory at the Southwest Wellfield pipe yard. As a best practice, MDWASD maintains local annual contracts to supply larger quantities of large diameter pipe and other materials.

13.04 Procedures for Updating Critical Spare Parts and Equipment Inventories in IMS

A bar code inventory system, which resides in the inventory management module of the IMS, tracks all spare parts. Bar codes are scanned each time spare parts are transferred to WWCTLD control or restocked, thus maintaining real-time documentation of available inventories. A “max/min” inventory flagging system is used to support restocking decisions based on the amount of stock in inventory. When the minimum allowable inventory quantity is reached, the system notifies Stores division staff of the need to re-order. The critical spare parts list and critical equipment list shown in Appendix C is updated as needs change and annual vendor contract change.

14. Reports Listing Equipment Problems & Work Order Status Over the Prior Month

14.01 CD Requirement

Section 19(e) paragraph (ix) requires that the GSSOMP include: “Reports which list equipment problems and the status of work orders generated during the prior Month.” MDWASD will use the reports indicated below. Report templates are provided at the end of this section and in Appendix E.

14.02 Recommended Supportive Actions

Table 14.1
Recommended Actions and Responsibilities

Action	Efficiency Achieved	Responsible Party	Completion Date
Develop required reports in the IMS which automate population of the required fields	<ul style="list-style-type: none"> • Reduces monthly report generation effort • Relies on data in IMS • Improves report accuracy • Reports are accessible • Reports are archived in IMS 	<ul style="list-style-type: none"> • IMS Implementation Team 	<ul style="list-style-type: none"> • To be identified in the CD required IMS CMOM Program

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Table 14.2
Sample Prior Month's Work Order Status Report

MDWASD WWCTLD Prior Month's Work Order Status Report For [Insert Month/Year]						
Date Opened	Work Order #	PS Basin #	Type ¹	SSO ²	Status ³	Comments

¹ Type Code: R=Reactive; P=Preventative; E=Emergency
² SSO: Y=Yes; N=No
³Status Code: O=Open; C=Closed; and P=Pending Close

Table 14.3
Sample Prior Month's Equipment Problems Report

MDWASD WWCTLD Prior Month's Equipment Problems Status Report <i>For [Insert Month/Year]</i>					
Date of Occurrence	Equipment Description ⁴	Problem Code ⁵	Crew District ⁶	Status ⁷	Comments

⁴ Equipment Description: Use a pull down menu of IMS defined Fleet Equipment
⁵ Problem Code: Use existing systems for identifying equipment issues
⁶ Crew District: N=North; CW=Central West; CE=Central East; S=South
⁷ Status Codes: R=Repaired; S=In Shop for Repair; U=Equipment Unsuable; and NA=No Action Taken

15. References

- Miami-Dade County Water and Sewer Department. *2011 CMOM Self Assessment*.
- Miami-Dade County Water and Sewer Department. *2013 Sewer System Evaluation Survey and Night Flow Reports*.
- MuniCode. *Municipal Code of Miami-Dade County*. Section 24-42.2.
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- United States District Court for the Southern District of Florida. United States of America, the State of Florida Department of Environmental Protection, and the State of Florida, Plaintiffs, v. Miami-Dade County, Florida. *Case Number: 12-24400-civ-FAM, CONSENT DECREE*. June 6, 2013.
- U.S. Environmental Protection Agency. 2009. *Condition Assessment of Wastewater Collection Systems (State of Technology Report)*. EPA/600/R-09/049.
- U.S. Environmental Protection Agency. 2003. "EPA Region 4 Introduction to Conducting Evaluations of Municipal Wastewater Collection System Management, Operations, and Maintenance Programs, Version 1.0"
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- U.S. Environmental Protection Agency. 1991. *Sewer System Infrastructure Analysis and Rehabilitation*. EPA/625/6-91/030.
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APPENDICES

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APPENDIX A

PREVENTATIVE OPERATIONS AND MAINTENANCE PROCEDURES

GRAVITY SEWER SYSTEMS OPERATIONS AND MAINTENANCE PROGRAM

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General Information

This SOP is intended to assist WWCTLD staff to perform Cleaning of Sewer Mains and Manholes in response to blockages or as a preventive measure. For blockages, the specific tools to be used for cleaning and removing blockages will depend on an analysis of the root cause prior to mobilization. In this document the focus will be high velocity cleaning (jetting) and vacuum device.

Related SOPs

Responsibilities

M&R Section Cleaning Investigation Crews, Inspection Section TV & Grout Crews

Procedure

1. Upon mobilizing to the work site set up work area following MDWASD standard Safety Procedures.
2. Fill jetting equipment with water from hydrant close to the work site.
3. If utilizing a degreaser injection system, proceed to fill the receptacle with degreaser solution prior to starting cleaning operation. If there is not a degreaser unit available, degreasing solution may be added directly to the upstream manhole.
4. Insert a debris trap into downstream pipe of downstream manhole.
5. Lower high vacuum suction pipe into downstream manhole.
6. Set the jet hose into pipe to be cleaned, starting from the downstream manhole if possible.
7. Activate the jetting equipment. Follow manufacturer's O&M when operating the equipment.
8. Do not allow detached grease and debris to wash into downstream lines.
9. While flushing, vacuum debris from manhole into vacuum truck.
10. Flush and degrease in the upstream direction. Multiple passes may be required. Adjust the pressures as necessary. Turn pressure off when retrieving from starting manhole.
11. Use a spray hose attachment to jet and clean manholes, if necessary.
12. If jetting equipment cannot get through the main but there is **no overflow concern**, schedule for CCTV inspection.
13. If jetting equipment cannot get through the main and there is **concern for overflow**, an Emergency Inspection is necessary.
14. Transport and dispose of all collected debris according to agency, local, state and federal regulations.
15. Clean and mitigate any work area affected with sewage material.
16. Clean and maintain equipment after use according to the manufacturer's O&M or User Manual.



GSS-001 Cleaning Sewer Mains and Manholes

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Close-out/Documentation/Follow-up

Complete all required fields in the work order. Complete all reports, documenting type of cleaning conducted and any blockages encountered. Submit to the Unit Supervisor for review and approval.



General Information

This SOP is intended to assist the WWCTLD staff in performing Mainline Television Inspection in response to blockages or as a preventive measure. A closed circuit television (CCTV) camera will be used in the process of mainline inspection

Related SOPs

GSS-003 – Suspect Lateral Cleaning and CCTV Inspection

Responsibilities

M&R Section Cleaning Investigation Crew and Inspection Section TV & Grout Crew

Procedure

1. Upon mobilizing to the work site set up work area following MDWASD standard safety procedures.
2. Inspection starts at the upstream manhole.
3. Pan the surface above gravity main to be televised and identify surface type.
4. Insert camera into gravity main.
5. Preset the footage counter to proper setting.
6. Input line segment information into CCTV database. All relevant fields on the CCTV office screen must be provided, for example, address, cross street, and other parameters.
7. It is critical that upstream and downstream manholes are properly identified. In the event of a reverse set-up, clearly state the direction of taping
8. Commence televising the gravity sewer at 30 feet per minute.
9. Stop and Pan each observation for a minimum of 10 seconds. Each observation shall be recorded in the CCTV database.
10. Pan and tilt all service laterals. Locate cleanouts and record the addresses. Identify lateral locations, e.g. left, right and crown, and record lateral distances in the mainline.
 - a. Check for flow in lateral.
 - b. If flow is detected in the lateral follow steps i. below. If not proceed to step c.
 - i. Continue to video on lateral for 3 minutes
 - ii. Check to see if flow subsides or if flow is clear water. If does not subside or is clear water, continue with the steps below. If flow subsides, proceed to step c.
 1. Check the water meter. If the meter is running, proceed to step c. If the meter is not running, proceed with step 2.
 2. Suspect Lateral – estimate flow, make entry in video log.
 - c. Continue mainline inspection.
11. If an obstruction is observed that prevents the inspection of the entire pipe, retrieve the camera and reverse the set-up to attempt to inspect the pipe from different direction and determine source of obstruction/blockage and pipe condition.
12. If an obstruction/blockage can be addressed through cleaning, stop CCTV activity until cleaning is performed to avoid risking the loss of the CCTV camera equipment



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13. In the event that the gravity main is surcharged, dewater the mainline with a jetter or plug and isolate the line for CCTV inspection. Retrieve the pneumatic plug afterwards.
14. If required to go into a manhole to retrieve equipment, use Personal Protection Equipment (PPE).
15. Decontaminate and clean CCTV equipment per manufacturer's User or O&M manual..

Close-out/Documentation/Follow-up

Complete the CCTV Inspection Log. Provide digital file of video and logs to E&R team to catalog and codify the video. Complete all WO fields and submit to Unit Supervisor for review and approval.



GSS-003 Suspect Lateral Cleaning and CCTV Inspection

Miami-Dade Water and Sewer Department

Wastewater Collection and Transmission Line Division: Standard Operating Procedures

General Information

This SOP is intended to assist WWCTLD staff performing cleaning and CCTV inspection of Suspect Laterals (identified during mainline inspection as possibly having infiltration). The cleaning and inspection begins at the property line and goes towards the mainline sewer. In cases where a clean out is not available, the lateral can be inspected from the mainline using the LAMP system. The sewer lateral that is between the property line and the building served is private plumbing.

Related SOP

GSS-002 – Sewer Main CCTV Inspection

Responsibilities

Suspect Lateral Crew

Procedure

1. Upon mobilizing to the work site set up work area following MDWASD Standard Safety Procedures.
2. Locate lateral clean-out
3. If clean-out exists in public right-of-way, clean pipe from clean out to mainline using appropriate equipment (jetter and vacuum truck).
4. Once cleaned, televise lateral to mainline.
5. Check for defects.
6. If there are defects, determine if it is on private property or in public-right-of-way.
7. If a Private Defect, then fill out the DERM Private Property Defect Report. Be sure to measure the distance and direction of at least three (3) permanent landmarks.
8. If a Public Defect, then measure the distance along the lateral to the defect from the property line. Complete a work issuance report.
9. Decontaminate and clean CCTV equipment per manufacturer's instructions.
10. Use Personal Protection Equipment (PPE) if entering the manhole is necessary to retrieve equipment.

Close-out/Documentation/Follow-up

Complete work order items and activity logs. Provide forms to Unit Supervisor for review and approval.

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General Information

This SOP is intended to assist WWCTLD staff employees performing sanitary sewer manhole inspections to assess the condition of a manhole. The work is done as part of a preventative maintenance.

Related SOPs

GSS-001 – Cleaning Sewer Mains Manholes

GSS-004F – Manhole Inspection Form

Responsibilities

TV and Grout Crew

Procedure

1. Upon mobilizing to the work site set up work area following MDWASD Standard Safety Procedures.
2. Prepare and fill the appropriate fields on the Manhole Inspection Form
3. With a strong flashlight check for cracks in walls and bottom.
4. Check manhole ring for proper alignment and weakened metal parts.
5. Check for areas of possible infiltration.
6. Check for signs of inflow, i.e, stains or other signs of water flow
7. Check for deterioration, misalignment of any parts.
8. Check for root intrusion.
9. Check condition of steps.
10. Check for signs of corrosion (See GSS-040, Corrosion Screening).
11. Note any sluggish or backed up flows in the manhole.
12. Note any grease accumulation.
13. Note any gravel and/or debris accumulation.
14. Input manhole information into Manhole Inspection Form. All relevant fields must be provided, for example, address, cross street, and other parameters

Close-out/Documentation/Follow-up

Complete all WO items, complete all inspection reports, review work, and submit Unit Supervisor for review, approval.

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GSS-004F - Manhole Inspection Form

Wastewater Collection and Transmission Line Division: Standard Operating Procedures

Crew Leader: Date: PS: EAMS Node:

Atlas Page: Weather: Dry Rain Ground Cond: Dry Moist Sat. WWC MH:

Private: Does Not Exist: Could Not Uncover: Surcharged: Subject to ponding:

Abandoned: Stubout/Lamphole: Could Not Access: Storm MH: MH has Drop Connection:

Frame Opening(in): Depth(ft): . Wall Dia.(in): Surcharge Evident(ft):

Address: &

Loc.Remark:

MH Surface:

Asph.	Conc.	Unpv.	Curb	Sdwk	Drive	Fyard	Syard	Byard	Field	Woods
-------	-------	-------	------	------	-------	-------	-------	-------	-------	-------

Traffic Type:

None	1/2 Lne	3/4Lne	Hway	Alley	Prking	Other
------	---------	--------	------	-------	--------	-------

 Traffic Volume:

None	Light	Med	Heavy
------	-------	-----	-------

Cover Type:

Solid	Vent	Pickhole	Missing
-------	------	----------	---------

 Cover Condition:

OK	Loose	Cracked	No Gsk	No Bolts
----	-------	---------	--------	----------

Roots in Manhole:

None	Light	Med	Heavy
------	-------	-----	-------

 Frame Condition:

OK	Cracked	Broken	Offset	Adjust
----	---------	--------	--------	--------

MH Insert Condition:

OK	Cracked	Missing	Added One
----	---------	---------	-----------

 Overall MH Cond.:

Good	Fair	Poor
------	------	------

Frame Seal Const.:

Mortar	Rubber	None	Other
--------	--------	------	-------

 Frame Seal Cond.:

OK	Cracked	Leaks
----	---------	-------

Chimney Construction:

Prcast	Brick	Fiber	None	Other
--------	-------	-------	------	-------

 Chimney Cond.:

OK	Cracked	Holes	Leaks	Deteriorate
----	---------	-------	-------	-------------

Cone Construction:

Prcast	Brick	Fiber	None	Other
--------	-------	-------	------	-------

 Cone Condition:

OK	Cracked	Holes	Leaks	Deteriorate
----	---------	-------	-------	-------------

Cone Shape:

Conc	Ecc	Rectang	None	Other
------	-----	---------	------	-------

Wall Construction:

Prcast	Brick	Fiber	None	Other
--------	-------	-------	------	-------

 Wall Condition:

OK	Cracked	Holes	Leaks	Deteriorate
----	---------	-------	-------	-------------

Step Construction:

Metal	Plastic	Conc	None	Other
-------	---------	------	------	-------

 Step Condition:

OK	Unsafe	Unknown
----	--------	---------

Bench Construction:

Prcast	Brick	Fiber	None	Other
--------	-------	-------	------	-------

 Bench Condition:

OK	Cracked	Holes	Leaks	Deteriorate
----	---------	-------	-------	-------------

Channel Const:

Prcast	Brick	PVC	Clay	Fiber	None	Other
--------	-------	-----	------	-------	------	-------

 Channel Condition:

OK	Cracked	Holes	Leaks	Deteriorate
----	---------	-------	-------	-------------

Channel Deposition:

None	Sand	Rock	Sludge	Mud	Other
------	------	------	--------	-----	-------

 Cannel Hydraulics:

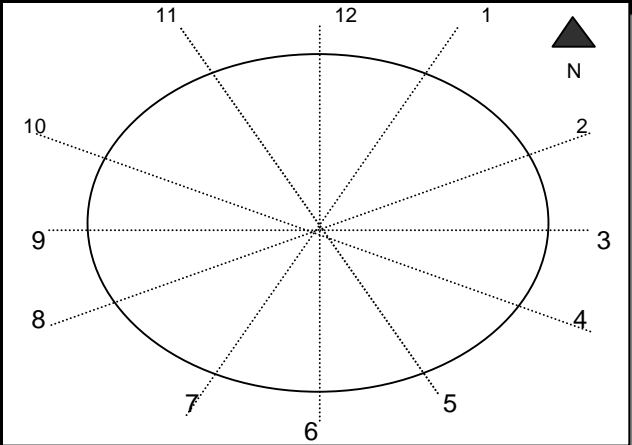
Good	Fair	Poor
------	------	------

Rehabilitation: (DRY=Dry/No Stains) (STAIN=Dry/Stains) (FLOW=Active I/I Flow)

Code	I/I (gpm)	I/I Indications		
		Dry	Stain	Flow
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Line	Line Type						Material						Dia	Depth	Dir.	Conn. MH			
	Out	Overfl.	Lateral	Pgbk.	FM	Other	Clay	PVC	CIP	Liner	Concrete	Other				<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
1	Out						Clay	PVC	CIP	Liner	Concrete	Other							
2	In	Overfl.	Lateral	Pgbk.	FM	Other	Clay	PVC	CIP	Liner	Concrete	Other							
3	In	Overfl.	Lateral	Pgbk.	FM	Other	Clay	PVC	CIP	Liner	Concrete	Other							
4	In	Overfl.	Lateral	Pgbk.	FM	Other	Clay	PVC	CIP	Liner	Concrete	Other							
5	In	Overfl.	Lateral	Pgbk.	FM	Other	Clay	PVC	CIP	Liner	Concrete	Other							
6	In	Overfl.	Lateral	Pgbk.	FM	Other	Clay	PVC	CIP	Liner	Concrete	Other							

*Direction is O'Clock position when North=12 O'clock Outgoing Line Length (ft):



Comments:

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Wastewater Collection and Transmission Line Division: Standard Operating Procedures

General Information

This SOP is intended to assist WWCTLD staff performing Smoke Testing, which is performed as part of a Sewer System Evaluation Survey (SSES). Smoke testing is used as the primary inflow investigation technique. Smoke migrates to and escapes from major pipe defects and direct connections to stormwater structures and roof drains. Any defects identified are issued for further investigation or repair. The results are used to prioritize the repairs in the sewer basin.

Related SOP

GSS-005B – Smoke Testing Equipment List

Responsibilities

Smoke Test Crew

Procedure

1. Upon mobilizing to the work site set up work area following MDWASD Standard Safety Procedures
2. Place Smoke Test Notices on the residents' doors in the neighborhood planned for smoke testing; 2 to 4 days of notice is sufficient to alert the residents of the impending work.
3. Notify local Fire Department that MDWASD will be conducting Smoke Testing the day of the tests.
4. To perform smoke test task, place safety cones and other warning signs if required.
5. Enter line segment information on the form provided
6. Open manhole.
7. Place smoke blower in position over open manhole.
8. Start the smoke blower.
9. Introduce smoke to manhole.
10. Spray paint where smoke escapes.
11. Take picture of each location smoke escapes.
12. Measure and record the location of the smoke outlets. Use landmarks and addresses as additional location tools.
13. Record the smoke intensity and data for each outlet.
14. Close manhole and move to the next testing site.

Close-out/Documentation/Follow-up

The results of the smoke testing are processed in the office. Smoke defects are classified into two groups – Public or Private Defect. The Public Defects are located on the public right-of-way; these defects are investigated and repaired by WWCTLD. The Private Defects are forwarded by the MDWASD to RER-DERM for enforcement or repair.

Complete all inspection reports and WO fields and submit Unit Supervisor for processing.

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General Information

The purpose of this SOP is to assist WWCTLD staff in repairing damaged sewer lines and sections of service laterals located in right-of-way (ROW).

Responsibilities

M&R Collection Repair Crew, Cleaning Investigation Crew

Procedure

1. Upon arrival at work site, set up work zone according to MDWASD's Safety Procedures.
2. Verify broken main, or length of lateral to be repaired is within the ROW.
 - a. Verify utility locate prior to excavation.
 - b. Do not repair lateral sections beyond the ROW.
3. Identify and locate (hand dig) all other utilities in area of excavation.
4. Excavate using proper techniques.
 - a. Slope/bench trench when possible.
 - b. Use trench box and/or shoring if benching or sloping not possible.
 - c. Use Confined Space procedures, if appropriate.
 - d. Excavate to a depth below pipe/fittings as needed to work safely.
5. Establish a dewatering sump:
 - a. Excavate adjacent to the damaged pipe, as far from the repair as possible.
 - b. Ensure bottom of excavated area slopes toward sump.
 - c. Fill sump with #57 stone. Place pump in sump to keep water level as low as possible.
 - d. Pipefitter Supervisor will determine the need for, and timing of, flow control.
6. Identify the section of damaged pipe to be replaced.
7. Remove soil around pipe beyond limits of damage as far as necessary to provide a clear "repair zone" for the pipe.
 - a. Measure and mark circumference of pipe.
8. Place pipe strap or chain in the middle of the damaged pipe as a balance point and for its removal after cutting.
9. Any crack or hole that is elongated and runs along the pipe length should be notched with a saw at the ends of the defect to prevent further spreading of the crack during cutting of the pipe.
10. Using pipe saw, cut damaged area of pipe out at the mark.
 - a. In some cases, multiple cuts might be needed to remove the damaged section.
 - b. Make a straight saw cut on the pipe all the way around.
11. Remove damaged pipe from excavation: Lift out damaged section of pipe using Backhoe.
12. Inspect exposed ends of the remaining pipe to ensure the damaged section is completely removed.
13. At each of the two cuts, the pipe must be clean and smooth for coupling to seal correctly –
14. Measure the distance of the gap in the sewer main from top edge to top edge and bottom edge to bottom edge.



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15. Cut new replacement pipe to fit into the measured distance.
16. Slide coupling onto both ends of existing sewer main, make sure cut edge of each section is exposed.
17. Using pipe strap located at midpoint of replacement pipe, lower replacement pipe with backhoe to set in place between cut edges of existing sewer main.
 - a. Make sure support is provided in middle of pipe with compacted #57 stone under the pipe.
 - b. Leave enough room at both ends of pipe unsupported by stone to work safely.
18. Using a pry bar or shovel, align one end of replacement pipe with existing pipe end.
19. Slide one coupling forward over cut edge of existing pipe far enough to center it over the cut.
20. On the existing sewer main side, tighten the coupling straps to secure it into place
21. Proceed to other end of replacement pipe:
 - a. Ensure that the pipe is resting fully on the bedding material.
 - b. Verify the pipe invert is true to grade at both ends
 - c. Adjust by adding #57 stone under pipe or lowering the pipe bedding by hand, as needed.
22. Slide other coupling onto the repair section so it is centered over the cut and tighten on the sewer main side of the repair to secure the coupling.
23. Complete the installation by securing the couplings on the repair side at both ends of repair.
24. Restore flow to sewer main, verify watertight seal.
25. Fill trench to just above pipe crown with compacted #57 stone:
26. Backfill remainder of excavation with compacted fill material leaving room for any required surface treatments. Place erosion control as required with seed/mulch.
27. For roadway excavation, backfill according to the requirements of the Authority Having Jurisdiction.
28. Clean and dress the work areas as required, and check site for tools or spare parts.
29. Issue a work order request if additional landscaping, driveway repair, paving, or other restoration work is needed.
30. Leave door tag for property owner, if appropriate.

Close-out/Documentation/Follow-up

Fill in all related WO fields and/or reports and submit to Unit Supervisor for review.

Appendix B

GSSOMP Implementation Plan, Schedule, and Periodic Updates

Gravity Sewer Systems Operations and Maintenance Program

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01. GSSOMP Implementation Schedule

The GSSOMP Implementation Schedule relies on the implementation of other Section 18 and Section 19 CMOM programs. The implementation status of the IMS CMOM Program and the allocation and acquisition of the resources described in the GSSOMP affect implementation of the GSSOMP most significantly. Therefore, initial implementation of the new or expanded elements described in the GSSOMP will be integrated with the implementation of IMS CMOM Program and the required resource acquisitions.

The WWCTLD Chief Superintendent will periodically review the implementation status and resource fulfillment of the IMS and other interrelated CMOM Programs and update the GSSOMP Implementation Schedule accordingly.

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APPENDIX C

SPARE PARTS AND EQUIPMENT INVENTORIES STORED BY MDWASD

GRAVITY SEWER SYSTEMS OPERATIONS AND MAINTENANCE PROGRAM

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Table C.1
WWCTLD 2015 Spare Parts List

Spare Parts Description	Minimum All Stores
WWCTLD	2136
ADAPTERS, PIPE	6
ADAPTER, 10", COUPLING, FLANGE, OD 10.89 - 11.40	1
ADAPTER, 2 1/2" MALE N.S.T. X 1 1/2" MALE I.P.T., COUPLING, TO CONNECT FIREHOSE	1
ADAPTER, 2 1/2", FEMALE SWIVEL, N.S.T. X 1 1/2" MALE I.P.T., COUPLING	4
BRICK, SEWER	8
BRICK, 4" X 2" X 8", RED CLAY, SOLID, SEWER, STANDARD PALLET	8
CONNECTORS, PIPE	3
CONNECTING PIECE, 30" X 16", FLG. X P.E., POLYLINE	3
COUPLINGS, PIPE	1
COUPLING, CLAMP, 8" X 7 1/2", FULL CIRCLE, SINGLE BAND, OD 8.54 - 8.94, ROCKWELL	1
MORTARS AND/OR GROUTS, EPOXY B	27
GEL, CHEMICAL, 15 GALLON DRUM (GROUT)	27
PIPE REPAIR CLAMPS AND COUPLIN	1039
BOLT, W/NUT, FOR 6 DRESSER COUPLING, STYLE 38 (NO SUBSTITUTIONS)	5
BOLT, W/NUT, FOR 8 DRESSER COUPLING, STYLE 38 (NO SUBSTITUTIONS)	12
CLAMP, 12" X 12", O.D. 13.60 - 14.00, REPAIR, SINGLE BAND, FULL CIRCLE	1
CLAMP, 6" X 12", OD 7.05-7.46, REPAIR, SINGLE BAND, FULL CIRCLE	6
CLAMP, 8" X 12", OD 8.60-9.00, REPAIR, SINGLE BAND, FULL CIRCLE, ROCKWELL 261	4
CLAMP, 8" X 12", OD 9.30-9.70, REPAIR, SINGLE BAND, FULL CIRCLE, CLOW 3121AS	41
CLAMP, COUPLING, 6 BAKER FULL CIRCLE SEAL, FOR STEEL PIPE 6.56- 6.96 OD, 7 1/4	6
CLAMP, COUPLING, BAKER FULL CIRCLE SEAL, FOR STEEL PIPE 7.45- 7.85 OD, 7 1/4	3
CLAMP, REPAIR, 10" X 12", OD 10.70-11.10, SINGLE BAND, FULL CIRCLE, ROCKWELL 261	1
CLAMP, REPAIR, 10" X 12", OD 11.04-11.44, SINGLE BAND, FULL CIRCLE, ROCKWELL 261	1
CLAMP, REPAIR, 10" X 12", OD 11.60-12.00, SINGLE BAND, FULL CIRCLE	1
CLAMP, REPAIR, 10" X 16", OD 11.04-11.44, SINGLE BAND, FULL CIRCLE, ROCKWELL 226	3
CLAMP, REPAIR, 10" X 16", OD 11.85-12.25, SINGLE BAND, FULL CIRCLE	1

Table C.1
WWCTLD 2015 Spare Parts List

Spare Parts Description	Minimum All Stores
CLAMP, REPAIR, 12" X 12", OD 12.70-13.10, SINGLE BAND, FULL CIRCLE	1
CLAMP, REPAIR, 12" X 12", OD 13.60-14.00, SINGLE BAND, FULL CIRCLE	1
CLAMP, REPAIR, 12" X 12", OD 14.10-14.50, SINGLE BAND, FULL CIRCLE, ROCKWELL 261	1
CLAMP, REPAIR, 12" X 16", OD 13.15-13.55, SINGLE BAND, FULL CIRCLE, CLOW 3121AS	2
CLAMP, REPAIR, 12" X 16", OD 14.10-14.50, SINGLE BAND, FULL CIRCLE, CLOW 3121AS	1
CLAMP, REPAIR, 12" X 16", OD 14.40-14.70, SINGLE BAND, FULL CIRCLE	1
CLAMP, REPAIR, 20", O.D. 22.90-23.65, SINGLE BAND-FULL CIRCLE	1
CLAMP, REPAIR, 6" X 10", OD 6.84-7.24, SINGLE BAND, FULL CIRCLE, W/1 CC OUTLET	3
CLAMP, REPAIR, 6" X 12", OD 6.84-7.24, SINGLE BAND, FULL CIRCLE, POWER SEAL 3121AS	7
CLAMP, REPAIR, 6" X 16", OD 6.84-7.24, SINGLE BAND, FULL CIRCLE, ROCKWELL 261	5
CLAMP, REPAIR, 6" X 16", OD 7.05-7.46, SINGLE BAND, FULL CIRCLE, POWER SEAL 3121AS	1
CLAMP, REPAIR, 6" X 8", OD 6.84-7.24, SINGLE BAND, FULL CIRCLE, ROCKWELL 261	11
CLAMP, REPAIR, 6" X 12", OD 6.60-7.00 SINGLE BAND-FULL CIRCLE	6
CLAMP, REPAIR, 8" X 12", OD 9.00-9.40, SINGLE BAND, FULL CIRCLE, ROCKWELL 261	4
CLAMP, REPAIR, 8" X 16", OD 8.60-9.00, SINGLE BAND, FULL CIRCLE	1
CLAMP, REPAIR, 8" X 16", OD 9.00-9.40, SINGLE BAND, FULL CIRCLE, ROCKWELL 261	4
CLAMP, REPAIR, 8" X 16", OD 9.30-9.70, SINGLE BAND, FULL CIRCLE, ROCKWELL 261	8
CLAMP, REPAIR, 10" X 12", OD 9.70-10.10, SINGLE BAND, FULL CIRCLE	21
COUPLING, 10", AC OR DI TO AC OR DI STRONG BACK SHEER RING	26
COUPLING, 10", C-900 PVC REPAIR	20
COUPLING, 10", CLAY TO AC OR DI STRONG BACK SHEER RING	25
COUPLING, 10", O.S., RANGE 10.96" TO 12.26", TRANSITION	9
COUPLING, 10", STRAIGHT, 10.70 - 11.10 OD, ROMAC 501	1
COUPLING, 10", STRAIGHT, 11.10 - 11.50 OD, ROCKWELL 441	2

Table C.1
WWCTLD 2015 Spare Parts List

Spare Parts Description	Minimum All Stores
COUPLING, 10", STRAIGHT, 11.60 - 12.12 OD, ROCKWELL 441	1
COUPLING, 10", TRANSITION, 10.70 - 11.10 X 11.10 - 11.50 OD	1
COUPLING, 10", TRANSITION, OD 11.10-11.50 X 11.60-12.12	1
COUPLING, 12", 12.75 O.D., DRESSER 38	1
COUPLING, 12", C-900 PVC REPAIR	26
COUPLING, 12", O.S., RANGE 13.15" TO 14.41" TRANSITION	6
COUPLING, 12", RANGE 12.40" TO 13.66", TRANSITION	3
COUPLING, 12", STRAIGHT, 12.75 - 13.20 OD, ROCKWELL 441	1
COUPLING, 12", STRAIGHT, 13.20 - 13.50 OD, ROCKWELL 441	4
COUPLING, 12", STRAIGHT, 13.78 - 14.38 OD, CLOW 3501, ROMAC 501	1
COUPLING, 12", TRANSITION, 12.75 - 13.50 OD X 13.20 - 13.50, ROCKWELL 441	1
COUPLING, 12", TRANSITION, 13.20-13.50 OD X 13.78-14.38 OD	1
COUPLING, 12", TRANSITION, OD 12.75-13.20 X 13.78-14.38	1
COUPLING, 16", RANGE 17.10" TO 19.20", TRANSITION	3
COUPLING, 16", STRAIGHT, 18.46 - 19.00 OD, CLOW	1
COUPLING, 16", STRAIGHT, OD 17.15 - 17.40, ROCKWELL 413	1
COUPLING, 16", TRANSITION, 17.40-17.80 OD X 18.45-18.97 OD	4
COUPLING, 54", TYTON, POLYLINED	3
COUPLING, 6" X 6"	1
COUPLING, 6" X 6", CI OR PLASTIC TO AC OR DI	51
COUPLING, 6" X 6", CLAY TO AC OR DI, STRONG BACK RC SERIES	51
COUPLING, 6", C-900 TO 4" CLAY CPLG	22
COUPLING, 6", C-900 TO 4" SOIL PIPE CPLG	42
COUPLING, 6", CLAY TO CAST IRON OR PVC	82
COUPLING, 6", CLAY TO CLAY	62
COUPLING, 6", DRESSER STYLE 38, STEEL PIPE, OD 6.625 (NO SUBSTITUTIONS)	5
COUPLING, 6", FLANGE, 6.81-6.96 OD	6
COUPLING, 6", NO HUB, (BANDAID)	82
COUPLING, 6", PVC/C.I.	82
COUPLING, 6", RANGE 6.42" TO 7.68", TRANSITION	19

Table C.1
WWCTLD 2015 Spare Parts List

Spare Parts Description	Minimum All Stores
COUPLING, 6", SLIP TO SLIP, SCHEDULE 80	2
COUPLING, 6", STRAIGHT, 6.90-7.22 OD, CLOW 3501, DRESSER 138, ROCKWELL 441	4
COUPLING, 6", STRAIGHT, 7.19 - 7.45 OD, ROCKWELL441	5
COUPLING, 6", STRAIGHT, OD 6.62 - 6.95, ROMAC 501	5
COUPLING, 6", TRANSITION, 6.62 - 6.95 OD X 6.90 -7.22 OD, ROCKWELL 441	3
COUPLING, 8" , 8 5/8" OD, STYLE 38, 1/4 X 7 PL27 (NO SUBSTITUTIONS)	3
COUPLING, 8", 8.625 O.D., DRESSER 38	4
COUPLING, 8", AC OR DI TO AC OR DI STRONG BACK SHEER RING	51
COUPLING, 8", C-900 PVC REPAIR	20
COUPLING, 8", CLAY TO AC OR DI STRONG BACK SHEER RING, MEAS: 9.75 TO 9.12	51
COUPLING, 8", CLAY TO CLAY	42
COUPLING, 8", FLANGE, OD 8.98 - 9.11	6
COUPLING, 8", OD 9.05 - 9.85, ROMAC 501	1
COUPLING, 8", RANGE 8.54" TO 9.84", TRANSITION	12
COUPLING, 8", STRAIGHT, 8.62 - 9.05 OD, ROCKWELL441	1
COUPLING, 8", STRAIGHT, 9.05-9.30 OD	2
COUPLING, 8", STRAIGHT, 9.10 - 9.79 OD, ROCKWELL 441	4
COUPLING, 8", TRANSITION, 8.62 - 9.05 OD X 9.05 X9.45 OD, ROCKWELL 441	3
COUPLING, 8", TRANSITION, 8.62-9.05 OD X 9.10-9.79OD	8
PIPE, CAST IRON	695
PIPE, 10", SINGLE GASKET, PUSH-ON, POLYETHYLENE LINED, LG=18'	101
PIPE, 12", SINGLE GASKET, PUSH-ON, POLYETHYLENE LINED, 18' LG	101
PIPE, 16", SINGLE GASKET, PUSH-ON, POLYETHYLENE LINED, 18' LG	101
PIPE, 18", SINGLE GASKET, PUSH-ON, POLYETHYLENE LINED, 18' LG	26
PIPE, 20", SINGLE GASKET, PUSH-ON, POLYETHYLENE LINED, LG=18'	201
PIPE, 24", D.I., PE X PE POLYLINED, GREEN CUTTING, 16' LG	1
PIPE, 24", D.I., SINGLE GASKET, PUSH-ON, POLYLINED, 18' LG	11

Table C.1
WWCTLD 2015 Spare Parts List

Spare Parts Description	Minimum All Stores
PIPE, 24", DUCTILE-IRON, FLANGE X FLANGE, POLYLINED	1
PIPE, 30", D.I., SINGLE GASKET, PUSH-ON, POLYLINED, 18' LG	13
PIPE, 36", D.I., PE X PE POLYLINED, GREEN CUTTING, 16' LG	1
PIPE, 36", D.I., SINGLE GASKET, PUSH-ON, POLYLINED, 18' LG	10
PIPE, 42", D.I., PE X PE POLYLINED, GREEN CUTTING, 16' LG	1
PIPE, 42", D.I., PUSH-ON, POLYETHYLENE LINED GREEN CUTTING PIPE, 18' LONG	8
PIPE, 48", D.I., PE X PE POLYLINED, GREEN CUTTING, 16' LG	1
PIPE, 48", D.I., SINGLE GASKET, PUSH-ON, POLYLINED, 18' LG	8
PIPE, 54", D.I., PE X PE POLYLINED, GREEN CUTTING, 16' LG	1
PIPE, 54", D.I., SINGLE GASKET, PUSH-ON, POLYLINED, 18' LG	8
PIPE, 8", SINGLE GASKET, PUSH-ON, POLYETHYLENE LINED, LG=18'	101
PIPE, CLAY	23
PIPE, 10" X 5', VITRIFIED	5
PIPE, 15" X 7', VITRIFIED	2
PIPE, 4" X 4', VITRIFIED	5
PIPE, 6" X 5', VITRIFIED	11
PIPE, PVC (POLYVINYL CHLORIDE)	153
PIPE, 10", C-900, CLASS 100, DR-25, LG=20'	51
PIPE, 12", C-900, CLASS 100, DR-25, LG=20', LIGHT GREEN	26
PIPE, 6", C-900, CLASS 235, DR-18, GREEN	76
REDUCERS, PIPE	4
REDUCER, 6" X 4" , M.J. X P.E., LARGE END BELL, POLYLINED - C153	4
SADDLES, SLEEVES, STRAPS FOR P	84
DIAPER, 30", PCCP JOINT	3
DIAPER, 36", PCCP JOINT	3
DIAPER, 42", PCCP JOINT	3
DIAPER, 48", PCCP JOINT	3
DIAPER, 54", PCCP JOINT	3
DIAPER, 60", PCCP JOINT	3
SLEEVE, 10", SOLID, M.J., HALF GROUND, LONG BODIED, POLYLINED, DUCTILE - C153.	3
SLEEVE, 10", SOLID, M.J., POLYLINED - C153	4
SLEEVE, 10", SOLID, M.J., HALF GROUND, LONG BODY, POLYLINED, DUCTILE(REORDER C153)	1

Table C.1
WWCTLD 2015 Spare Parts List

Spare Parts Description	Minimum All Stores
SLEEVE, 12" X 12", SOLID, M.J., HALF GROUND, LONGBODY, POLYLINE, DUCTILE (REORDER C153)	2
SLEEVE, 12", SOLID, M.J., POLYLINED - C153	7
SLEEVE, 16" X 16", SOLID, M.J. HALF GROUND, LONGBODIED, POLYLINE, DUCTILE - C153	7
SLEEVE, 16", SOLID, M.J., POLYLINED - C153	7
SLEEVE, 18", SOLID, M.J., POLYLINED - C153	5
SLEEVE, 20" X 20", SOLID M.J., HALF GROUND, LONGBODY, POLYLINE, DUCTILE (REORDER C153)	1
SLEEVE, 20", SOLID, M.J., POLYLINED - C153	7
SLEEVE, 24", SOLID, M.J., HALF GROUND, LONGBODIED, POLYLINED, DUCTILE - C153	1
SLEEVE, 24", SOLID, M.J., LONG PATTERN, POLYLINED - C153	3
SLEEVE, 30" X 30", SOLID, M.J., HALF GROUND, LONGBODY, POLYLINE, DUCTILE (REORDER C153)	1
SLEEVE, 30", SOLID, M.J., LONG PATTERN, POLYLINED - C153.	1
SLEEVE, 36" X 36", SOLID, M.J., HALF GROUND, LONGBY, POLYLINE, DUCTILE (REORDER C153)	1
SLEEVE, 36", SOLID, M.J., LONG PATTERN, POLYLINED - C153.	1
SLEEVE, 42", SOLID, M.J., LONG PATTERN, POLYLINED (REORDER C153)	1
SLEEVE, 48", SOLID, M.J., LONG PATTERN, POLYLINED - C153	2
SLEEVE, 6", SOLID, M.J., POLYLINED - C153	7
SLEEVE, 8", SOLID, M.J., POLYLINED - C153.	4
WYES (Y), PIPE	93
WYE, 10" X 6", M.J., POLYLINED - C153	4
WYE, 12" X 6", M.J., POLYLINED - C153	5
WYE, 16" X 6", M.J., POLYLINED - C153	2
WYE, 18" X 6", M.J., POLYLINED - C153	3
WYE, 8" X 4", CLAY, DOUBLE	11
WYE, 8" X 6", C-900 DR 18/150, PVC (TO ATTACH 6 X45 DEG PVC BEND BELL X SPIGOT)	61
WYE, 8" X 6", CLAY, DOUBLE	6
WYE, 8" X 6", M.J., POLYLINED (REORDER C153)	1
Grand Total	2136

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
Administration	19
	1
DESIGNJET	1
CCTV	1
TV 55" 1080p HDTV	1
COMMUNICATION	4
RADIO - P7350	4
COMPUTER	11
	2
COMPUTER EQUIP PRINTER - LASER HEWLETT PA	1
DESIGNJET T610 PRINTER	1
LAPTOP COMPUTER	1
LAPTOP TOUGHBOOK	2
MICROFILM EQUIP READER	1
PANASONIC LAPTOP	1
PANASONIC LAPTOP COMPUTER	1
PORTABLE PROJECTOR - 800 X 600 RESOLU	1
FLEET	2
4 DOOR SEDAN	1
4 DOOR SPORT UTILITY	1
Evaluation & Review	7
COMMUNICATION	1
RADIO - P7350	1
COMPUTER	3
	1
LAPTOP TOUGHBOOK	2
FLEET	1
LIGHT VEHICLES PICKUP TRUCK - FORD	1
LIGHT EQUIPMENT	1
A/C UNIT - WALL MOUNT	1
MISC	1
	1
Inspection North	264
CCTV	13
CAMERA ASSEMBLY	2
CAMERA HELMET	1
CAMERA PAN	3

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
MISC TEST EQ. PROBE - CUES - CAMERA/FLOAT	1
MISC. EQ & MACH CAMERA - CUES	1
MISC. EQ & MACH CAMERA TRANSPORTER - CUES	1
PHOTOGRAPHIC EQ - CAMERA VIDEO CUES	1
TELEVISION EQ - CAMERA - UNDERWATER CUES	1
TELEVISION EQ - MONITOR - VIDEO CUES	1
WATER PROBE - CAMERA FLOAT	1
COMMUNICATION	23
800 MHZ-GE HANDHELD RADIO LID# 10534	1
COMMAND MODULE	2
COMMUNICATION MODULE	2
LID# 11781	1
RADIO - M7300	1
RADIO - M7300 - LID 11781	1
RADIO - M7300 - LID 11813	1
RADIO - P7350	13
TRANSMITTER RECEIVER MOBL MTD	1
COMPUTER	16
DESKTOP COMPUTER	1
HP COMPAQ	2
HP NOTEBOOK	1
LAPTOP TOUGHBOOK	3
PANASONIC CF52 LAPTOP	2
PANASONIC LAPTOP	4
PANASONIC TOUGHBOOK LAPTOP	3
EQUIPMENT	53
BL SWIPER	4
COMMERCIAL GENERATOR	1
GENERATOR	1
KANGAROO CUTTER	1
RADIO - M7300	16
RADIO - P7350	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
RADIO - P7370	1
RAM FAN VENTILATOR	4
SONAR VIDEO FLOAT ASSEMBLY	1
TRANSPORTER ASSY	2
VHF PORTABLE RADIO	5
VHF RADIO	5
VHF RADIO HT-750	11
FIELD EQUIPMENT	9
FLOW SHARK	6
LIQUID SMOKE BLOWER	2
PORTABLE GENERATOR	1
FLEET	31
1 TON C&C	4
1 TON PICK UP/UTILITY BODY	2
1 TON PICKUP	3
16' STEP VAN WITH TV INSPECTION	2
1998 STERLING C&C VACCUM JET CLEANER	1
1998 STERLING C&C WITH VACUUM JET	1
2006 STERLING LT-7500	3
4X2 1 TON CAB & CHASSIS	1
4X2 SPORT UTILITY	1
CARGO MINI VAN	1
SEWER CLEANER MACHINE	
TRL MDT	1
STEP VAN FREIGHTLINER	1
STEP VAN W/TV AND GROUT INSPEC	4
TRUCK PICK UP DODGE 3/4 TON	1
TRUCK PICKUP FORD F-250 3/4TON	2
VACTOR JETTER TRUCK	1
WALK IN STEP VAN	1
WALKIN STEP VAN	1
IT HARDWARE	5
LIGHT EQUIPMENT	105
	3

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
36V CORDLE	2
950 AV SUB FLOW METER	2
A/C UNIT - WALL MOUNT	1
AIR RESPIRATOR	6
AV FLOW METER	10
CARRIER PLUG 8X12"	1
CHAIN SCRAPER	1
ELECTRIC HAMMER DRILL	1
GASOLINE PORTABLE GEN/COMP/WELDER	1
GENERATOR 6.5 ONAN	1
HADRONEX SMART COVER	6
JETTER NOZZLE 8" SLED	1
LAMP 2 LAUNCH ASSY	1
LIQUID SMOKER	2
LOGIBALL	1
MILLING PERCSION IMPACT CUTTER	1
MISC. EQ & MACH. PUMP - GRACO	1
MUDMASTER TRANSPORTER CUES	1
ONAN GENERATOR 6.5	2
ONAN GENERATOR 6.5H	2
PIPE RANGER WHEELED TRANSPORTER	1
PORTABLE AIR SUPPLY CART	1
PORTABLE BREATHING AIR COMPRESSOR BB50-COAA	1
PORTABLE BREATHING SYSTEMS	1
PORTABLE BREATING AIR COMPRESS	1
PUMP PORTABLE	1
ROTATING CHAIN SCRAPER 1"	1
RUBBER PILLOW TEST BALL	1
RUBBER TEST BALL PILLOW	1
SCOTT AIR PACK	1
SMART COVER LEVEL SENSOR	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
SMARTCOVER LEVEL MONITOR	5
SMOKE BLOWER	1
SMOKE BLOWER MODEL 303550 GASO	3
SONAR PIPE	1
SUB FLOW METER	9
TEST BALL PLUG 24" - 48"	2
TRIPOD	2
WIRELESS FLO SHARK METER- DUAL	6
WIRELESS FLO SHARK METER- SING	18
MISC	1
	1
SAFETY	8
FIREFIGHTING EQ - BREATH APPARATUS PORTABLE - SCOTT	2
TRIPOD	4
TRIPOD - WINCH	2
Inspection Section	9
COMMUNICATION	4
RADIO - P7350	4
COMPUTER	3
LAPTOP TOUGHBOOK	3
FLEET	1
STEP VAN W/TV AND GROUT INSPEC	1
LIGHT EQUIPMENT	1
MULTI PURPOSE CUTTER	1
Inspection South	126
CCTV	8
CAMERA ASSEMBLY	2
CAMERA PAN & TILT	2
PAN & TILT CAMERA	2
PIPE RANGE	1
WATER PROBE- CAMERA FLOAT	1
COMMUNICATION	22
RADIO - M7300	2
RADIO - M7300 - LID 11653	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
RADIO - P7350	19
COMPUTER	13
LAPTOP TOUGHBOOK	9
PANASONIC LAPTOP	2
PANASONIC TOUGHBOOK LAPTOP	2
EQUIPMENT	31
BL SWIPER	3
COMMERCIAL GENERATOR	1
GENERATOR COMMERCIAL 6.5NHD	2
KANGAROO CUTTER	1
RADIO - M7300	5
RADIO - P7350	3
RAM FAN VENTILATOR	2
TRANSPORTER ASSY	2
VHF RADIO HT-750	12
FIELD EQUIPMENT	2
LIQUID SMOKE BLOWER	2
FLEET	31
	1
1 TON C&C	2
1 TON PICKUP	4
16' STEP VAN WITH TV INSPECTION	2
1998 STERLING C&C VACUUM JET CLEANER	1
1998 STERLING C&C W/VACUUM	1
2006 STERLING LT-7500	3
4 DOOR SPORT UTILITY	1
CARGO MINI VAN	1
CUES TV VAN	1
DIESEL C&C	1
SEWER CLEANER MACHINE TRL MDT	1
STEP VAN W/TV AND GROUT INSPEC	4
TRUCK PICKUP FORD F-250 3/4TON	1
TRUCK SEWER CLEANER VAC-CON	4
TV STEP VAN	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
VACUUM SEWER LINE CATCH BASIN	1
W/SWR CLNR C&C	1
LIGHT EQUIPMENT	14
	2
A/C UNIT - WALL MOUNT	1
CUTTER MULTI PURPOSE	1
GAS BLOWER	1
GENERATOR	1
LAMP 2 LAUNCH ASSY	1
LIQUID SMOKE BLOWER	1
LOGIBALL	1
PIPE SEALING PLUG 24"-48"	1
PIPE SEALING PLUG 30"- 60"	2
ROTARY HAMIER 36V CORDLE	1
TANK	1
MISC	2
CONTAINER 40' X 8'	2
OTHER	1
CONTAINER	1
SAFETY	2
TRIPOD - WINCH	2
M&R Central	146
CCTV	1
	1
COMMUNICATION	19
LID# 1650	1
RADIO	1
RADIO - M7300	2
RADIO - P7350	13
RADIO HANDHELD	2
COMPUTER	18
COMPUTER EQUIPM	
COMPUTER - PORTABLE IBM	1
HP LAPTOP	1
LAPTOP TOUGHBOOK	9
PANASONIC CF52 LAPTOP	6
PORTABLE COMPUTER	1
EQUIPMENT	12

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
LASER	2
LUMBERJACK SPEED CUTTER	1
MANHOLE INSPECTION SYSTEM	1
POWER GRIT AIR UTILITY SAW	1
POWER SAW	1
RADIO	3
RADIO - CS7000	1
RADIO - P7350	1
RADIO - P7370	1
FIELD EQUIPMENT	2
3' TRENCH	1
8 DRUM OIL	1
FLEET	35
	1
1 TON PICK UP/UTILITY BODY	2
1998 FORD 14 CU YD DUMP TRUCK	2
1998 FORD 14 CU-YD DUMP TRUCK	1
1998 STERLING C&C VACCUM JET CLEANER	1
1998 STERLING C&C VACUUM JET CLEANERS	1
1998 STERLING C&C WITH VACUUM JET	1
20 TON TRAILER	2
2006 STERLING LT-7500	2
4X2 1 TON CAB & CHASSIS	3
4X2 SPORT UTILITY	1
BACKHOE LOADED COMBINATION	1
BOBCAT EXCAVATOR	1
CREW CAB	2
EXCAVATOR, MINI / BOBCAT	1
FLAT BED TRAILER	1
FORKLIFT/5,000 LBS	1
LT TRACTORS UTILITY HYDRAULIC FORD	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
PAYLOADER J.D. 5446	1
RIDER OPER TRACT/LDR/BCKHO	1
TRACT/LDR/BCKHO RIDER OPER PAYLOADERS	1
TRACTHOE	1
TRAILER - 4 WHEEL TAMDEM AXLE	1
TRAILER, FLATBED	1
TRUCK SEWER CLEANER VAC-CON	2
WATERLINE	2
LIGHT EQUIPMENT	52
	9
185 CFM TRAILER MOUNTED AIR COMPRESSOR	1
6' TRAILER MOUNTED TRASH PUMP	1
6" HYD PUMP	1
8" SLOAN TRASH PUMP	1
AIR COMPRESSOR	1
AIR COOLED GEN/COMP/WELDER TRL MTD	1
CONCRETE MIXER	1
CONCRETE MIXER, 2 WHL MTD W/GAS ENG MULLER	1
GASOLINE PORTABLE GEN/COMP/WELDER	2
GASOLINE SAW	1
GASOLINE TAMPER/COMPACTOR	1
JACK HAMMER 123-R 70 LB	1
JACK HAMMER 125-R 97 LB	1
PAVEMENT BREAKER, LATCH 30-LB THOR	1
PIPE CUTTER	1
PIPE LASER TOPCON TPL 4G	2
PNEUMATIC PIPE CUTTER	1
PORTABLE METAL HALIDES LIGHTS	8
REED UPC 636 PIPE SAW	1
ROOT CUTTER	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
SAW CONCRETE 623 G	
GASOLINE	2
SAW TRAV-L	1
SHOP EQUIPMENT 2" PUMP	1
TRAILER MOUNTED ARROWBOARD	3
UTILITY TRAILERS	1
WACKER	1
WACKER BPU3545A REVERSIBLE VIBRATOR	1
WACKER BS/600	1
WATER JET ROOT CUTTER	
O'BRIEN SEWER CLEANER	3
MISC	1
ELECTRIC ICE MACHINE	1
SAFETY	6
	1
ELECTRONIC TEST DETECTOR	1
GAS DETECTOR	1
GAS TEST DETECTOR	1
TRIPOD	2
M&R North	149
CCTV	4
CAMERA MINI-PUSH PIN	1
CAMERA PS	1
DV-1 VIDEO	1
JET CAMERA SYSTEM-SRECO FLEXIBLE #J	1
COMMUNICATION	25
	1
P7179 SYSTEM M/A-COM PORTABLE RADIO	1
RADIO - M7300	2
RADIO - M7300 - LID 11793	1
RADIO - P7350	20
COMPUTER	14
HP- 9010	1
LAPTOP TOUGHBOOK	9
LASER PRINTER	1
PANASONIC CF-52 LAPTOP	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
PANASONIC TOUGHBOOK LAPTOP	2
EQUIPMENT	11
INVERTER GENERATOR	2
MANHOLE INSPECTION SYSTEM	1
POWER GRIT AIR UTILITY SAW	1
POWER SAW	1
PUMP 2" SUMP INGERSOLL	2
RADIO - M7300	2
RADIO - P7350	2
FIELD EQUIPMENT	3
3' TRENCH	1
4' TRENCH	2
FLEET	44
	1
1 TON C&C	2
1 TON C&C WITH UTILITY BODY	1
1 TON PICKUP	2
1998 FORD 14 CU YD DUMP TRUCK	1
1998 STERLING C&C VACUUM JET CLEANERS	2
1998 STERLING C&C WITH VACUUM JET	1
1-TON P/U	2
20 TON TRAILER	1
2006 STERLING LT-7500	2
4X2 1 TON CAB & CHASSIS	1
4X2 SPORT UTILITY	1
504 HEAVY DUMP TRUCKS	3
AIR COMPRESSOR TRAILER MTD	1
BACKHOE/LOADER COMBINATION	2
BOBCAT EXCAVATOR	1
C&C INTL W/15-TON HYD CRANE BODY PITMA TRUCK	1
CREW CAB TRUCK	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
CREW CAB TRUCK/UTILITY BODY/ELECTRIC WINCH	1
FLAT BED UTILITY TRAILER	1
FORD MODEL E-250	1
FORKLIFT/5,000 LBS	1
LOADER BOBCAT BASE MACHINE	1
LOADER TRACTOR JOHN DEERE 710D	1
RIDER OPER TANDEM VIBRTY	1
RIDER OPER TRACT/LDR/BCKHO	1
TEMDEM TRAILOR WITH RAMPS - 4 WHEELS	1
TRAILER	1
TRAILER UTILITY 20 TON TAG	1
TRAILER UTILITY EAGLE BEAVER	1
TRUCK DUMP FORD 12/14 CU YD	1
TRUCK SEWER CLEANER VAC-CON	1
TRUCK SIDELIFT 19-TON W/CRANE	1
TRUCK WATERLINE FLATBED BODY	1
WATERLINE	2
LIGHT EQUIPMENT	45
	4
14" GAS CUT SAW	3
8" SLOAN TRASH PUMP	1
AIR COOLED GEN/COMP/WELDER	1
ASPHALT POUNDER SLINGER WIS COMPACTOR	1
CNS DYNAMOMETER	1
CONCRETE MIXER	1
CONCRETE MIXER, 2 WHL MTD W/GAS ENG MULLER	1
ELECTRIC PIPE DRAIN CLEANER	1
HYDRAULIC POWER TRL MTD	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
JACK HAMMER	1
JACK HAMMER 125-R 97 LB	1
JUMPING HAMMER	1
LATCH 60-LB THOR PAVEMENT BREAKER	1
LIGHT TOWER, TRAILER MOUNTED	1
LIGHTING SYSTEM EMERGEN PRTBLE	1
LOCATOR	1
LUMBERJACK SPEED CUTTER	1
MISC EQUIP - TAMPER/COMPACTR - GASOLINE WACKER	1
PLATE COMPACTOR WACKER	1
PUMP	2
SCOOTER, BASE UNIT: 4 WHEEL, GAS	1
SHOP EQUIPMENT - PIPE CUTTER - REED	2
SINGLE DIRECTION PLATES	2
TAMPER	1
TAMPER PLATE MODEL VPG 165A	1
TRAILER MOUNTED ARROWBOARD	4
WACHS TRAV-L-CUTTER MODEL E	1
WACKER BS/600	1
WACKER TAMPER	2
WATER JET ROOT CUTTER O'BRIEN SEWER CLEANER	2
WELDING OUTFIT, OXY-ACETYLENE VICTOR	1
RADIO	1
SAFETY	2
TRIPOD	1
TRIPOD - WINCH	1
M&R South	251
CCTV	30
	3

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
CAMERA CONTROL CONSOLE	1
CAMERA FLEXIPROBE INSPECTION	4
CAMERA SONDE	3
CAMERA, UNIT, CUES	1
FLEXI COILER/COUNTER	1
FLEXIBROBE COLOR CAMERA	3
PEARPOINT #P371 MINI CAMERA SYSTEM-ELS	1
PEARPOINT 455 TWIN VIEW CAMERA	2
PEARPOINT P371 FLEXIPROBE COLOR CAM	1
PROBE KIT	1
SYSTEM PROBE, CAMERA UNIT, PEARPORNT	1
TELEVISION EQ CONTRL CONSOLE CAMERA CUES	1
UNDERWATER CAMERA HEAD/PEARPOINT	1
UNDERWATER LIGHT BOX	1
UNDERWATER LIGHT BOX - 40 WATT LIGHT HEAD	1
WASTEWATER CAMERA TRANSPOR	3
WATER PROBE, CAMERA, LAUNCH, CUES	1
COMMUNICATION	26
	1
HANDIE-TALKIE, VHF MOTOROLA	1
LID# 11722	1
LID# 11846	1
RADIO - M7300	3
RADIO - P7350	18
TRANSMITTER-RECEIVER, MOBILE MOUNT	1
COMPUTER	19
COMPUTER EQUIPM RACK	1
HP NX9010 LAPTOP COMPUTER	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
LAPTOP TOUGHBOOK	11
PANASONIC CF52 LAPTOP	3
PANASONIC CF-52 LAPTOP	1
PANASONIC TOUGHBOOK LAPTOP	2
EQUIPMENT	21
AIR RESPIRATOR SYSTEM	1
CONFINED SPACE TRIPOD WINCH	2
CORE DRILL	1
INVERTER GENERATOR	2
LUMBERJACK SPEED CUTTER	1
MANHOLE INSPECTION SYSTEM	1
PUMP 2" SUMP INGERSOLL	2
RADIO - CS7000	1
RADIO - M7300	4
RADIO - P7350	2
SEMI TRASH PUMP 4"	3
VIBRATORY PLATE	1
FIELD EQUIPMENT	11
3' TRENCH	2
4' TRENCH	1
BL SWIPER	2
JAWS NOZZLE	1
POWER GRIT AIR UTILITY SAW	1
SEMI TRASH PUMP 4"	2
SPINNER	2
FLEET	48
	5
1 TON CAB & CHASSIS W/PANEL SERVICE BODY 4X2	1
16' STEP VAN WITH TV INSPECTION	1
1998 FORD 14 CU YD DUMP TRUCK	1
1998 FORD 14 CY YD DUMP TRUCK	1
1998 STERLING C&C VACCUM JET CLEANERS	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
1998 STERLING C&C WITH VACUUM JET	1
20 TON TRAILER	2
2006 STERLING LT-7500	2
4 X 2 CHASSIS CREW CAB	2
4X2 1 TON CAB & CHASSIS	5
504 HEAVY DUMP TRUCKS	1
BACKHOE LOADED COMBINATION	1
BACKHOE/LOADER COMBINATION	2
C&C INTL W/15-TON HYD CRANE BODY PITMA TRUCK	1
CREW CAB TRUCK	1
EXCVATR.320-RETAG FROM 20-0219	1
FLATBED UTILITY TRAILER	1
FLATBED UTILITY TRAILERS	1
FORD 555 E COMBINATION BACKHOE	1
FORD MODEL E-250	1
HEAVY CARGO VAN	1
INTERSTATE TRAILER	1
RIDER OPER TANDEM VIBRTRY	1
RIDER OPER TRACT/LDR/BCKHO	1
TRACK MOUNTED EXCAVATOR	1
TRACT/LDR/BCKHO RIDER OPER	1
TRAILER	1
TRAILER LANDOLL 20 TONS	1
TRAILER UTILITY 20 TON TAG	1
TRUCK FLATBED C&C DUMP BODY	1
TRUCK SEWER CLEANER VAC-CON	1
UTILITY TRAILERS	1
UTILITY VEHICLE ELECTRIC - MTR CY/SCOOTRS	1
WALK IN STEP VANS 2004	1
WATERLINE	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
IT HARDWARE	1
LIGHT EQUIPMENT	80
	8
3890 HYDRAULIC PIPE CUTTER	1
6" MILLING CUTTER, BUEHLER	1
8" MILLING CUTTER, BUEHLER	1
8" SLOAN TRASH PUMPS	1
AIR COMPRESSOR	1
ANALOG PIPE LOCATOR	2
ATHSCOPCO AIR COMPRESSOR 175/185	1
CABLE TEST LOCATOR	1
CAMERA CONTROLLER ELECTRONIC	2
CAMERA SYSTEM-JET STRECO FLEXI	3
CHAIN SAW	1
CNS DYNAMOMETER	1
COMPACTOR GAS WACKER BS60-21	1
COMPRESSORS PUMP AIR	1
CONCRETE SAW 14" STIHL	1
CONNECTRA FUSION TECH 28 CQ FUSION M	1
CONTROL UNIT-CAMERA PEARPOINT	1
DOCKING STATION	1
ELECTRONIC DIALGRADE	2
ELECTRONIC PIPE LOCATOR	1
ELECTRONIC TEST LOCATOR	1
EMERG LIGHT UNIT	1
ENGINEERING EQUIPMENT - LEVEL ELECTRONIC WILD	1
GASOLINE PORTABLE GEN/COMP/WELDER	2
GASOLINE SAW	1
GASOLINE TAMPER/COMPACTR	1
GENERATOR, W/GAS ENG SKID MTD KOHLER	1

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
HYD W/ACCY POLLARD PIPE CUTTER	1
HYDRAMAX SPRAYER	1
JACK HAMMER 125-R 97 LB	1
MICRO DRAIN INSPECTION SYSTEM	1
MINI CAMERA SYSTEM	2
MINI PUSH 20/20 PORTABLE	1
MISC EQ & MACH COMPACTOR PORTABLE WACKER	1
PEARPOINT RADIO DETECTION LOCATOR	3
PIPE BURSTING KIT	1
PIPE CUTTER	1
PIPE LOCATOR	1
PORTABLE COMPACTOR PUMP	2
REED UPC 636 AIR SAW PIPE CUTTER	1
REVER. VIBRAT. PLATE COMPACTOR	2
ROOT CUTTER	1
SCOOTER 4 WHEEL	1
SEWER PIPE CLEANING MACHINES, TRAILER	1
SHOP EQUIPMENT - PUMP	1
SLOAN PUMP	1
SONDE LOCATOR	3
SUBMERSIBLE TRASH 8-IN H&H PUMP CO.	1
TAMPER PLATE MODEL VPG 165A	1
TRAILER MOUNTED AIR COMPRESSOR	1
TRAILER MOUNTED ARROWBOARD	2
TRAILER PUMP	1
TRAV-L CUTTER	1
TV/SEWER LINE EQUIPMENT SYSTEM	1
VIBRATOR PLATE-WACKER	1
SAFETY	15

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
ELECTRONIC TEST DETECTOR	2
GAS TEST DETECTOR	4

Table C.2
WWCLTD 2015 Equipment Inventory

Description	#
RESCUE WINCH	9
Grand Total	971

APPENDIX D

WWCTLD 2014 STAFFING

GRAVITY SEWER SYSTEMS OPERATIONS AND MAINTENANCE PROGRAM

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APPENDIX D1

2014 WWCTLD STAFF DISTRIBUTION

GRAVITY SEWER SYSTEMS OPERATIONS AND MAINTENANCE PROGRAM

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Table D1.1
FY 2014 WWCTLD Staff Classifications

Division Section/Unit/Crew	Number of Staff	Division Section/Unit/Crew	Number of Staff
Administrative Officer 1	1	W&S Cadastral Technician	1
Administrative Secretary	1	W&S Engineering Drafter 2	1
Assistant W&S Superintendent	2	W&S Eval & Review Specialist	3
CCTV Equip Insp Tech	2	W&S Flow Meter Technician	3
Chief, W&S Division	1	W&S Heavy Equipment Operator	16
Clerk 4	1	W&S Maintenance Mechanic	1
Engineer 2	1	W&S Maintenance Repairer	18
Office Support Specialist 3	2	W&S Secretary	1
Pipefitter	17	W&S Semi-Skilled Laborer	24
Pipefitter Supervisor	18	W&S Sewer Collection Sys. Supv.	8
Sewer Inspection Technician 1	11	W&S Sewer Lateral Repairer	29
Sewer Inspection Technician 2	12	W&S Valve Exercise Technician	1
W&S Account Clerk	4	Water Distribution Supervisor	6
W&S Auto Equip Oper 2	9		
Grand Total		194	

Table D1.2
FY 2014 WWCTLD Budgeted Staff Numbers by Section

Description	Chief				Total
	Superintendent/ Administration	Evaluation and Review	Maintenance and Repair	Inspections	
Chief	1	0	0	0	1
Asst. Superintendent	0	0	1	1	2
Administrative Support	4	0	1	0	5
Accounting	1	0	3	1	5
Engineering	0	1	0	0	1
Supervision	0	0	4	2	6
Evaluation and Review	0	3	0	0	3
Repair Crews	0	0	69	0	69
Investigation Crews	0	0	26	0	26
Valve Crews	0	0	10	0	10
TV & Grout Crews	0	0	0	33	33
Flow Meter Crew	0	0	0	7	7
Smoke Test Crew	0	0	0	8	8
Large Diameter Inspection Crew	0	0	0	7	7
Restoration Crew	0	0	6	0	6
Data Control	0	0	0	2	2
Repair Shop	0	0	1	2	3
Totals	6	4	121	63	194

Table D1.3
FY 2014 WWCTLD Field Crews

Crew Name	Inspection Section	Maintenance & Repair Section
TV & Grout	4	
Flow Meter	1	
Large Diameter Inspection	1	
Repair Shop	2	
Smoke Test	2	
Cleaning and Investigation		3
Lateral Investigation		1
Manhole Repair		3
Repair		10
Restoration		1
Transmission ARV		1
Transmission Valve		1
Transmission Repair		3
Total	10	23

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APPENDIX D2

2014 MDWASD WWCTLD JOB DESCRIPTIONS

GRAVITY SEWER SYSTEMS OPERATIONS AND MAINTENANCE PROGRAM

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MDWASD – WWCTLD Staffing	
Job Title:	<i>CLERK 4</i>
Minimum Qualifications	High school diploma or GED. Three years of advanced clerical experience are required.
Wage Band	\$33,619.04 to \$54,476.50
Job Description:	<p>NATURE OF WORK:</p> <p>This is supervisory clerical work involving some administrative responsibility in the management of diversified clerical operations of a major organizational unit. Employees in this class perform a range of responsible duties including work planning and progression, the assignment and review of other supervisory and operating employees in moderately large units engaged in processing and maintaining a volume of fiscal and operating functions. Work may also involve assisting an administrative superior by relieving him of routine office management functions or performing specialized operational or clerical activities under general supervision. The incumbent is responsible for the proper performance of independent work decisions based on experience and knowledge of departmental operations but refers policy, difficult technical or procedural matters to a superior for resolution. Work is assigned and reviewed through conferences with administrators or technical superiors, who review work for general administrative effectiveness by personal observation, review of written reports and by providing assistance in matters of policy interpretation.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Supervises the fiscal and clerical operations of a major departmental unit as an office manager or assistant to the administrator performing departmental functions. Supervises the duplicating of printed materials for all county departments; supervises the county mail and messenger service and maintains a daily record of mail costs for each department; maintains record control of all office and material supplies for county departments and insures that all charges are correct and the books are properly balanced. Coordinates the maintenance of a criminal history record file, master name file and entry and retrieval of computerized criminal history data; assigns and supervises the record control of all open metro warrants and corresponding cross indexes and dissemination of information to municipal, state and federal law enforcement agencies; assists in the development of police records systems and coordinates them with data processing personnel. Plans, assigns and supervises the work of subordinates engaged in waste administration, volume billing and records keeping, reviews procedures, processes delinquent accounts requiring investigation and prosecution, performs periodic balance of accounts. Plans, assigns and supervises the work of subordinates engaged in phases of property tax collection and assessment including complex property valuations; performs tax receipt audits, computes distribution to tax receipts, conducts tax sales, counsels dissident taxpayers. Coordinates the preparation of weekly payroll timesheets based on transit route assignments; supervises the recording of route revenues, mileage readings and related cost items of a large transit operation. Supervises</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>CLERK 4</i>
	<p>the processing of all real estate exemptions; reviews and approves applications from religious, fraternal, and charitable organizations claiming total exemption from taxes; makes field inspections of properties and consults with county attorney on protested applications. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES AND SKILLS:</p> <p>Thorough knowledge of modern office practices, procedures, and equipment. Considerable knowledge of the principles of office management, business accounting, and the legal procedural requirements of the department assigned. Considerable knowledge of business English, spelling, and accounting. Ability to plan, assign, and supervise the work of a staff of clerical and other subordinates in a manner conducive to full performance and high morale. Ability to develop effective office and fieldwork procedures and training programs. Ability to acquire complex knowledge of the legal, administrative, and procedural requirements of the department assigned. Ability to promote and maintain effective departmental and public relations. Ability to prepare correspondence, operational, and statistical tabulations and reports. Ability to communicate effectively, orally, and in writing. REV 10/98</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>OFFICE SUPPORT SPECIALIST 3</i>
Minimum Qualifications	<p>High school diploma or GED. Two years of advanced clerical experience to include one year using personal computer software are required.</p> <p>Must take and pass a typing skills test with a score of 40 net WPM. Photo identification is required to take the typing skills test</p>
Wage Band	\$28,621.58 - \$ 44,653.96
Job Description:	<p>NATURE OF WORK:</p> <p>This is supervisory clerical work or independent clerical work of comparable responsibility requiring skilled typing. Employees in this class supervise the work of a moderate sized staff engaged in varied clerical duties of a complex nature or perform independent work of a comparable level of difficulty. Primary responsibilities typically include planning, assigning, and reviewing work of a subordinate staff performing clerical duties requiring knowledge of established procedures and regulations for a specific county operation. Some employees in this class serve in a secretarial capacity to an executive where skill in stenography is not essential, requiring considerable knowledge of departmental organization, programs, policies, and regulations. Incumbents are frequently required to keep informed on changes in basic laws and related regulations pertaining to the work and to train subordinates accordingly. General supervision is received from an executive or other supervisor who assists with unusual and difficult problems.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Serves as secretary to an executive official; receives, screens, and routes incoming mail; receives and answers inquiries of office visitors; composes correspondence from brief oral instruction; compiles data for departmental budget, making arithmetical calculations and typing appropriate supporting documents; immediately supervises and trains a small clerical staff assisting with duties of the executives office. Plans, assigns, and supervises work of a clerical staff engaged in a large volume of hospital personnel record work, including processing documents for new employees, assembling information and typing various personnel actions according to current regulations, maintaining detailed position control of budgeted positions, processing separations and related work; rotates employees between various assignments; spot checks completed personnel actions and other work for accuracy; coordinates work with central personnel department. Plans, assigns, and supervises work of a sizeable group of clerk typists engaged in issuing tags and effecting title changes and registrations for vehicles and boats; supervises a small related staff who receive and dispose of inquiries and maintain record files; disposes of complaints from the public; trains seasonal employees in heavy workload periods; prepares required workload reports. Supervises work of a moderate sized group of subordinate office support specialists responsible for a large volume of hospital timekeeping work for a wide variety of positions; supervises the review of division time cards, current maintenance of time and leave cards, preparation of merit increase schedules and personnel reports such as overtime and service</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>OFFICE SUPPORT SPECIALIST 3</i>
	<p>award lists; advises subordinates on new and revised time and leave regulations. Serves in charge of indexing and recording of official County Commission minutes; reads details of Commission agenda and reports of action recorded in official minutes and condenses for incorporation into index records; codes all items using judgment in assigning type and number of appropriate reference codes; supervises a small clerical staff engaged in typing action items on all appropriate pages of the official index record; replies to a heavy volume and wide variety of inquiries from county departments, the public, Commissioners, and their secretaries and others relating to various official Commission action in previous years; obtains reference information for Commissioners during meetings. Assists the Administrative Officer in a tax assessor activity with a variety of general administrative duties; assembles data for annual budget preparation; initiates requests for supplies, equipment and services; prepares personnel actions and maintains leave records for departmental employees; bills various municipalities and receives payments for deed transfers; supervises clerical assistants as assigned. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES AND SKILLS:</p> <p>Considerable knowledge of the clerical procedures used in office management. Considerable knowledge of the specific governmental operation to which assigned, including its policies, procedures, organization, workflow, regulations, and recordkeeping. Considerable knowledge of secretarial procedures including correspondence preparation, filing systems, office machine operation, business English, and commercial arithmetic. Ability to plan, assign, and coordinate the work of moderate sized clerical staff in a manner conducive to full performance and high morale. Ability to develop and maintain cooperative and effective relationships with all individuals contacted. Ability to use good judgment in the application of various procedures and regulations pertinent to the area of assignment. Ability to search for and compile data from files and other sources applicable to the topic of concern. Ability to express ideas clearly and to communicate effectively, orally and in writing. Ability to operate both manual and electric typewriters at an accurate and rapid rate of speed. REV 02/99</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>ADMINISTRATIVE SECRETARY</i>
Minimum Qualifications	<p>High school diploma or GED. Three years of secretarial or related word processing experience are required.</p> <p>Must take and pass a typing skills test with a score of 40 net WPM. Photo identification is required to take the typing skills test</p>
Wage Band	\$31,218.20 to \$55,159
Job Description:	<p>NATURE OF WORK</p> <p>This is advanced responsible secretarial and related clerical work for a division head or an exempt executive official in the County service. Employees in this class perform a variety of complex secretarial and clerical duties for division directors or other comparable executive officials within the County organization. Emphasis of the work is on the performance of advanced secretarial duties requiring considerable knowledge of the executive's responsibilities and an understanding of the policies, programs, procedures and regulations in effect in the area of assignment. Duties typically include arranging for and attending conferences, independently answering inquiries where there is established policy or precedent action, taking and transcribing dictation, composing and typing correspondence and performing research to compile data for special reports and other purposes. Incumbents utilize a variety of office skills and considerable judgment in relieving the executive of administrative details. Supervision may be exercised over subordinate clerical employees through assignment of tasks and review of completed work for accomplishment of desired objectives. General supervision is received from a division director or an executive official who reviews work for satisfactory performance of executive secretarial duties and for attainment of desired goals and objectives.</p> <p>ILLUSTRATIVE TASKS</p> <p>Performs secretarial and clerical duties for a division director or other comparable executive official; commits supervisors time in making appointments and maintains calendar; maintains supervisors itinerary and makes travel and hotel arrangements as required. Arranges for and attends various conferences and meetings; informs participants and provides background information; serves as recording secretary at conferences, board meetings and staff consultations; takes official minutes and prepares reports of proceedings; follows through on actions required as a result of conferences. Takes and transcribes dictation which may vary by subject matter including legal, technical, financial or other specialized terminology; takes verbatim transcript from telephone calls or in conferences as requested. Opens, screens and distributes mail; marks important parts of instructions, orders and regulations for executive, and organizes mail according to priorities; maintains control of correspondence flow through office; insures that report deadlines are met and that all information distributed is complete. Composes correspondence from verbal instructions of superior, and independently drafts replies to inquiries; reviews correspondence prepared by others for superiors signature to ensure correct grammar, format and completeness. Receives and screens telephone calls and visitors; responds to requests for information by answering questions where there are established</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>ADMINISTRATIVE SECRETARY</i>
	<p>policies or regulations, or precedent actions taken by supervisor. Plans, assigns and reviews the work of subordinate clerical employees engaged in typing reports, correspondence and other documents, filing, and performing a variety of other clerical duties; provides training in procedures and methods in the organization of assignment. Researches and compiles data from a variety of sources in connection with special reports, budget preparation and other matters; assembles material for supervisors reply to correspondence demanding superiors personal attention. Keeps various activity and production records; types various activity reports, requisitions, work orders and personnel forms; composes reports on caseloads, workloads or other subjects as delegated; authorizes expenditures from petty cash; requisitions office supplies; performs arithmetic calculations for budget requests and other matters. Establishes and maintains office filing systems; reorganizes files as required; establishes subject matter files for superior; purges files of unnecessary items according to established policies and procedures. Makes recommendations regarding hiring, discipline and promotion of subordinates; authorizes leave and overtime; evaluates and rates employee performance. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES AND SKILLS</p> <p>Thorough knowledge of executive secretarial methods, techniques and procedures. Thorough knowledge of general office procedures, practices and equipment. Considerable knowledge of the operation to which assigned including its policies, procedures, regulations, organization and workflow. Considerable knowledge of executive protocol and the proper order of etiquette in conducting secretarial activities with responsible county and other officials. Considerable knowledge of business English, spelling and arithmetic. Considerable knowledge of the structure and function of various county departments. Knowledge of supervisory principles and practices. Ability to establish and maintain effective working secretarial relationships with an executive official. Ability to take and transcribe dictation at a high rate of speed. Ability to operate typewriters, personal computers and other office machines with accuracy and speed. Ability to develop and maintain effective working relationships with subordinates, superiors and a variety of county and other officials. Ability to express ideas clearly and concisely, verbally and in writing. Ability to establish and revise office policies and procedures. Ability to research and develop information from a variety of sources. Ability to supervise subordinates in a manner conducive to full performance and high morale. NEW 10/98</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>ADMINISTRATIVE OFFICER 1</i>
Minimum Qualifications	Bachelors degree
Wage Band	\$33,891.00 to \$56,813.90
Job Description:	<p>NATURE OF WORK:</p> <p>This is administrative work in performing various administrative activities in a central administrative division or special program in a county department or agency. Employees in this class are responsible for performing various administrative duties in assisting departmental management in carrying out required administrative operations. Duties or combination of duties performed vary, depending on the department to which assigned. Some incumbents in the class perform specialized duties of a staff nature relating to a specific program. Employees are assigned duties such as cost analysis and control, budget preparation and expenditure control, purchasing and inventory work, methods and procedure studies, report or grant proposal preparation and personnel administration. Incumbents exercise some independent judgment in devising and installing new work methods, interpreting rules, regulations and procedures and in making recommendations to superiors. Supervision may be exercised over clerical and technical employees who assist in various phases of administrative operations. Supervision is received from an administrative superior who reviews work for attainment of desired management objectives and conformity with established administrative and departmental policies and procedures through conferences, personal inspections and review of reports.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Assists in planning and preparing divisional or project budgets; insures adherence to budget procedures and guidelines; reviews completed budget documents for format, accuracy of budget codes and computations; monitors budget forecasts and expenditures for departmental projects and activities; prepares periodic budget reports. Supervises clerical subordinates engaged in preparation of invoices and billings for equipment or services, issuance of purchase orders and requisitions, reconciliation of computer reports and related clerical activities; provides training to employees in new procedures required with automated accounting and reporting systems. Coordinates the maintenance of various accounting records such as cash and surety bonds; audits departmental financial records to obtain data for management reports relative to budget control, purchasing standards, stores, and equipment inventory control or improvements in operational efficiency; recommends procedures for collection and reporting of data on departmental programs in cost analysis and revenue producing activities; accounts for costs and reviews revenue summaries to assure revenues are properly collected. Analyzes financial, procurement and administrative procedures for simplification and improvement in efficiency; analyzes purchase orders to determine requirements; checks requisitions for completeness and accuracy; writes specifications and requisitions and assists in selection of bids for departmental equipment or</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>ADMINISTRATIVE OFFICER 1</i>
	<p>supplies. Interviews applicants for employment to determine qualifications; provides information to applicants regarding career county employment; requests eligible lists and coordinates panel interviews for departmental positions; processes affirmative action complaints from employees through appropriate channels. Assists in the supervision of clerical subordinates engaged in processing departmental personnel actions; discusses work related problems with employees; coordinates departmental personnel activities with federal funded employment programs as necessary. Conducts assigned research, procedural or administrative studies, and prepares narrative and statistical reports, proposing courses of action; reviews workload reports from operating segments for conformance with department instructions; audits program records reflecting client or patron workloads for conformance with departmental instructions and accuracy of computations. Makes recommendations regarding hiring, discipline, and promotion of subordinates; authorizes leave and overtime; evaluates and rates employee performance. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Considerable knowledge of the principles of general management and their application to governmental administration. Considerable knowledge of research techniques and the sources and availability of current information applicable to the area of assignment. Knowledge of budget preparation procedures and reporting requirements. Knowledge of departmental, legal, administrative, and procedural regulations. Knowledge of the principles and procedures of modern office administration. Knowledge of basic accounting principles, practices, and procedures. Knowledge of the use of data processing and cost accounting systems. Knowledge of the principles, practices, and procedures of public personnel administration. Knowledge of supervisory principles and practices. Ability to analyze administrative problems and make sound recommendations as to their solution. Ability to supervise the work of subordinates in a manner conducive to full performance and high morale. Ability to understand and carry out complex oral and written instructions. Ability to establish and maintain effective working relationships with other employees, supervisors, departmental officials, and the general public. Ability to express ideas clearly, concisely, verbally, and in writing. Ability to supervise preparation of records and reports on a timely and complete basis. Ability to prepare complete narrative and statistical reports. Ability to conduct appropriate interviews with prospective employees and obtain pertinent information. Ability to prepare accurate accounting and budgetary reports. REV 05/98</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>ENGINEER 2</i>
Minimum Qualifications	Bachelor's degree in Engineering. Two years of engineering experience are required. A State of Florida Professional Engineer license; or Bachelor's degree in Engineering Technology awarded or having been enrolled prior to July 1, 1979 and proof of having passed the fundamentals test for the State of Florida Professional Engineer license may substitute for the required education.
Wage Band	\$56,813.90 - \$95,377.62
Job Description:	<p>NATURE OF WORK:</p> <p>This is advanced professional civil engineering work with supervisory responsibility in the planning, design, construction, inspection and maintenance of a variety of public works facilities. Employees in this class typically serve as heads of work units in the Public Works engineering organization with responsibility for, and participating in, the work of complex and diversified projects. This class is distinguished from that of Engineer 1 in that employees apply more advanced knowledge and skills to projects of a more complex nature, and are responsible for finalizing major projects. Employees receive a minimum of professional direction and confer with superiors on unusual or difficult problems and matters of policy. Work is reviewed by a professional superior primarily to determine general progress and conformity to departmental practices, governmental ordinances and statutes.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Supervises and participates in the production of plans for construction of highways; supervises the design and preparation of plans for construction of highway bridges; supervises field surveys to develop information required for design activities; supervises the preparation of cost estimates of proposed bridges, highways and other improvements; supervises the advance planning of major highway, bridge and related projects, including preparation of recommendations for program scheduling. Supervises collection, recording and analysis of ground water elevations, surface water stage, rainfall amount and intensity; supervises regulation of water levels throughout the county by operation of dams and water control structures; studies operation record of water control structures and interrelated hydrologic data to improve both results and methods of operation; conducts continuing review of official County Flood Criteria Map and supervises computation of flood water profiles and stage frequency relationship. Supervises coastal engineering activities of the county; coordinates these activities with state and federal agencies having jurisdiction over dredging and filling in tidal waters and beach preservation work; supervises planning and design of coastal construction projects and reviews plans for such work submitted to the county for approval and permit; supervises and participates in preparation of standards and permit procedures governing such work. Supervises and participates in processing of special improvement taxing districts; prepares County Managers report and recommendations for creating special taxing districts; prepares and maintains status reports covering special taxing districts; prepares plans and designs for street lighting improvement districts; designs and prepares recommendations for lighting of arterial streets; investigates and tests new lighting materials for consideration in street lighting programs; handles public inquiries and complaints regarding improvements in</p>

MDWASD – WWCTLD Staffing**Job Title:*****ENGINEER 2***

special taxing districts. Supervises and participates in review of plans for proposed water supply and sewer facilities to insure compliance with county standards; supervises and participates in reviews of tentative subdivision plats for water supply and sewerage requirements; designs water and sewer works including treatment plants and pumping facilities; prepares reports and makes preliminary feasibility studies for water and sewerage facilities; assists in developing programs and projects to implement the countywide master plans for water supply and sewerage. Supervises and participates in preparation of hydraulic design computations for canals, culverts, ditches and storm sewers; estimates drainage area of water sheds and direction of flow; reviews tentative subdivision plats and subdivision drainage plans for adequacy of design and for conformance with County Water Control Plan; reviews permit applications for proposed utility installations and makes recommendations based on their effect on water control facilities; reviews plans for proposed lake excavations and similar work under jurisdiction of other county departments; prepares recommendations regarding engineering features of such plans. Supervises and participates in development of automatic data processing procedures and their application to engineering and accounting functions; conducts research into new methods of design computation, work measurement recording, and cost accounting using electronic computers; supervises and participates in preparation of computer programs for specific project applications; prepares reports and explanatory materials required for understanding and use of computer programs; instructs users of the programs and assists supervisors in training personnel in their use; investigates areas of operation to which electronic automatic data processing may be applied to increase efficiency and reduce costs. Acts as traffic design engineer; supervises and participates in studies relating to the movement of traffic on roads and streets for use in geometric design of highways, intersections and interchanges and for design of traffic control devices; prepares technical reports dealing with the traffic engineering aspects of highway design for road program planning and for specific projects; supervises preparation of plans for installation of traffic control signals, signs and markings; through subordinates, investigates complaints and requests concerning local traffic conditions and prepares recommendations for their improvement; prepares road sufficiency ratings and assists in development of the countywide master thoroughfare plan. Supervises and reviews the work of subordinate technical and professional personnel engaged in preparing cadastral engineering data for state highway and county road projects including right-of-way maps, legal descriptions, survey sketches and related information required for use in right-of-way acquisition and condemnation proceedings. Supervises and participates in reviewing and checking of building plans and specifications for compliance with building codes; suggests alternative design to safety code requirements; reviews and evaluates engineering drawings, calculations and tests for compliance of various building components; attends and evaluates various tests conducted by laboratories and professional engineers. Assists in planning and supervising an efficient and effective program of air pollution control; conducts specialized surveys and studies; prepares recommendations, consults with public officials, industrial representatives and private individuals relative to the elimination or control of air pollution; conducts field investigations of complaints of violations, prepares reports with recommendations for corrective measures, makes follow-up investigations. Supervises engineering survey section providing information for county departments including fieldwork to establish and maintain official survey

MDWASD – WWCTLD Staffing	
Job Title:	<i>ENGINEER 2</i>
	<p>monuments for section public works construction and related survey work. and property corners, surveys of county owned properties, locating right-of-way lines, determining lines and grades for public works construction and related survey work. Supervises the inspection of public works construction projects, including roads, bridges, canals and other drainage works, water supply and sewer systems, coastal works and land development projects. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Considerable knowledge of the principles and practices of civil engineering and land surveying. Considerable knowledge of the design, construction and operation of public works projects and facilities, including highways, bridges, water and sewer facilities, flood control works and coastal works. Considerable knowledge of applicable laws and regulatory codes pertinent to design and construction. Considerable knowledge of the principles, practices and techniques of hydraulic engineering, hydrology and coastal engineering. Considerable knowledge of mathematics, automatic data processing equipment, and techniques and computer program languages for engineering and related applications. Considerable knowledge of the principles and practices of traffic planning and engineering and familiarity with current standards for traffic control devices. Knowledge of laws and regulations pertaining to traffic and motor vehicles. Knowledge of modern developments, current literature, and sources of information regarding bridge, highway and other public works design and construction. Ability to design and prepare engineering plans and specifications for highways, bridges, streets, water control and other major structural projects. Ability to perform moderately difficult engineering computations and to make recommendations on engineering problems. Ability to plan, schedule, and review the work of technical, professional and clerical assistants in a manner conducive to full performance and high morale. Ability to make engineering cost estimates, related computations, and recommendations on technical engineering problems. Ability to express ideas clearly, concisely, verbally, and in writing. Ability to secure state registration either as a professional engineer or registered land surveyor at time of appointment if required. Skill in the use of civil engineering instruments and equipment. REV 8-66</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER COLLECTION SYSTEM SUPERVISOR</i>
Minimum Qualifications	High school diploma or GED. Two years of experience in the inspection, evaluation and/or maintenance of the water and sewer systems infrastructure to include televising lines, smoke testing, flow monitoring, inspecting manholes and/or grout repair are required. Must possess a CDL/Class B license. Must obtain a tanker endorsement during the probationary period.
Wage Band	\$46,690.285 - \$68,091.92
Job Description:	<p>NATURE OF WORK</p> <p>This is skilled supervisory work supervising the activities of the Sewage Collection Division's work crews located throughout Miami-Dade County. Work in this class involves responsibility for supervising a group of skilled and unskilled workers engaged in installation, repair and maintenance work on the county sewage collection system. Supervision is received from an administrative superior in the form of general oral instructions, or designs and specifications for new installations. Difficult maintenance or construction assignments are subject to frequent inspection while work is in process, but employee is allowed considerable latitude in carrying out normal work assignments.</p> <p>ILLUSTRATIVE TASKS</p> <p>Supervises crews engaged in the inspection and minor maintenance of main lines to include operating closed circuit TV systems to identify defects and or infiltration in the sanitary lines, inserting smoke bombs in the manholes to identify leaks in the sewer collection system, installing flow meters inside manholes to register the amount of sewage flowing through the collection system, isolating specific segments of pipe to check for infiltration or exfiltration, injecting chemical grout into the manhole structure to seal cracks, and operating sewer cleaning machines. Directs safety measures for the protection of the labor force and the public while work is in progress; ensures compliance with applicable confined space entry rules and regulations, including but not limited to documentation of all confined space entries, and monitoring safety equipment during man-entry inspections; directs the monthly calibration and inspection of safety equipment such as gas detectors and breathing boxes. Plans and executes assigned inspections to include the scheduling of off-duty police, ordering traffic barricades, traffic control, scheduling de-watering pumps and de-watering tanks as needed. Makes recommendations regarding hiring, discipline and promotion of subordinates; authorizes leave and overtime; evaluates and rates employee performance. Performs related work as required.</p> <p>KNOWLEDGE, SKILLS AND ABILITIES</p> <p>Considerable knowledge of methods, practices, techniques, materials, tools and equipment used to identify defects and infiltration in the sewage collection system. Considerable knowledge of hazards to workers and the public involved in servicing a sewage collection system, and of necessary precautionary measures. Ability to plan and direct the work of subordinates in a manner</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER COLLECTION SYSTEM SUPERVISOR</i>
	conducive to full performance and high morale. Ability to read and interpret blueprints and other system designs, and to prepare rough sketches of work to be done. Ability to estimate labor, equipment and materials required for repair or installation work. Ability to keep time, work and accident records, and to prepare reports. Skill in the use of tools, and in the application of techniques of the trade. NEW10/30/2006

MDWASD – WWCTLD Staffing	
Job Title:	<i>PIPEFITTER SUPERVISOR</i>
Minimum Qualifications	High school diploma or GED. Two years of skilled pipefitting experience in installing, repairing, and maintaining water/sewer systems infrastructure is required. Must possess a CDL/Class B. Must possess and maintain a State of Florida Level 3 Water Distribution System license.
Wage Band	\$46,690.28 - \$68,091.92
Job Description:	<p>NATURE OF WORK:</p> <p>This is skilled supervisory pipefitting work in the installation and maintenance of all lines of the county water distribution system. Work in this class involves responsibility for supervising a group of skilled and unskilled workers engaged in installation, repair and maintenance work on the county water distribution system. Assignments are usually received from a technical superior in the form of general oral instructions, or designs and specifications for new installations. Difficult maintenance or construction assignments are subject to frequent inspection while work is in process, but employee is allowed considerable latitude in carrying out normal work assignments.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Supervises and assists in making repairs to water mains, valves and fire hydrants; connects mains and service lines; installs meters and boxes; makes estimates of materials, equipment and labor force required. Directs ditching operations as to location and depth, taking into consideration existing water mains, gas mains, sewers and telephone or electrical cables; lays out and closely supervises pipefitting and pipe repairing operations, and directs backfill work. Directs the closing and opening of proper mains and valves when tie-ins or repairs are to be made. Instruct caulkers where to start, and the type of material to use. Directs flushing and chlorination of mains and service lines following installation and repair; makes complete inspection and operating tests of repair or installation work before service is begun. Supervises safe and proper use of tools, compressors, trucks and other equipment; lists abandoned or retired materials and charges them to the appropriate account. Directs safety measures for the protection of the labor force and the public while work is in progress; notifies the Fire Department of fire hydrants temporarily deprived of water, and sees to the notification of customers in areas temporarily without service; keeps records and prepares reports of labor, time, accidents, and service interruptions. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Considerable knowledge of methods, practices, techniques, materials, tools and equipment used in pipefitting, and in installing and repairing water distribution lines, meters, valves and hydrants. Considerable knowledge of hazards to workers and the public involved in servicing a water distribution system, and of necessary precautionary measures. Considerable knowledge of the qualities of various types of pipe and their reaction under pressure. Ability to plan, lay-outs, and direct the work of pipe fitters, equipment operators and laborers in a manner</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>PIPEFITTER SUPERVISOR</i>
	conducive to full performance and high morale. Ability to read and interpret blueprints and other system designs, and to prepare rough sketches of work to be done. Ability to estimate labor, equipment, and materials required for repair or installation work. Ability to keep time, work, and accident records, and to prepare reports. Skill in the use of tools, and in the application of techniques of the trade. NEW 4-73

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER DISTRIBUTION SUPERVISOR</i>
Minimum Qualifications	High school diploma or GED. Two years of experience supervising crews involved in the installation, repair and maintenance of water mains, water service pipelines, fire hydrants, meters and meter boxes are required. Must possess a Driver license. Must obtain a State of Florida Level 2 Water Distribution System license during the probationary period.
Wage Band	\$53,643.20 - \$78,566.28
Job Description:	<p>NATURE OF WORK:</p> <p>This is responsible supervisory and administrative work in the installation, repair and maintenance of pipelines in the County water distribution system. Employees in this class are responsible for planning and coordinating the work of employees engaged in the construction and maintenance of water distribution pipelines. Emphasis is on the large scale supervision and coordination of the work of subordinate supervisors, equipment operators, technical employees and laborers, utilizing materials and equipment to install, repair and maintain pipelines, repair water mains, valves and fire hydrants, connect mains, install meters and boxes and perform excavating and backfill tasks. Responsibilities include coordinating geographically separated work crews, assisting with difficult or unusual problems and inspecting work in progress and upon completion. Supervision is exercised over subordinate supervisors, skilled journeymen, semi-skilled and unskilled employees. Supervision is received from an administrative superior through personal conferences and inspection of projects in progress and upon completion for satisfactory attainment of objectives.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Plans, assigns, and reviews the work of subordinate supervisors, skilled journeymen, semi-skilled and unskilled employees engaged in the installation, repair and maintenance of water distribution pipelines, water mains, valves, fire hydrants, connections of main lines and service lines, water meters and boxes, and related excavation and back fill work. Prepares diagrams and sketches for new installations; inspects work in progress and upon completion and assists with difficult or unusual problems. Requisitions equipment, supplies, and materials necessary for completion of work projects; examines blueprints and estimates cost of materials and labor necessary to complete work. Keeps records of time and materials required for projects and submits reports. Arranges for the closing and opening of appropriate mains and valves when tie-in or repairs are to begin. Communications and enforces established safety measures and regulations, instructs employees in occupational hazard and safety precautions. Makes recommendations regarding hiring, discipline, and promotion of subordinates; authorizes leave and overtime; reviews performance evaluations prepared by subordinate supervisors; evaluates and rates employee performance. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER DISTRIBUTION SUPERVISOR</i>
	<p>Through knowledge of methods, practices, techniques, tools, and equipment used in pipefitting, and in the installation and repair of water distribution lines, meters, valves, and hydrants. Through knowledge of the hazards to the public and necessary precautionary measures involved in servicing a water distribution system. Considerable knowledge of the qualities of various types of pipe and their reaction under pressure. Considerable knowledge of supervisory principles, practices, and operations. Considerable knowledge of occupational hazards and safety precautions required in pipeline construction and repair projects. Ability to supervise a large staff of subordinate supervisors, skilled journeymen, semi-skilled and unskilled employees in a manner conducive to full performance and high morale. Ability to coordinate the use of work crews, equipment, and materials in geographically separated locations. Ability to delegate necessary authority to subordinates for completion of assigned responsibilities. Ability to read and interpret blueprints and prepare diagrams and sketches of work projects. Ability to accurately estimate labor, equipment, and materials required for repair or installation work. Ability to keep detailed records and prepare reports. NEW 10-80</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>ASSISTANT WATER & SEWER SUPERINTENDENT</i>
Minimum Qualifications	Bachelor's degree in Engineering and one year of professional supervisory experience to include planning or installation, repair and maintenance of water/sewer pipelines, general construction or mechanical maintenance; or High school diploma or GED and five years of supervisory experience related to the installation, repair and maintenance of water/sewer pipelines, general construction or mechanical maintenance are required. Must possess a driver's license.
Wage Band	\$66,222.52 - \$108,532.84
Job Description:	<p>NATURE OF WORK:</p> <p>This is advanced responsible administrative and supervisory work in the construction, repair and maintenance of water distribution lines in the county water distribution system. Employees in this class are responsible for large scale supervision, planning and coordination of employees engaged in construction, repair and maintenance of water distribution lines. Emphasis of the work is on assisting in the development of plans for new construction and for relocation of underground installations, supervising trouble crews, service crews, mains crews and meter repair crews, providing advice and direction to subordinate Water Distribution Supervisors, and developing solutions to complex operating problems. Supervision is exercised over an extensive staff of subordinate supervisors, mechanics, repairers and laborers engaged in various phases of the work. Supervision is received from the Water Distribution Superintendent who holds the incumbents responsible for efficient and effective supervision of water distribution operations in the area of assignment.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Plans, assigns, and reviews through subordinate supervisors the work of repairers, mechanics, equipment operators and laborers engaged in the repair and maintenance of water distribution lines and services. Receives and reviews various periodic production reports of the various water distribution operators. Researches, designs, and develops solutions to improve efficiency and effectiveness of various water distribution operations. Assists in technical investigation related to the development and preparation of plans and specifications of new construction work in the water distribution system. Schedules, conducts, and participates in management meetings. Approves requisitions for equipment, supplies and materials needed for completion of work projects. Communicates and enforces established safety measures and regulations. Makes recommendations regarding hiring, discipline and promotion of subordinates; authorizes leave and overtime; reviews performance evaluations prepared by subordinates and evaluates and rates employee performance. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Thorough knowledge of the methods, materials and techniques involved in the construction, repair and maintenance of underground water distribution systems.</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>ASSISTANT WATER & SEWER SUPERINTENDENT</i>
	<p>Thorough knowledge of the properties and uses of various types of pipes and meters. Considerable knowledge of supervisory principles and practices. Considerable knowledge of hydraulics and utility accounting procedures. Considerable knowledge of departmental policies, practices, and procedures. Considerable knowledge of occupational hazards and safety precautions required for pipeline construction and repair projects. Ability to supervise directly and through subordinate supervisors the work of large construction or maintenance crews engaged in pipe system repairs and water meter repairs in a manner conducive to full performance and high morale. Ability to inspect and determine quality of work performed by subordinates. Ability to establish and maintain effective working relationships with subordinates and supervisors. Ability to express ideas and information clearly and concisely. Ability to prepare administrative reports. Ability to identify areas of improvements and develop and implement solutions. NEW 10-86</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>CHIEF, WATER & SEWER DIVISION</i>
Minimum Qualifications	Bachelors degree. A minimum of four to eight years of experience in a large water and sewer utilities to include responsibility for repair and maintenance of water distribution systems is required.
Wage Band	\$87,265.88 - \$137,195.76
Job Description:	<p>NATURE OF WORK</p> <p>This is highly responsible professional managerial work planning and directing the functions of a division of the Miami-Dade Water & Sewer Department. An employee in this class is responsible for planning, directing and coordinating diversified activities of a division. Responsibilities include providing direction and guidance to subordinate supervisory staff on a variety of issues pertaining to the operation of the division. The incumbent exercises considerable independent judgment in the management of various division services and in the resolution of complex administrative problems. Supervision is exercised through subordinate supervisors over professional, technical and clerical employees engaged in various phases of division operations. General direction is received from an administrative superior who holds the incumbent responsible for the professional management of division activities and services.</p> <p>ILLUSTRATIVE TASKS</p> <p>Plans, assigns and reviews the work of subordinate supervisors, specialized and clerical employees engaged in providing division service activities and functions for the Miami-Dade Water & Sewer Department. Attends various planning and programming meetings with departmental and other officials; participates in the development and implementation of new and revised policies and procedures to improve division activities and services. Ensures the development and maintenance of tracking and report systems for division activities and services. Conducts analytical reviews of division operational activities to install improvements or implement new programs. Interprets County, state and federal regulations and policies as they pertain to the management and operation of the division. Coordinates division procurement activities consistent with departmental and County policies and procedures. Prepares and reviews budget estimates and documents; administers budget for the division; reviews and authorizes requisitions for equipment, materials and supplies. Establishes and maintains effective working relationships with subordinates, superiors, the public, officials of various local and federal agencies and representative of various private organizations doing business at the airport, to assure compliance with airport rules and regulations and to resolve operational problems. Represents the department with various local, state, federal agencies, and at state, national and international conferences; attends meetings with Airport divisional heads, and other County departments. Supervises the development of agreements, contracts and leases to ensure compatibility with established policies of county, state and federal rules and regulations. Develops and implements training programs to enhance employee job performance and operational activities.</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>CHIEF, WATER & SEWER DIVISION</i>
	<p>Makes recommendations and decisions regarding hiring, discipline and promotion of subordinates; authorized leave and overtime; reviews employee performance reports prepared by subordinates and rates employees' performance. Performs other related duties.</p> <p>KNOWLEDGES, SKILLS AND ABILITIES</p> <p>Thorough knowledge of the County Administrative Orders. Thorough knowledge of County regulations and ordinances. Thorough knowledge of the principles of business and public administration. Considerable knowledge of public relations principles and techniques. Knowledge of supervisory principles and practices. Ability to gather, analyze, interpret, summarize and present complex data in a logical format. Ability to express ideas and information clearly and concisely, verbally and in writing, to groups and individuals. Ability to establish and maintain effective working relationships with a variety of public and private officials. Ability to analyze a variety of administrative and operational problems and make sound recommendations for their solution. Ability to exercise judgment and discretion in the application of departmental policies and procedures to a variety of complex problems. Ability to enforce established rules and regulations with firmness, tact and impartiality. Ability to determine if departmental standards have been met and redirect priorities. Ability to supervise subordinates in a manner conducive to full performance and high morale. NEW - 11/15/2006</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER CADASTRAL TECHNICIAN</i>
Minimum Qualifications	High school diploma or GED. Three years of technical drafting experience to include the preparation of working plans and drawings using AutoCADD are required. One year of technical surveying experience may substitute for one year of the required drafting experience. Completion of coursework in Engineering may substitute for the required experience on a year-for-year basis.
Wage Band	\$37,584.56 - \$59,872.54
Job Description:	<p>NATURE OF WORK</p> <p>This is advanced technical work in cadastral engineering. Employees in this classification act as principal assistants to professional engineers in performing a variety of the more responsible and technical cadastral engineering tasks. Work requires a considerable knowledge of engineering surveying, land surveying and real property interests. Cadastral Technicians frequently supervise subordinate technical personnel. All work is subject to check in progress and upon completion by professional engineers.</p> <p>ILLUSTRATIVE TASKS</p> <p>Checks and verifies plats of subdivisions which have been prepared by land surveyors for official recording. Reviews title search information prepared by abstractors to determine ownerships and other property interests. Prepares and checks legal descriptions of property to be acquired for road right-of-way or other public purposes. Performs difficult surveying computations to determine bearings and distances included in legal descriptions and area of tracts of land. Checks executed instruments of conveyance and related documents for proper form, accuracy and completeness. Supervises the preparation of exhibits, maps and sketches as needed in connection with acquisition functions and condemnation proceedings. Makes routine field trips to obtain information concerning property descriptions and property values. Trains lower level technical personnel by informal on-the-job instruction. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES AND SKILLS</p> <p>Thorough knowledge of principles, techniques and instruments of engineering drafting. Considerable knowledge of mathematics through trigonometry and its application to sub-professional engineering and surveying computations. Considerable knowledge of the basic principles of civil engineering and land surveying. Considerable knowledge of interests in real property and instruments of conveyance and documents related thereto. Ability to perform difficult surveying computations. Ability to read and interpret a wide variety of maps, plans, aerial photographs, survey notes and other cartographic records. Ability to understand and follow complex oral and written instructions. Skill in the use of engineering drafting instruments and equipment. NEW 10-73</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER SECRETARY</i>
Minimum Qualifications	High school diploma or GED. One year of advanced clerical experience is required.
Wage Band	\$30,109.56 - \$46,555.08
Job Description:	<p>NATURE OF WORK:</p> <p>This is advanced secretarial and related clerical work for the Miami-Dade Water & Sewer Department. Employees in this class are responsible for performing advanced secretarial duties for water & sewer officials, administrators and managers. Work includes utilizing the full range of modern secretarial skills to perform secretarial duties, operation of word processing equipment, personal computers, typewriters and other office equipment, assigning and reviewing the work of lower-level clerical employees, and preparing a variety of reports, forms, requisitions and correspondence. Duties may include taking and transcribing dictation, which may involve financial, engineering or technical terminology. Supervision is received from an administrative official who reviews work for the efficient and effective performance of secretarial duties in support of unit operations.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Performs advanced secretarial duties for officials, administrators and managers of the Miami-Dade Water & Sewer Department; makes appointments and maintains calendar; arranges for conferences and meetings; attends meetings and conferences taking minutes or summary notes. Opens and distributes mail; maintains control of correspondence flow through work unit and assures that response deadlines are met; composes correspondence or selects standardized formats; prepares a variety of reports, correspondence, documents, forms and requisitions. Receives visitors and screens telephone callers; acts as receptionist and answers requests for information involving department, division or work unit activities and established policies and procedures. Operates word processing, personal computer or advanced typewriting equipment to prepare and create reports, generate correspondence or other documents, and complete forms, requisitions, and other similar standardized records. Assigns and reviews the work of lower-level clerical employees engaged in typing, filing and other clerical activities; provides advice and assistance as questions arise concerning work tasks and work unit procedures. Retrieves and assembles material from files; authorizes expenditures from petty cash funds; requisitions office supplies; performs arithmetic calculations as needed. Takes and transcribes dictation as required, involving technical or specialized terminology. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Considerable knowledge of secretarial procedures, methods, and techniques. Knowledge of modern office procedures, practices, and equipment. Knowledge of business English, spelling, and arithmetic. Knowledge of the records, reports, and forms utilized in the area of assignment. Knowledge of the policies,</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER SECRETARY</i>
	procedures, and regulations of the Miami-Dade Water & Sewer Department. Some knowledge of County organization and operations. Some knowledge of supervisory principles and practices. Ability to establish and maintain an effective working relationship with a government official. Ability to operate modern office equipment. Ability to search for and compile information from files and other sources. Ability to make minor decisions in accordance with office procedures and departmental regulations. Ability to develop and maintain effective departmental and public relations. Skill in the operation of a computer keyboard. Skill in typewriting. NEW 10-94

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER ACCOUNT CLERK</i>
Minimum Qualifications	High school diploma or GED. One year of experience in bookkeeping; completion of a one year business program in bookkeeping; or completion of six semester credits in Accounting are required.
Wage Band	\$28,083.90 - \$43,029.74
Job Description:	<p>NATURE OF WORK:</p> <p>This is specialized clerical work in the application of elementary bookkeeping principles to the maintenance of accounting or fiscal records for the Miami-Dade Water & Sewer Department. Employees in this class maintain accounting records involving varied but routine bookkeeping operations in posting and balancing journals, ledgers and other records. Work may involve the operation of standard office equipment such as calculators and computer terminals for which no previous training is required. Incumbents may provide guidance and assistance to subordinate clerical personnel. Supervision is received from a superior through verification of financial records and statements, and review through audit by internal or external auditors.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Maintains cash, invoice, disbursement or control accounts; balances accounts and prepares routine reports; takes trial balances. Checks and codes invoices; prepares vouchers for payment and maintains voucher register. Compiles figures for use in preparation of preliminary budgets. Charges cost items to cost journals; extends, proves and assembles cost records; posts monthly cost records to ledgers. Counts, proves, records, and prepares reports on daily cash receipts; posts to cash ledgers; prepares daily bank deposit; reimburses concession managers for cash disbursements; prepares reports on daily cash disbursements and posts to disbursement journal.</p> <p>Pre-audits fiscal documents for completeness, accuracy and compliance with well defined departmental accounting procedures. Classifies receipts and expenditures according to standard accounting classifications. Maintains time, material, and equipment rental cost account records for capital improvement and maintenance projects. Schedules preparation of warrants in order to take advantage of discounts for prompt payment. Operates calculators, computer terminals and other standard office equipment. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Knowledge of bookkeeping principles and practices. Some knowledge of standard office practices, methods, and equipment. Some knowledge of fiscal policies and procedures applicable to the area of assignment. Ability to make arithmetic computations rapidly and accurately. Ability to apply bookkeeping principles to the maintenance of routine fiscal and accounting records. Ability to maintain detailed records of inventory and accounting transactions. Ability to understand and follow verbal and written instructions. Ability to learn the operation of calculators, computer terminals, and other standard office and</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER ACCOUNT CLERK</i>
	accounting machines for which no significant previous training is needed. NEW 1-96

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER SEMI-SKILLED LABORER</i>
Minimum Qualifications	Eighth grade. Six months of experience as a general helper or laborer are required. Must possess a driver's license.
Wage Band	\$25,162.28 - \$33,7686.28
Job Description:	<p>NATURE OF WORK:</p> <p>This is heavy manual work involving limited skills in various maintenance and construction tasks for the Miami-Dade Water and Sewer Department. Employees in this class perform laboring tasks requiring some acquired skills in the use of hand tools, power tools and equipment, or occasional operation of light automotive equipment. Duties may involve the maintenance of water treatment buildings and equipment, assisting in the repair of various types of sewer pipes, and assisting journeymen in a variety of trade and craft areas. Employees are responsible for the upkeep and efficient operation of the tools or equipment used. Instructions are usually received verbally and routine tasks are performed with considerable independence, while more difficult work is performed under the supervision of a skilled trades employee or crew leader. All work is subject to inspection in progress and upon completion.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Chips and scrapes water treatment units and contact basin weirs to remove calcium buildup and maintain proper flow; assists in maintenance and cleanup of operational equipment and areas. Assists in the installation and repair of various sizes of clay, PVC, galvanized and cast iron pipes above and below ground; sets up cones and directs traffic as necessary; performs hand-digging in difficult areas inaccessible to heavy equipment. Operates pressure cleaning equipment to clean water treatment units, buildings and other structures. Assists in the installation and repair of various water meters; operates jackhammer or gas saw to cut sidewalks. Operates pick-up truck or other vehicle to transport tools, equipment and supplies; loads and unloads equipment and supplies on and off of trucks or other utility vehicles. Operates power mowers, small tractors, saws, edgers, clippers and other equipment used in landscaping and roadside maintenance. Operates, cleans and maintains large power-spraying equipment used to control insects, plant pests, and weeds. Assists in surface preparation and spray painting of signs; cleans, sands, straightens, and repairs signs. Maintains tools and equipment used; cleans and makes minor repairs; performs routine preventive maintenance. Assists in maintaining work areas; removes trash, debris and waste materials from treatment plant areas. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Knowledge of basic methods, materials, and techniques used in maintenance and construction work. Knowledge of power tools and equipment used in water and sewer maintenance activities. Knowledge of occupational hazards and safety precautions applicable to the area of assignment. Ability to operate pick-up or other trucks, small tractors, and similar automotive equipment. Ability to</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER SEMI-SKILLED LABORER</i>
	understand and follow verbal and written instructions. Ability to assist in the installation, repair, and maintenance of a variety of water and sewer facilities and equipment. Ability to work out-of-doors occasionally under adverse weather conditions. Skill in the operation of power tools and equipment. Physical strength and agility sufficient to perform heavy manual labor. NEW 10-96

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER MAINTENANCE REPAIRER</i>
Minimum Qualifications	Eighth grade. One year of experience performing semi-skilled maintenance and repair tasks or assisting with maintenance and repairs in any of a variety of the skilled trades is required. Must possess a CDL/Class
Wage Band	\$28,257.84 - \$39,073.06
Job Description:	<p>NATURE OF WORK:</p> <p>This is semi-skilled work in the performance of a variety of maintenance and repair tasks in one or more trades areas for the Miami-Dade Water and Sewer Department. Employees in this class perform a variety of general maintenance work, which approaches the journeyman level but does not require as high a degree of skill. Employees are frequently called upon to perform rough maintenance and repair work covering several utility, mechanical or building trades areas. Assignments are usually received verbally, may be accompanied by sketches or diagrams, and are generally specific as to the nature of the work. Employees may devise their own methods of accomplishing assigned tasks and may work with some independence. All work is subject to inspection in process and upon completion by a skilled trades employee or technical supervisor.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Assists in the installation and repair of various sizes of clay, PVC, galvanized, and cast iron pipes above and below ground; assists in the repair and installation of various sizes of water mains and services. Operates jetter, vector, and side lift equipment. Checks and maintains fluid levels on mobile equipment, crew trucks, side lifts, and air compressors on a daily basis; checks and maintains truck stock such as fittings, clamps and chemicals. Assists in drilling manhole walls, inserting probes, and inserting grout for repairs. Assists in the repair and maintenance of hydraulic, electronic, and hydronic systems on jettors and vectors. Repairs and maintains small tools including tamper/wackers, jackhammers, light-towers, root cutters, gas and air saws, and pneumatic hand tools. Performs smoke tests by placing blowers over manholes and dropping smoke bombs into manholes; keeps simple test records and submits reports. Assists in the repair and overhaul of pumps, shafts and other mechanical items; cleans and maintains pump station equipment and keeps simple records. Replaces defective light bulbs and fluorescent lights; replaces burned out fuses; cuts, threads and bends conduit pipe to sizes and lengths required by electricians. Makes general minor repairs to wood fixtures; assists in the installation of doors, door jams, and other hardware fixtures. Mixes plaster, mortar and cement; assists journeymen engaged in building or repairing brick, stone or tile walls, and structures. Prepares walls for painting and does rough painting; erects scaffolding. Assists in repair and overhaul of air conditioning and refrigeration equipment. Assists plumbers by unstopping sinks, toilets, sewer lines, and similar facilities. Makes minor repairs to riding lawnmowers, push mowers, weed eaters and edgers; changes oil, adjusts and cleans equipment. Loads and unloads materials; cleans tools and work area upon completion of projects. Performs related work as required.</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER MAINTENANCE REPAIRER</i>
	KNOWLEDGES, ABILITIES, AND SKILLS: Knowledge of the standard tools, materials, methods, and practices of a variety of trades areas. Knowledge of the occupational hazards and safety precautions applicable to the area of assignment. Ability to understand and follow verbal and written instructions. Ability to understand and work from rough sketches and diagrams. Ability to make rough estimates of time and material requirements for maintenance and repair assignments. Skill in the care and use of tools, materials and equipment of various trades areas. Skill in the operation of power tools and equipment. Physical strength and agility sufficient to perform assigned duties. NEW 12-96

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER MAINTENANCE MECHANIC</i>
Minimum Qualifications	Eighth grade. One year of experience installing, maintaining and overhauling pumps, engines, or heavy equipment is required. Must possess a CDL/Class B.
Wage Band	\$32,655.48-\$46,819.24
Job Description:	<p>NATURE OF WORK:</p> <p>This is skilled work in the maintenance and repair of buildings, machinery and mechanical equipment for the Miami-Dade Water and Sewer Department. Employees in this class perform specialized mechanical work in a manual trade or skilled work in more than one craft. Work involves the maintenance and repair of mechanical equipment, machinery and electrical apparatus used at a wide variety of water and sewer buildings and facilities including pumping equipment and accessories, piping, water tanks, pneumatic and hydraulic tools, and gasoline and diesel-powered equipment. Employees work independently using hand tools, power tools and various precision-measuring and testing instruments. Assignments may be in the form of sketches, diagrams or written instructions and may involve locating defective parts or determining the cause of malfunctioning equipment. Work is reviewed by a technical supervisor who inspects work occasionally in progress and upon completion for compliance with instructions and satisfactory operation of equipment repaired and maintained.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Overhauls, repairs and maintains pumping equipment; inspects and determines extent of required repairs, removes equipment, disassembles pumps, replaces and installs bearings and packing sleeves, removes and installs impellers and wear rings, installs rebuilt pumps, aligns shafts of motors to pumps, and tests pump units for proper operation. Performs rough welding to repair pumping equipment, pump bases, motor bases, piping, and water tanks; replaces fittings or re-pipes seal water systems. Performs preventive maintenance work through removing and inspecting pumping equipment, taking accurate measurements and pressure readings and conducting visual inspections; repairs valves and piping. Operates shop equipment including lathe to trim impellers and perform minor shaft repairs, and operates drill press, shear and brake in the fabrication of equipment such as water tanks, pump bases and wet well covers. Repairs and overhauls various types of gasoline and diesel equipment including tamper plates, cement mixers, and arrow boards. Repairs and overhauls various types of pneumatic and hydraulic tools including air impact tools, jackhammers, sump pumps, air saws, and grinders. Repairs and overhauls various types of mechanical tools such as tapping machines, reed pipe cutters, rigid pipe cutters, and pipe theaters. Designs, manufactures, and installs cabinets and shelving for clamps, fittings and other small tools stored on crew trucks. Repairs and maintains all parts on jettors and vactors including pressure hoses, gauges, and pumps. Repairs and overhauls hydraulic pumps, high pressure pumps, generators, and air compressors. Makes simple time and material estimates for proposed jobs; maintains records of equipment repaired and maintained.</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER MAINTENANCE MECHANIC</i>
	<p>Observes established safety practices and procedures. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Considerable knowledge of the methods, materials, tools, and practices used in a specialized trade or in the building, electrical or mechanical crafts. Considerable knowledge of the occupational hazards and safety precautions of the building, electrical, and mechanical trades. Knowledge of the principles of mechanics. Knowledge of the operating, repair, and maintenance characteristics of a wide variety of specialized mechanical and electrical equipment used in water and sewer installations. Knowledge of the operating, repair, and maintenance characteristics of a wide variety of mechanical and electrical equipment in use in water and sewer buildings and facilities. Ability to detect malfunctions in machinery and equipment and make necessary repairs or adjustments. Ability to work from verbal or written instructions, simple diagrams, and sketches. Ability to make simple time and material estimates. Skill in the use of a variety of hand tools, machines, and power tools used in a craft or in building and machinery repair work. Physical strength and agility sufficient to perform assigned duties. NEW 10-96</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>SEWER INSPECTION TECHNICIAN 1</i>
Minimum Qualifications	High school diploma or GED. One year of experience in sewer maintenance or electronics is required. Must possess a CDL/Class B with a Tanker endorsement.
Wage Band	\$31,773.82-\$44,376.02
Job Description:	<p>NATURE OF WORK</p> <p>This is technical work in the operation of a mobile closed-circuit television inspection and chemical sealing unit in the wastewater infrastructure. Employees in this class work as part of a team in conducting internal inspection of underground sewer lines and sealing defective lines to prevent groundwater infiltration. Work requires the operation of cable winches and video power cables. Employees may drive a TV Grout unit truck as assigned. Supervision is received from a technical superior at the site who provides instruction on work operations and reviews completed assignments.</p> <p>ILLUSTRATIVE TASKS</p> <p>Maintains the TV Grout truck and equipment; prepares the TV Grout truck with the necessary equipment for the day's assignment. Adjusts the tension on the trackers used to mount the camera equipment and lowers the camera underground; assists the Sewer Inspection Technician 2 in activating and adjusting television camera and monitors control for optimal clarity and contrast. Assists the Sewer Inspection Technician 2 in preparing descriptions of each identified sewer defect and recording all pertinent data including exact location of defect; obtains addresses and locates clean-outs of residences or vacant lots for each line segment for entry into the computer system; makes atlas corrections. Fills out manhole inspection forms. Assists the Sewer Inspection Technician 2 in operating remote control units inflating and deflating packer unit to complete sealing operations. Measures and mixes basic sealing chemicals in compound tank and checks set-up time of sealing compound. Erects barricades or traffic cones to protect equipment operators at the site. Assists the Sewer Inspection Technician 2s in the man entry inspection of large diameter pipes. Inspects air supply of breathing apparatus and completes confined space entry permits. Locates sewer laterals and rear easement manholes. Plugs off line segments with leaks as necessary to complete inspections. Drives TV Grout unit truck; performs the work of the Sewer Inspection Technician 2 in his absence. Performs confined space entry into manholes and large diameter pipes; opens and monitors confined space entry permits. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS</p> <p>Knowledge of the types and properties of sewer line construction, sewer layouts, gases encountered and wastewater characteristics. Knowledge of the operation and maintenance of a closed-circuit TV system and a chemical sealing unit and attachments. Knowledge of methods, practices, techniques, materials, tools, and equipment employed in detecting and correcting groundwater infiltration into sewer lines. Knowledge of sewer inspection and maintenance. Knowledge of occupational hazards and necessary safety precautions. Ability to perform minor</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>SEWER INSPECTION TECHNICIAN 1</i>
	repair and maintenance of electrical and electronic systems. Ability to determine proper chemical mixture and set-up time. Ability to operate video camera viewer and audio-visual recorder. Ability to prepare accurate records showing conditions of sewer lines. Ability to perform sealing operations in manholes. Ability to work with hand tools. Ability to read, and interpret maps, blueprints, schematics, and plans. Ability to understand and follow oral and written instructions. Ability to maintain effective working relationships with fellow employees and work as part of a team. NEW 6/19/2013

MDWASD – WWCTLD Staffing	
Job Title:	<i>SEWER INSPECTION TECHNICIAN 2</i>
Minimum Qualifications	High school diploma or GED. One year of experience in the inspection of water and sewer lines to include the operation of video equipment is required. Must possess a CDL/Class B with a Tanker endorsement.
Wage Band	\$37,578-\$52,978.90
Job Description:	<p>NATURE OF WORK</p> <p>This is technical work in the operation of a mobile closed circuit television inspection and chemical sealing unit in wastewater infrastructure. Employees in this class direct a team of employees conducting internal inspection of sewer lines and sealing defective lines to prevent groundwater infiltration. Functional direction is exercised at the site, in the absence of supervisor, through verbal instructions during scanning and sealing operations and review of work upon completion. Incumbents are required to drive a TV Grout unit truck. Supervision is received from a technical superior who sets work priorities and confers on work problems.</p> <p>ILLUSTRATIVE TASKS</p> <p>Inspects sewer lines using a mobile closed circuit television camera; activates and adjusts television camera and monitors control for optimal clarity and contrast; records all pertinent data including exact location of defect by conducting continuous surveys of the county's underground sewer mains and services; locates and identifies unrecorded installations. Locates, identifies and documents degree of damage for infiltration and exfiltration points and sewer defects; records descriptions of identified sewer line and lateral defects during inspections; reports immediately any emergency repairs needed to the crew supervisor. Records landscape conditions of area with video camera equipment prior to inspection. Drives TV Grout unit truck. Reads and interprets Geographic Information System (GIS) and Enterprise Assets Management System (EAMS) gravity mains maps to ensure proper equipment number is used to document findings in the Granite XP System. Maintains and submits daily records and performs data transfer of all work performed; prepares atlas corrections as needed to request the addition or removal of line segments. Conducts manhole rehabilitations using chemicals, sealants and masonry. Determines chemical composition based on type of sealing activity and prepares or oversees preparation of compound. Conducts large diameter man entry pipe inspections to identify pipe defects; insures all safety protocols are followed. Conducts various types of grout repairs to stop ground water infiltration; operates remote control units inflating and deflating packer unit to complete pipe sealing operations. Conducts trenchless repairs to pipe and liner defects; inspects sewer laterals from the mainline and inspects submerged pipes to identify debris fields or deformities using a sonar system. Performs confined space entry into manholes and large diameter pipes; opens and monitors confined space entry permits. Investigates the source of smoke leakage by inspecting sewer lines once smoke tests have identified possible defects; responds to customer back-up complaints. Communicates with immediate supervisor to coordinate the shutdown of pump stations and monitoring of sewer levels. Supervises a crew as the lead man; instructs technicians and other team personnel in inspection and sealing operations; trains employees in the operation of the TV Grout system;</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>SEWER INSPECTION TECHNICIAN 2</i>
	<p>directs safety measures to include work zone traffic control. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES AND SKILLS</p> <p>Considerable knowledge of the operation and maintenance of a closed circuit TV system and a chemical sealing unit. Considerable knowledge of the types and properties of sewer line construction. Considerable knowledge of sewer layouts, gases encountered and wastewater characteristics. Considerable knowledge of occupational hazards and necessary safety precautions. Knowledge of methods, practices, techniques, materials, tools and equipment employed in detecting and correcting water infiltration into sewer lines. Knowledge of sewer inspection, maintenance and repair procedures. Ability to read and interpret maps, blueprints, schematics and plans. Ability to determine proper chemical mixture and set-up time. Ability to supervise work of a small crew effectively. Ability to establish and maintain effective working relationships with employees and supervisors. Ability to prepare accurate records showing conditions of sewer lines. Ability to operate video camera viewer and audio visual recorder. Ability to operate TV Grout unit equipment. Ability to communicate orally. NEW 6-19-2013</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER AUTO EQUIPMENT OPERATOR 2</i>
Minimum Qualifications	High school diploma or GED. Six months of experience in the operation of medium-duty trucks such as dump trucks, flatbed trucks, single unit cargo trucks, tank trucks or similar equipment are required. Must possess a CDL/Class A .
Wage Band	\$30,562.74-\$42,922.62
Job Description:	<p>NATURE OF WORK:</p> <p>This is advanced skilled work in the operation of large vehicles and similar types of public works equipment for the Miami-Dade Water & Sewer Department. Employees in this class are responsible for operating tractor trailers, heavy duty road rollers, front end loaders, small bulldozers and other vehicles used principally for maintenance and construction purposes. Incumbents are responsible for the safe and efficient operation of the equipment and for performing routine pre-operational checks and routine preventive maintenance. Work requires skill and dexterity in using simultaneous control mechanisms on assigned vehicles. Supervision is received from a maintenance or construction supervisor who reviews work in progress and upon completion for proper equipment operation and thoroughness in carrying out assigned tasks.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Transports construction equipment using a low bed trailer; operates tractor trailer in local hauling tasks; loads and unloads vehicles as required. Operates heavy duty road roller in resurfacing and roadway construction. Operates front end loader or small tractor rigged with hydraulic loading lift and back hoe digging shovel. Operates amphibious vehicles used in spraying and removing vegetation from canals and waterways. Drives truck and operates hydraulic aerial hoists used in tree maintenance; uses crane and winch attachments for loading and placing various equipment and materials. May operate smaller earth-moving equipment such as bulldozers, graders, and mobile hydrocranes. Operates mow trim or boom-mounted saw to trim roadside vegetation and canal banks. Operates large dump truck to haul construction materials or debris. Operates large street sweeper for road maintenance. Operates a single bed trash truck with chipper attachment to cut back visual obstructions and hazardous roadside vegetation. Performs routine pre-operational checks and routine preventive maintenance of equipment; makes minor adjustments to equipment in the field. May assist labor crew with assigned tasks or direct labor crew on landscape or construction jobs. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Knowledge of the operational characteristics of large vehicles and larger types of automotive equipment. Knowledge of large vehicles and public works equipment used for maintenance and construction purposes. Knowledge of safe driving techniques and the occupational hazards of motorized equipment operation. Knowledge of local traffic rules and regulations. Some knowledge of the geography and road network of the metropolitan area. Ability to operate an assigned vehicle in the prescribed manner. Ability to detect malfunctions while operating heavy equipment. Ability to make minor adjustments and to perform</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER AUTO EQUIPMENT OPERATOR 2</i>
	minor servicing of assigned automotive equipment. Skill in the operation of heavy automotive and public works equipment. NEW 10-94

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER HEAVY EQUIPMENT OPERATOR</i>
Minimum Qualifications	High school diploma or GED. Two years of experience operating heavy construction equipment to include backhoe, excavator, lowboy and payloader are required. Must possess a CDL/Class A. Must obtain a Tanker endorsement during the probationary period. An operator proficiency test will be administered during the interview selection process.
Wage Band	\$34,592.22-\$49,037.04
Job Description:	<p>NATURE OF WORK</p> <p>This is skilled work in the operation of heavy-duty earth-moving equipment utilized by the Miami-Dade Water & Sewer Department.</p> <p>Employees in this class operate large diesel-powered vehicles used in varied maintenance and construction tasks. Duties include the operation of equipment with complex control systems requiring a high degree of manipulative skill and dexterity. Incumbents are responsible for the safe and efficient operation of the equipment and for performing routine pre-operational checks and routine preventive maintenance. Supervision is received from a field supervisor who inspects work in progress and upon completion for effective equipment operation and compliance with engineering standards.</p> <p>ILLUSTRATIVE TASKS</p> <p>Operates an excavator used for major pipeline installation and repairs; properly places sheeting and shoring necessary to safely allow workmen to be in the trench area; sets pumps and well points. Operates combination backhoes used for minor and major pipeline installation and repairs of various size pipe lines; works in confined or restricted area; excavates around underground utilities; cleans up previously excavated debris and properly backfills excavations; loads dump trucks and safely transports equipment. Operates front end loaders used for major pipeline installation and repairs including the movement of large amounts of debris and loading of dump trucks and the restoration of roadways and the spreading of asphalt. Operates trenchers used to cut wide trenches in hard rock areas for pipeline installation. Operates ditchers used in the installation of small water service lines. Operates a skid steer loader to clean up in very confined working zones and for placing sod. Operates a power broom used to clean up construction site areas. Operates a mobile hydraulic crane or sidelif used in pipeline installation. Operates a dump truck used for the hauling of various types of materials from job sites. Operates a lowboy used to transport heavy equipment to and from job sites. Operates a water tank used for the watering down of construction sites to minimize dusty conditions and water freshly planted sod. Operates large diesel powered, heavy-duty pay loader used in the loading of raw wastewater solids, such as grit grease, rags, and plastic material. Operates large diesel powered machines specifically designed to turn cake sludge on asphalt drying beds used to dry this material for the purpose of removing as much moisture as possible before disposing. Operates large diesel powered screening equipment used to screen dried sewage sludge resulting in a finished end product of Class "AA" sludge for sale to an outside market. Operates diesel powered vactor machines to clean sewer lines at plants and clean floating debris from treatment process tanks. Operates tractor and broom</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER HEAVY EQUIPMENT OPERATOR</i>
	<p>to empty grit bins at plants and street clearings; maintains the drying beds by removing weeds; clears roadways; performs the jetting of sewer lines; cleans debris from treatment tanks. Performs pre-operational checks and routine preventive maintenance on equipment; completes paperwork detailing work activities. May serve as a crew leader over a small field crew of equipment operators and laborers. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS</p> <p>Considerable knowledge of the operating characteristics of heavy-duty earth-moving equipment. Considerable knowledge of the occupational hazards and safety precautions applicable to the operation of construction equipment. Knowledge of basic maintenance requirements of heavy construction equipment. Knowledge of different soil types and conditions and the digging techniques required by each in order to excavate safely. Ability to detect malfunctions while operating heavy construction equipment. Ability to make adjustments and to perform minor maintenance to heavy equipment. Ability to perform earthwork according to engineering specifications. Ability to operate equipment in confined or restricted areas. Skill in the operation of large earth-moving equipment. NEW 2/28/2007</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>PIPEFITTER</i>
Minimum Qualifications	High school diploma or GED. One year of experience in pipefitting or performing installations, maintenance, or repair on infrastructure of water and sewer systems is required. Must possess a CDL/Class B.
Wage Band	\$34,150.22-\$49,085.14
Job Description:	<p>NATURE OF WORK:</p> <p>This is skilled pipefitting work in the installation, repair and maintenance of water pipe systems. Work involves performing pipefitting tasks of a journeyman level in the installation, repair and maintenance of all pipelines in the county water system. Work is usually performed under the supervision of a foreman, although work may be carried out in shop or field without immediate supervision. Incumbents in this class occasionally supervise a small group of laborers, making work layouts on the basis of verbal or written instructions, blueprints or sketches usually received from a foreman.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Installs, replaces and maintains steel, wrought iron, cast iron, galvanized, copper, brass and other types off pipe of various sizes employed in water distribution lines; measures, cuts and fits tile or asbestos cement pipe. Cuts, saws, threads, bends and reams pipe; solders joints or tubing; caulks pipe joints with lead; makes screwed flange connections and welded joints; installs, repairs and replaces valves and other fittings which are integral parts off pipelines; fastens and installs pipe hangers and braces; grinds and checks valves; repairs pipe leaks; and replaces worn flanges and gaskets. Cleans pipes and applies protective coating; checks for leaks and other defects in valves, meters and water mains off various sizes. Installs, repairs, and maintains standard and high pressure fire hydrants; maintains related distribution systems. Uses pipe dies, power threading and cutting machines, reamers, tapping machines, hammers, chisels, wrenches, saws, caulking tools, acetylene torches and other tools and equipment involved in the installation, repair and removal of pipes, pipe fittings, meters and valves. Occasionally supervises the work of a small number of maintenance laborers. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Considerable knowledge of the methods, practices, techniques, materials, tools and equipment employed in joining, jointing, fitting, cutting, bending and threading all types of water distribution pipes. Knowledge of the performance of various pipe materials under a wide variety of conditions. Knowledge of the hazards of the trades, and of necessary precautionary measures. Ability to direct and supervise a small group of maintenance repairmen and laborers in a manner conducive to full performance and high morale. Ability to work from blueprints, sketches, and oral instructions. Skill in the use of tools and in the application of techniques of the trade. NEW 4-73</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER FLOW METER TECHNICIAN</i>
Minimum Qualifications	Graduation from an accredited high school. GED or high school equivalency is acceptable. One year of experience performing semi-skilled maintenance or repair tasks on water and/or sewer facilities is required. Must possess a CDL/Class B license. Tanker endorsement preferred.
Wage Band	\$30,633.46-\$42,502.98
Job Description:	<p>NATURE OF WORK:</p> <p>This is technical work in the installation, maintenance and removal of open and closed-channel flow monitoring equipment. Employees in this class perform duties in the installation and operation of flow meters used to measure sewage flow through pump stations before and after repairs are conducted to document the impact of corrective actions on system performance. Duties include installing and starting flow meter equipment, ensuring the meters are operating properly, inputting information through the use of a lap top computer, and removing flow meter equipment. Employees may be assisted by a semi-skilled helper in the performance of assigned duties. Supervision is received from a technical supervisor who reviews work for conformance with established policies and procedures.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Installs, maintains, and removes open and closed-channel flow monitoring equipment. Determines the presence of toxic gases in confined spaces using a gas detector; observes established safety practices and procedures; visually checks the amount of sewage flowing into the pump station. Determines the proper type of flow meter to be installed based upon grease content and access to inlet. Connects meter to lap top computer; inputs pipe diameter, pipe material, and level of flow and actual velocity using a portable velocity meter; starts meter to verify that readings are accurate. Disconnects lap top computer from flow meter; secures an anchor to wall in manhole and secures flow meter to anchor. Maintains flow meters by checking readings at pump stations to verify their accuracy, and returning to manholes to clean meters, as required. Removes flow meters after use; connects lap top computer to flow meter to generate reports on sewage flow. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Knowledge of sewer lines, sewer layouts, pump stations, and sewage flow characteristics. Knowledge of the installation, maintenance, and removal of open and closed-channel flow monitoring equipment. Knowledge of the occupational hazards and safety precautions applicable to the work. Some knowledge of lap top computer operation. Ability to install, maintain, and remove flow meters in accordance with departmental procedures. Ability to follow verbal and written instructions. Ability to operate lap top computer equipment used in the installation and removal of flow meters. Physical strength and agility sufficient to perform assigned duties. NEW 10-96</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER EVALUATION & REVIEW SPECIALIST</i>
Minimum Qualifications	Graduation from an accredited high school. GED or high school equivalency is acceptable. Three years of experience in the inspection of water and sewer lines to include the operation of video equipment are required. Must possess a Class B with a tanker endorsement.
Wage Band	\$44,291.00-\$71,555.38
Job Description:	<p>NATURE OF WORK</p> <p>This is advanced technical work in the review of inspection sewer videos produced by a mobile closed circuit television unit in a Miami-Dade Water & Sewer facility. Employees in this class review digital videos produced by a team of employees conducting internal inspections of sewer lines. Emphasis of the work in on identifying and evaluating defects which allow water infiltration or exfiltration, determining the most cost effective method of repair required and referring to appropriate personnel for repairs. Supervision is received from a technical superior who sets work priorities and confers on work problems.</p> <p>ILLUSTRATIVE TASKS</p> <p>Operates television and computer network in reviewing CD or downloaded videos to identify defects in sewer lines; reviews for information concerning sewer conditions including weather at the time of televising, pump station number, manhole numbers, and specific description of the location. Evaluates each identified defect and determines the method of repair required based on the severity of defect or line segment and economical factors; enter findings into database. Issues repairs to in-house forces or construction management based on the method of repair required such as pipe replacement, cured in-place liners, fold and form liners, point repairs, robotic point repairs, sectional repairs or grouting; updates database with repair completion dates. Verifies accuracy and audits sewer system inventory by comparing information received from various methods of inspection such as smoke testing, manhole or TV inspection; atlases and databases. Performs field surveys noting surface composition such as asphalt, concrete restoration, curb and gutter and driveways; elevation and approximate estimates of water tables; ground composition such as clay or sand; and impediments to construction such as trees, foliage, overhead utilities or structures and noting known crossings of underground facilities and photographing pertinent surface conditions. Performs related work as necessary.</p> <p>KNOWLEDGES, SKILLS AND ABILITIES</p> <p>Knowledge of the types and properties of sewers and construction. Knowledge of sewer layouts and water flow characteristics. Knowledge of methods, practices, techniques, materials, tools and equipment employed in detecting and correcting water infiltration into sewer lines. Knowledge of sewer inspection, maintenance and repair procedures. Ability to read and interpret maps, blueprints, schematics and plans. Ability to establish and maintain effective working relationships with employees and supervisors. Ability to interpret and input data with minimal supervision. Ability to communicate effectively, both verbally and in writing. NEW 3/01/2007</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER VALVE EXERCISE TECHNICIAN</i>
Minimum Qualifications	High school diploma or GED. One year of experience working with water distribution systems is required. Must possess a CDL/Class B.
Wage Band	\$31,704.40-\$45,455.54
Job Description:	<p>NATURE OF WORK</p> <p>This is skilled work in the exercise of valves in the water distribution system to ensure valves are operable. Employees in this class monitor the proper exercise of valves in the water distribution system. Responsibilities include monitoring and assisting semi-skilled workers in the valve exercise process, reviewing atlas pages, and field verification and measurement of valve coordinates; confirming and entering all data associated with exercising valves and requesting GIS updates; completion of works orders and entering work orders, time booked and vehicle usage into the Enterprise Asset Management Systems (EAMS) on a daily basis; and generating work orders for items needing attention or repair such as missing and buried valve boxes and broken valves. Work is generally performed independently in the field, but receives supervision from a technical superior who evaluates quality of work through observation, and measures quantity of work through review of reports submitted.</p> <p>ILLUSTRATIVE TASKS</p> <p>Instructs, monitors and assists subordinates in the valve exercising process; ensures daily production quota of valves exercised is met. Completes works orders, books time, labor and vehicle usage daily into the EAMS using a laptop computer. Confirms and enters all data associated with exercising valves daily and requests GIS updates. Reviews atlas pages; performs field verification and measures all coordinates for each valve. Generates works orders for items that need attention or repair such as missing and buried valves boxes and broken valves. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS</p> <p>Knowledge of the principles and practices applicable to the maintenance of a water distribution system. Knowledge of the methods, practices and techniques used in the exercise of valves. Knowledge of computers and data management systems used by the department. Knowledge of the occupational hazards and safety precautions of the work. Ability to work independently in the field. Ability to supervise work of a small crew effectively. Ability to establish and maintain effective working relationships with employees and supervisors. Ability to keep records and prepare reports on work accomplished. Ability to read atlas pages. NEW 2/13/2012</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER LATERAL REPAIRER</i>
Minimum Qualifications	High school. One year of experience in maintenance repair work or assisting in the maintenance and repair of sewer lines is required. Must possess a Commercial Drivers/Class B license with a tanker endorsement.
Wage Band	\$32,655.48-\$46,819.24
Job Description:	<p>NATURE OF WORK:</p> <p>This is skilled work in the inspection, cleaning and repair of laterals in the County sewer system. Employees in this class are responsible for investigating customer complaints pertaining to the sewer system, sewer backups, and infiltration and leaks through flow meter monitoring, sewer line televising and visual inspection. Duties include grouting and cleaning sewer lines as necessary, conducting smoke bomb tests to detect leaks and illegally connected storm drains, and completing required job orders and reports. Supervision is received from a field supervisor who reviews work occasionally in progress and upon completion for satisfactory inspection, cleaning and repair of laterals.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Locates sewer laterals; inspects sewer laterals and mains using a TV truck; grouts and cleans sewer lines as necessary. Installs flow meters in manhole inverts and pump stations; monitors flow using remote equipment or by reading flow meter charts. Visually inspects storm drain catch basins. Conducts smoke bomb tests to detect leaks and illegally connected storm drains. Performs manhole investigations to check for infiltration in County sewer lines. Conducts field investigations of customer complaints concerning the sewer system or sewer backups; notifies property owners when leaks are found in private lines. Performs dye tests to verify if customer is connected to the County sewer system. Clears lateral stoppages using snakes with appropriate headers such as root or grease cutters. Completes job orders, work tickets and unscheduled maintenance reports. Observes established safety practices and procedures. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Knowledge of the types and properties of sewer line construction, sewer layouts, gases encountered, and water flow characteristics. Knowledge of the methods, practices, and techniques used in clearing sewer blockages in sewers and laterals. Knowledge of the methods, practices, and techniques used in detecting and correcting water infiltration into sewer lines. Knowledge of pump station operations. Knowledge of the performance of various pipe materials under a wide variety of conditions. Knowledge of the practices, methods, and materials used in the maintenance and repair of sewer laterals. Knowledge of sewer inspection and maintenance practices. Knowledge of basic plumbing techniques applicable to working on sewers and laterals. Knowledge of the occupational hazards and safety precautions of the work. Ability to locate sewer laterals. Ability to determine the proper chemical mixture and set-up time for grouting operations. Ability to operate a video camera viewer and audio visual recorder. Ability to prepare accurate records indicating conditions of sewer lines. Ability to</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER LATERAL REPAIRER</i>
	operate sewer jettors and vactors. Ability to interpret flow isolation information. Ability to understand and follow verbal and written instructions. Ability to read and interpret sketches, blueprints, and diagrams. NEW 10-94

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER ENGINEERING DRAFTER 2</i>
Minimum Qualifications	High school diploma or GED. Three years of technical drafting experience to include the preparation of working plans and drawings using AutoCADD are required. One year of technical surveying experience may substitute for one year of the required drafting experience. Completion of coursework in Engineering may substitute for the required experience on a year-for-year basis.
Wage Band	\$34,771-\$54,789.64
Job Description:	<p>NATURE OF WORK:</p> <p>This is advanced technical work in engineering drafting for the Miami-Dade Water and Sewer Department. Employees in this class are responsible for performing a variety of advanced responsible and technical drafting and office engineering tasks. Responsibilities may include preparing and verifying field information concerning water and sewer facilities and structures, drafting engineering drawings pertaining to water and sewer engineering projects, assisting in the preparation of cost estimates, drawing topographic and hydrographic maps and various alterations, assisting the public with information concerning water and sewer facilities, and operating computer-aided design and drafting software. Work requires a considerable knowledge of basic civil engineering principles and practices. Supervision is received from a professional superior who reviews work for quality and adherence to established engineering drafting standards.</p> <p>ILLUSTRATIVE TASKS:</p> <p>Prepares and verifies field findings for repairs, corrections, improvements and updates of water and sewer conduit systems including structural conditions and infiltration and exfiltration potential; verifies as-built records, plats and sketches. Prepares plans and detailed layouts of sewage collection systems, pump stations, and right-of-way data. Drafts topographic and hydrographic maps, alterations, and updates demonstrating contours, roads, canals, sewer transmission systems and other physical features. Checks and verifies locations, elevations, dimensions, and pertinent statistical data for updates and corrections of as-built data and blueprint information. Drafts and provides design assistance for wastewater and water treatment systems and facilities; assists with the preparation of cost estimates. Prepares sketches for new water services, retirement of existing services, new fire lines and new fire hydrants using property surveys and plats, as-built drawings, field survey notes and proposed construction plans. Supplies developers, engineers, contractors, surveyors, and the public with information regarding existing and proposed water and sewer facilities. Prepares Bill of Sale exhibits for water and sewer agreements; drafts sketches from as-built plans, prepares bill of materials, and clarifies errors and/or omissions with field inspectors. Prepares exhibits from developer-furnished and surveyor-prepared real property legal descriptions. Performs related work as required.</p> <p>KNOWLEDGES, ABILITIES, AND SKILLS:</p> <p>Considerable knowledge of the principles, practices, techniques, and instruments of engineering drafting. Considerable knowledge of mathematics</p>

MDWASD – WWCTLD Staffing	
Job Title:	<i>WATER & SEWER ENGINEERING DRAFTER 2</i>
	through trigonometry and its application to sub professional engineering computations. Considerable knowledge of the basic principles of civil engineering related to topographic surveying and engineering drafting. Considerable knowledge of blueprints, construction plans and specifications related to water and sewer engineering projects. Knowledge of computer-aided design and drafting software. Ability to perform difficult technical engineering computations and to compile engineering data and statistics. Ability to prepare difficult and technical engineering drawings, manually or through the use of a computer-aided design and drafting system. Ability to read, understand and interpret a wide variety of maps, engineering plans and other technical engineering documents. Ability to understand and follow complex technical verbal and written instructions. Skill in the use of engineering drafting instruments and equipment. NEW 10-96

APPENDIX E

PRIOR MONTH'S STATUS REPORTS

GRAVITY SEWER SYSTEMS OPERATIONS AND MAINTENANCE PROGRAM

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MDWASD WCTL Division Prior Month's Work Order Status Report <i>For</i> Click here to enter a date.						
Date Opened	Work Order #	PS Basin #	Type ¹	SSO ²	Status ³	Comments

¹ Type Code: R=Reactive; P=Preventative; E=Emergency
² SSO: Y=Yes; N=No
³ Status Code: O=Open; C=Closed; and P=Pending Close

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MDWASD WCTL Division Prior Month's Equipment Problems Status Report For <i>[Insert Month/Year]</i>					
Date of Occurrence	Equipment Description ⁴	Problem Code ⁵	Crew District ⁶	Status ⁷	Comments

⁴ Equipment Description: Use a pull down menu of IMS defined Fleet Equipment
⁵ Problem Code: Use existing systems for identifying equipment issues
⁶ Crew District: N=North; CW=Central West; CE=Central East; S=South
⁷ Status Codes: R=Repaired; S=In Shop for Repair; U=Equipment Unsuable; and NA=No Action Taken

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APPENDIX F

WWCTLD 2012-2014 PRODUCTIVITY REPORTS

GRAVITY SEWER SYSTEMS OPERATIONS AND MAINTENANCE PROGRAM

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Table F.1
 2012-2014 WWCTLD Inspections by Type

Activity	2012-2013	2013-2014
Special Work	0	0
Cone of Influence (Wellfield Protection Ordinance)	414,984	0
I/I Program Inspection (VSCO Ordinance)	800,632	941,328
PSIP	0	0
Large Diameter Force Main/Interceptor Inspection	36,811	0
Total (Feet)	1,252,427	941,328
Inspection Functions		
Smoke Testing	598,397	865,562
TV Inspection	1,252,427	941,328
Total (Feet)	1,850,824	1,806,890
Manhole Inspection	5,753	4,640
Lateral Inspection	409	990
Total (Each)	6,162	5,630

Table F.2
 2012-2014 M&R Operations and Maintenance Productivity
Each

Description	2012-2013	2013-2014
Gravity Main Point Repair	93	142
Manhole Repair	1,295	1,563
Force Main Repair	41	56
Valve Repair	26	20
Manhole Sealing	79	85
<i>Grout</i>		<i>Feet</i>
Mainline Joint	209 (Ft)	0 (Ft)
Lateral Grout	8 (Ea)	174 (Ea)

Table F.3
2012-2013 M&R Capital Activities

Activity	Each	
Lateral Replacement	1,307	1,146
Automatic ARV Installations	2	14
Manual ARV Installations	6	1
Valve Installation	19	6
Manhole Installation	23	6
	<i>Feet</i>	
Force Main Installation	0	0
Gravity Line Segment Replacement	0	0

Table F.4
2012-2014 M&R Section Maintenance and Repair Functions

Activity	2012-2013	2013-2014
Lateral Replacement	1,307	1,146
Gravity Main Point Repair	93	142
Manhole Repair	1,295	1,563
Force Main Repair	41	56
Valve Repair	26	20
Automatic ARV Installation	2	14
Manual ARV Installation	6	1
Valve Installation	19	6
Manhole Installation	23	6
Manhole Sealing	79	85
<i>Total (Each)</i>	2,891	3,039
Grout		
Mainline Joint	209 (Ft)	0 (Ft)
Lateral Grout	8 (Ea)	174 (Ea)
Force Main Installation	0	0
Gravity Line Segment Replacement	0	0
<i>Total (Feet)</i>	0	0

Table F.5
2012-2014 Support Activities Provided by the WWCTLD

Flow Measuring	# Of Stations Completed	
	2012-2013	2013-2014
Night Flow Survey	277	283
PSIP Metering	0	0
I/E/I Program Pre/Post-Meter	0	0
Night Flow SCADA	1,988	988
Total	2,265	1,271
Activity	Year	
Cleaning	2012-2013	2013-2014
Scheduled Maintenance	983,678	890,559
I/E/I Program	1,215,616	941,328
Total (Feet)	2,199,294	1,831,887
Miscellaneous	Each	
	2012-2013	2013-2014
Air Release Valves Exercised	3,807	5,824
Mainline Valves Exercised	6,022	6,049
Automatic Air Release Valves Rebuilt	210	227
Dye Test	234	185
Lateral Location	55	53

Table F.6
WWCTLD Trouble Investigation Findings

Findings	2012-2013	2013-2014
Other, NOT a Sewer Problem	303	529
Main Stoppage	1,192	876
Customer Problem	1,315	1,268
Lateral Stoppage	147	271
Station Problem	39	16
Broken Lateral	115	126
Broken Force Main	35	30
Broken or Missing Manhole Cover	18	6
Broken Gravity Main	14	32
Broken ARV	43	21
System Surcharged	26	40
Main Stoppage Due To Grease	N/A	30

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APPENDIX G

FY2015/16 WWCTLD BUDGET AND GSSOMP RECOMMENDED RESOURCE AUGMENTATION

GRAVITY SEWER SYSTEMS OPERATIONS AND MAINTENANCE PROGRAM

APPENDIX G

FY2015/16 WWCTLD BUDGET AND GSSOMP RECOMMENDED RESOURCE AUGMENTATION

GRAVITY SEWER SYSTEMS OPERATIONS AND MAINTENANCE PROGRAM

Miami-Dade Water and Sewer Department
Gravity Sewer System Operation and Maintenance Program

Table G.1
Summary of WWCTLD Proposed Budget Submittal for FY2015/16

Budget Cost Category ¹	FY14-15 Budget	FY2015-16 Proposed Budget
Personnel Services	\$ 11,639,563	\$ 2,439,300
Contractual Work	\$ -	\$ 400,000
Professional Services	\$ -	\$ 400,000
Labor	\$ 8,707,202	\$ 2,035,000
Overtime	\$ 1,535,000	\$ 2,035,000
Regular Time ²³	\$ 7,172,202	\$ TBD
Labor Burden	\$ 2,932,361	\$4,300 (TBM)
Contractual Prof Svc	\$ 2,501,200	\$ 4,712,800
Contractual Work	\$ 2,501,200	\$ 4,712,800
Construction	\$ 115,300	\$93,200
Construction Materials Supplier	\$5,000	\$5,000
Other	\$ 1,500,000	\$ 4,000,000
Professional Services	\$ 880,900	\$ 614,600
County Services	\$ 757,100	\$ 986,800
GSA Other Services	\$25,200	\$56,900
Services	\$47,200	\$ 151,300
Supplies	\$ 684,700	\$ 778,600
G&A Expenses⁴	\$ 4,720,700	\$ 6,814,200
Contractual Work	\$45,300	\$ 104,100
Equipment	\$ 2,997,100	\$ 4,101,900
Equipment Supplies	\$ 309,600	\$ 492,900

¹ FY2014/15 and FY2015/16 presented. This data was compiled from the WWCTLD Proposed Budget Submittal Report for Fiscal Year 2015 / 2016 dated 1/13/2015 (Budget). The major headings are consistent with the headings used in the Budget. The sub-headings were created for GSSOMP organizational and display purposes.

² In the MDWASD budgeting process this line item is populated at a later date by Human Resources once requested actual new staff additions have been approved and all wage, insurance, and other labor costs have been determined.

³ To be determined (TBD). To be modified (TBM)

⁴ The Proposed Budget Report contains two separate headings for G&A Expenses, these were duplicated to facilitate report comparison for QA/QC purposes.

Table G.1 continued
Summary of WWCTLD Proposed Budget Submittal for FY2015/16

Budget Cost Category ¹	FY14-15 Budget	FY2015-16 Proposed Budget
Fees	\$ 2,350,000	\$ 3,164,800
Maintenance	\$53,700	\$ 125,400
Repairs	\$26,700	\$33,400
Safety	\$ 257,100	\$ 285,400
G&A	\$51,800	\$52,000
Materials	\$ 1,541,100	\$ 2,444,200
Consumables	\$24,000	\$26,300
Equipment Supplies	\$4,800	\$4,700
Materials	\$ 1,512,300	\$ 2,413,200
Services	\$1,100	\$5,000
Supplies	\$59,400	\$77,400
Training	\$24,900	\$29,600
Total	\$ 19,618,563	\$ 14,953,100 (TBM)

Table G.2
WWCTLD Personnel Services Budgets, FY2014/15 and Proposed
FY2015/16 (without labor)

Budget Category⁵	FY14-15 Budget	FY15-16 Proposed Budget
Personnel Services	\$ 11,639,563	\$ 2,439,300
Contractual Work		\$ 400,000
Professional Services		\$ 400,000
Labor	\$ 8,707,202	\$ 2,035,000
Overtime	\$ 1,535,000	\$ 2,035,000
Regular Time	\$ 7,172,202	
Labor Burden	\$ 2,932,361	\$ 4,300
Fringe Benefits	\$ 2,931,961	\$ 300
Indirect Labor		
Time off	\$ 400	\$ 4,000
Grand Total	\$ 11,639,563	\$ 2,439,300 (TBM)

⁵ This series of tables is provided to document the steps used to estimate the TBD and TBM line items in the Personnel Services section of the budget. FY2014/15 Regular Time and Fringe Benefits were moved to the corresponding lines in the FT2015/16 budget, and represents an estimate of the funding requirements for the *status quo*. They do not include new employees. These fields will be populated by data from Human Resources once projections for labor costs for the existing staff and Requests for a New Budgeted Employee have been approved/denied and processed.

Table G.3
WWCTLD Personnel Services Budgets, FY2014/15 and Proposed FY2015/16
(with labor)

Budget Category	FY14-15 Budget	FY14-15 Extrapolated Labor	FY15-16 Proposed Labor	FY15-16 Proposed Budget
Personnel Services	\$11,639,563		\$2,439,300	\$12,543,463
Contractual Work			\$ 400,000	\$ 400,000
Professional Services			\$ 400,000	\$ 400,000
Labor	\$ 8,707,202		\$2,035,000	\$9,207,202
Overtime	\$ 1,535,000		\$2,035,000	\$2,035,000
Regular Time	\$ 7,172,202	\$ 7,172,202		\$7,172,202
Labor Burden	\$ 2,932,361		\$ 4,300	\$2,936,261
Fringe Benefits	\$ 2,931,961	\$ 2,931,961	\$300	\$2,932,261
Indirect Labor				
Time off	\$ 400		\$ 4,000	\$ 4,000

Table G.4
WWCTLD FY2015/16 Estimated Full Proposed Budget

Budget Category	FY15-16 Proposed Budget	Modified FY15-16 Proposed Budget
Personnel Services	\$ 2,439,300	\$12,543,463
G&A Expenses	\$ 6,814,200	\$ 6,814,200
Contractual Professional Services	\$ 4,712,800	\$ 4,712,800
County Services	\$ 986,800	\$ 986,800
Total	\$ 14,953,100	\$ 25,057,263

Table G.5
FY2015/16 WWCTLD New Staff Requests

Budget Cost Category⁶	No.	FY15/16 Cost
Admin	4	\$ 342,412
Administrative Officer 1	1	\$ 78,157
W&S Information Tech Specialist	1	\$ 100,265
W&S Projects Inspector	1	\$ 99,051
W&S Secretary	1	\$ 64,939
Evaluation & Review	3	\$ 278,932
Engineer 1	1	\$ 119,762
W&S Account Clerk	1	\$ 60,119
W&S Evaluation & Review Specialist	1	\$ 99,051
Inspection. North	6	\$ 346,321
Sewer Inspection Technician 1	1	\$ 63,075
Sewer Inspection Technician 2	1	\$ 75,167
W&S Maintenance Repairer	2	\$ 111,290
W&S Semi-Skilled Laborer	2	\$ 96,789
Inspection South	7	\$ 406,439
Sewer Inspection Technician 1	1	\$ 63,075
Sewer Inspection Technician 2	1	\$ 75,167
W&S Account Clerk	1	\$ 60,119
W&S Maintenance Repairer	2	\$ 111,290
W&S Semi-Skilled Laborer	2	\$ 96,789
Inspection, Flow Meter	3	\$ 171,779
W&S Flow Meter Technician	1	\$ 60,489
W&S Maintenance Repairer	2	\$ 111,290
M&R Central	8	\$ 501,927
Pipefitter	1	\$ 69,388

⁶ As requested by the WWCTLD on the Request for a New Budgeted Employee forms.

Table G.5 continued
FY2015/16 WWCTLD New Staff Requests

Budget Cost Category⁶	No.	FY15/16 Cost
Pipefitter Supervisor	1	\$ 95,995
W&S Heavy Equipment Operator	1	\$ 69,502
W&S Maintenance Repairer	1	\$ 55,645
W&S Semi-Skilled Laborer	3	\$ 145,183
W&S Sewer Lateral Repairer	1	\$ 66,216
M&R North	8	\$ 501,927
Pipefitter	1	\$ 69,388
Pipefitter Supervisor	1	\$ 95,995
W&S Heavy Equipment Operator	1	\$ 69,502
W&S Maintenance Repairer	1	\$ 55,645
W&S Semi-Skilled Laborer	3	\$ 145,183
W&S Sewer Lateral Repairer	1	\$ 66,216
M&R South	8	\$ 501,927
Pipefitter	1	\$ 69,388
Pipefitter Supervisor	1	\$ 95,995
W&S Heavy Equipment Operator	1	\$ 69,502
W&S Maintenance Repairer	1	\$ 55,645
W&S Semi-Skilled Laborer	3	\$ 145,183
W&S Sewer Lateral Repairer	1	\$ 66,216
Total	47	\$ 3,051,666

Table G.6
Proposed FY2015/16 WWCTLD GSS Refurbishment and Replacement Budget

Budget Cost Category	No.	FY15/16 Cost
WWTCLD General	23	\$7,939,663
<i>Equipment</i>	18	\$2,394,663
Excavator, Trackhoe, Caterpillar. Model 338	1	\$ 350,000
Loader, backhoe combo, 410 John Deere	7	\$1,396,500
Truck, Crew Cab, 1 ton, 4x4 Cab & Crew Chassis (24,500 lb) GVW	1	\$ 73,500
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 10,000 lb GVW	1	\$ 51,670
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 10,000 lb GVW, Steel High Top	1	\$ 66,769
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 10,000 lb GVW, Utility Body	2	\$ 128,164
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 12,000 lb GVW	2	\$ 118,314
Truck, pickup, 3/4 Ton, 4x4 Cab & Chassis, V8	1	\$ 52,246
Van, step, 133", 12-ft body, 10,000 lb	2	\$ 157,500
<i>System Replacement</i>	2	\$5,020,000
Laterals, Sewer Service	1	\$5,000,000
Manholes, Replacement	1	\$ 20,000
<i>Tools</i>	3	\$ 525,000
Equipment, Shop, Tools (over \$1,000)	1	\$ 250,000
Equipment, Shop, Tools (over \$1,000), M&R Section	1	\$ 250,000
Equipment, Shop, Tools (over \$1,000), S. Miami Heights	1	\$ 25,000
Inspection North	1	\$ 66,769
<i>Equipment</i>	1	\$ 66,769
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 10,000 lb GVW, Steel High Top	1	\$ 66,769
Inspection South	1	\$ 27,300
<i>Equipment</i>	1	\$ 27,300
Forklift, 4000 lb	1	\$ 27,300
M&R Central	3	\$ 319,500
<i>Equipment</i>	3	\$ 319,500
Loader, Bobcat, Trailer, Hydraulic attachments, and hydraulic pavement breaker	1	\$ 75,000
Loader, Front End	1	\$ 199,500
Trailer, 20 ton, Pintle hook	1	\$ 45,000

Table G.6 continued
Proposed FY2015/16 WWCTLD GSS Refurbishment and Replacement Budget

Budget Cost Category	No.	FY15/16 Cost
M&R North	2	\$ 258,657
<i>Equipment</i>	2	\$ 258,657
Loader, backhoe combo, 410 John Deere	1	\$ 199,500
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 12,000 lb GVW	1	\$ 59,157
M&R South	3	\$ 158,500
<i>Equipment</i>	3	\$ 158,500
Dewatering, Well point, 8"	1	\$ 25,000
Excavator, mid-size, rubber tracks	1	\$ 60,000
Truck, Crew Cab, ., 4x4 Cab & Crew Chassis (24,500 lb) GVW	1	\$ 73,500
Total	33	\$8,770,389

Table G.7
GSSOMP Recommended Year 1 WWCTLD Resource Augmentation

Budget Cost Category	No.	Cost
Evaluation & Rev., GSSOMP		\$ 500,127
<i>Equipment</i>	4	\$ 60,000
Computer, Workstation w/Software Licenses	4	\$ 60,000
<i>Labor</i>	4	\$ 440,127
Engineer 2	1	\$ 131,177
W&S Evaluation & Review Specialist	2	\$ 198,102
W&S Maintenance Planner/Scheduler	1	\$ 110,848
Flow Meter Crew, GSSOMP		\$ 287,785.94
<i>Equipment</i>	3	\$ 75,657
Meters, Conductivity	1	\$ 1,500
Meters, Flow	1	\$ 15,000
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 12,000 lb GVW	1	\$ 59,157
<i>Labor</i>	3	\$ 212,129
W&S Flow Meter Technician	1	\$ 60,489
W&S Maintenance Repairer	1	\$ 55,645
W&S Sewer Collection Sys. Supervisor	1	\$ 95,995
Manhole Inspection Crew, GSSOMP		\$ 158,242
<i>Equipment</i>	1	\$ 20,000
Truck, Manhole Scanner, yr lease	1	\$ 20,000
<i>Labor</i>	2	\$ 138,242
Sewer Inspection Technician 1	1	\$ 63,0754
Sewer Inspection Technician 2	1	\$ 75,167
TV & Grout Crew, GSSOMP		\$ 1,720,312
<i>Equipment</i>	5	\$ 1,129,157
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 12,000 lb GVW	1	\$ 59,157
Truck, TV & Seal	2	\$ 570,000
Truck, VACTOR	2	\$ 500,000
<i>Labor</i>	9	\$ 591,155
Sewer Inspection Technician 1	2	\$ 126,150
Sewer Inspection Technician 2	2	\$ 150,334
W&S Auto Equip Oper 2	2	\$ 121,888
W&S Semi-Skilled Laborer	2	\$ 96,789
W&S Sewer Collection Sys. Supervisor	1	\$ 95,995
M&R Cleaning Investigation Crew, GSSOMP		\$ 530,184
<i>Equipment</i>	2	\$ 309,157
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 12,000 lb GVW	1	\$ 59,157

Table G.7 continued
GSSOMP Recommended Year 1 WWCTLD Resource Augmentation

Budget Cost Category	No.	Cost
Truck, VACTOR	1	\$ 250,000
<i>Labor</i>	3	\$ 221,027
Pipefitter	1	\$ 69,388
Pipefitter Supervisor	1	\$ 95,995
W&S Maintenance Repairer	1	\$ 55,645
M&R Lateral Investigation Crew, GSSOMP		\$ 181,018
<i>Equipment</i>	1	\$ 59,157
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 12,000 lb GVW	1	\$ 59,157
<i>Labor</i>	2	\$ 121,861
W&S Maintenance Repairer	1	\$ 55,645
W&S Sewer Lateral Repairer	1	\$ 66,216
M&R Repair Crew, GSSOMP		\$ 1,818,452
<i>Equipment</i>	10	\$ 1,008,175
Loader, backhoe combo, 410 JD	2	\$ 399,000
Trailer, 20 ton, Pintle hook	2	\$ 90,000
Truck, Crew Cab, ., 4x4 Cab & Crew Chassis (24,500 lb) GVW	2	\$ 147,000
Truck, Dump	2	\$ 253,861
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 12,000 lb GVW	2	\$ 118,314
<i>Labor</i>	12	\$ 810,278
Pipefitter	2	\$ 138,775
Pipefitter Supervisor	2	\$ 191,989
W&S Heavy Equipment Operator	2	\$ 139,003
W&S Maintenance Repairer	2	\$ 111,289
W&S Semi-Skilled Laborer	2	\$ 96,788
W&S Sewer Lateral Repairer	2	\$ 132,431
Training		
<i>Training</i>	131	\$ 36,650
Training, FW&POCA or similar	91	\$ 22,750
WWCO Certification/CEU, Class A	3	\$ 765
WWCO Certification/CEU, Class B	6	\$ 2,130
WWCO Certification/CEU, Class C	31	\$ 11,005
Overhead		
<i>Overhead</i>	1	\$ 1,193,900
Overhead Expenses as a percentage (47.1%) of Burdened Labor	1	\$ 1,193,900
Total	193	\$ 6,426,671

Table G.8
WWCTLD FY 2015/16 Requested Additional Budgeted Positions and GSSOMP
Recommended Year 1 Staff Augmentation

Budget Cost Category	No.	Cost
GSSOMP	35	\$ 2,534,819
<i>Labor</i>	35	\$ 2,534,819
Engineer 2	1	\$ 131,177
Pipefitter	3	\$ 208,163
Pipefitter Supervisor	3	\$ 287,984
Sewer Inspection Technician 1	3	\$ 189,225
Sewer Inspection Technician 2	3	\$ 225,501
W&S Auto Equip Operator 2	2	\$ 121,888
W&S Evaluation & Review Specialist	2	\$ 198,102
W&S Flow Meter Technician	1	\$ 60,489
W&S Heavy Equipment Operator	2	\$ 139,003
W&S Maintenance Planner/Scheduler	1	\$ 110,848
W&S Maintenance Repairer	5	\$ 278,225
W&S Semi-Skilled Laborer	4	\$ 193,577
W&S Sewer Collection Sys. Supervisor.	2	\$ 191,989
W&S Sewer Lateral Repairer	3	\$ 198,647
O&M	47	\$ 3,051,666
<i>Labor</i>	47	\$ 3,051,666
Administrative Officer 1	1	\$ 78,157
Engineer 1	1	\$ 119,762
Pipefitter	3	\$ 208,163
Pipefitter Supervisor	3	\$ 287,984
Sewer Inspection Technician 1	2	\$ 126,150
Sewer Inspection Technician 2	2	\$ 150,334
W&S Account Clerk	2	\$ 120,237
W&S Evaluation & Review Specialist	1	\$ 99,051
W&S Flow Meter Technician	1	\$ 60,489
W&S Heavy Equipment Operator	3	\$ 208,505
W&S Information Tech Specialist	1	\$ 100,265
W&S Maintenance Repairer	9	\$ 500,805
W&S Projects Inspector	1	\$ 99,051
W&S Secretary	1	\$ 64,939
W&S Semi-Skilled Laborer	13	\$ 629,126
W&S Sewer Lateral Repairer	3	\$ 198,647
Total	82	\$ 5,586,484

Table G.9
Summary of WWCTLD R&R and GSSOMP Recommended Capital Equipment Investments⁷

Budget Cost Category	No.	Cost
GSSOMP	26	\$ 2,661,303
<i>Equipment</i>	26	\$ 2,661,303
Computer, Workstation w/Software Licenses	4	\$ 60,000
Loader, backhoe combo, 410 John Deere	2	\$ 399,000
Meters, Conductivity	1	\$ 1,500
Meters, Flow	1	\$ 15,000
Trailer, 20 ton, Pintle hook	2	\$ 90,000
Truck, Crew Cab, ., 4x4 Cab & Crew Chassis (24,500 lb) GVW	2	\$ 147,000
Truck, Dump	2	\$ 253,861
Truck, Manhole Scanner, yr lease	1	\$ 20,000
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 12,000 lb GVW	6	\$ 354,942
Truck, TV & Seal	2	\$ 570,000
Truck, VACTOR	3	\$ 750,000
R&R	28	\$ 3,225,389
<i>Equipment</i>	28	\$ 3,225,389
Dewatering, Well point, 8"	1	\$ 25,000
Excavator, mid-size, rubber tracks	1	\$ 60,000
Excavator, Trackhoe, Caterpillar Model 338	1	\$ 350,000
Forklift, 4000 lb	1	\$ 27,300
Loader, backhoe combo, 410 JD	8	\$ 1,596,000
Loader, Bobcat, Trailer, Hydraulic attachments, and hydraulic pavement breaker	1	\$ 75,000
Loader, Front End	1	\$ 199,500
Trailer, 20 ton, Pintle hook	1	\$ 45,000
Truck, Crew Cab, ., 4x4 Cab & Crew Chassis (24,500 lb) GVW	1	\$ 73,500
Truck, Crew Cab, 1 ton, 4x4 Cab & Crew Chassis (24,500 lb) GVW	1	\$ 73,500
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 10,000 lb GVW	1	\$ 51,670
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 10,000 lb GVW, Steel High Top	2	\$ 133,538
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 10,000 lb GVW, Utility Body	2	\$ 128,164
Truck, pickup, 1 ton, 4x2 (Cab & Chassis) 12,000 lb GVW	3	\$ 177,471
Truck, pickup, 3/4 Ton, 4x4 Cab & Chassis, V8	1	\$ 52,246
Van, step, 133", 12-ft body, 10,000 lb	2	\$ 157,500
Total	54	\$ 5,886,692

⁷ WWCTLD's capital equipment portion of the FY 2015//16 Proposed Refurbish & Replacement Budget and the GSSOMP recommended Year 1 capital equipment purchases

Table G.10
FY 2015/16 Costs for Recommend On-Call WWCTLD Resources

Budget Cost Category	Cost
On-call Inspection, Maintenance and Repair Contracts	\$22,169,885
Const., CIP Annual	\$ 3,300,000
Const., Dig & Replace Annual	\$ 3,316,680
Const., Dig & Replace Biannual	\$ 5,980,000
Const., Emergency Repair Contract	\$ 364,605
Const., Large Diam. Clean & Repair	\$ 800,000
Const., MH Rehab Annual Contract	\$ 898,500
Const., Sectional Liner Contract	\$ 600,000
Const., SSES Support Annual Contract	\$ 1,000,000
Constr., CIP Biannual	\$ 5,910,100
Total	\$22,169,885

Table G.11
Summary of GSSOMP Recommended WWCTLD FY2015/16
Proposed Budget Additions

Budget Cost Category⁸	FY2015/16
WWCTLD Requests for New Budgeted Positions	\$ 3,051,666
FY2015/16 Proposed Budget ⁹	\$ 25,057,263
On-call Contracts	\$ 22,169,885
R&R Budgets	\$ 8,770,389
GSSOMP Year 1 Augmentation of Resources	\$ 6,426,671
O&M	\$ 4,330,368
Equipment	\$ 2,096,303

Table G.12
Summary of GSSOMP Recommended WWCTLD FY2015/16
Budget by O&M, R&R and On-Call

Budget Cost Category¹⁰	FY2015/16
O&M Items	\$ 32,439,297
R&R Items	\$ 10,866,692
On-call Contracts	\$ 22,169,885

⁸ Summary of the totals from the previous tables.

⁹ Including addition of FY2014/15 Labor Costs to FY2015/16 Labor; Line Item was TBD in budget proposal.

¹⁰ O&M Items: The WWCTLD FY2015/16 Proposed Budget (O&M) plus the recommended Year 1 GSSOMP staffing.
 R&R Items: GSSOMP Equipment Costs (Table G.9) plus the R&R budget.

Table G.13
Recommended 5-yr WWCTLD O&M, R&R, and On-call Contractor Budgets¹¹

Cost Areas	FY2015/16	FY2016/17¹²	FY2017/18	FY2018/19	FY2019/20
O&M Items	\$32.4M	\$34.1M	\$35.8M	\$37.6M	\$38.1M
R&R Items	\$10.9M	\$11.4M	\$12.0M	\$12.6M	\$13.2M
On-call Contracts	\$22.2M	\$23.3M	\$24.4M	\$25.7M	\$26.9M

¹¹ Summary assumes Year 1 of the GSSOMP corresponds to FY2015/16.

¹² Indexed at 5% per year

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