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VIA ELECTRONIC CORRESPONDENCE

May 17, 2017

CCN: 61068
File No: 8.DC.52 & 77

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Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044-7611
RE: DOJ No. 90-5-1-1-4022/1
Tom.Mariani@usdoj.gov

Chief, Clean Water Enforcement Branch
Water Protection Division
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Florida Department of Environmental Protection
Southeast District – West Palm Beach
3301 Gun Club Road, MSC 7210-1
West Palm Beach, FL 33406
Attn: Compliance/Enforcement Section
Jason.Andreotta@dep.state.fl.us

RE: Consent Decree (Case: No. 1:12-cv-24400-FAM)
Reference DOJ Case No. 90-5-1-1-4022/1
Section VI – Information Management System Program, Paragraph 19.(c)

Dear Sir/Madam:

Miami-Dade County (County) is in receipt of your request for additional information related to the December 4, 2015 submittal of the Information Management System Program (IMSP) as required by Paragraph 19. (c) of the above referenced Consent Decree (CD). Following, please find the restatement of EPA/FDEP comments and the County's responses, clarification and/or additional information to your questions and/or comments.

1. Paragraph 19.(c).(ii). of the CD requires that the IMS Program provide an operations IMS component including operations reports and standard operation forms. Please provide an update of implementation of this component, especially SCADA.

RESPONSE: The proposed Operations IMS described in the IMSP submittal includes the following components: SCADA Archives Staffing, Enhanced MORS Functionality, Enhanced Spill Application Module Functionality and Integrated WWCTLD Inspection Tools Functionality. The SCADA Historical has been operational several years, with some of the historical data being captured through MORS. The Planning Section is currently leveraging SCADA historical for model calibration, hydraulic

analyses, and operations optimization. As part of the implementation efforts, MDWASD has initiated the development of a SCADA and Hydraulic Modeling Strategic Vision and Governance Plan with assistance from an engineering consultant. As part of this effort the process for on-boarding of new signals, retiring of obsolete signals, data retention and disposal policies, proposed annual metrics, and other are currently being established. In addition, MDWASD is in the process of deploying the Monthly Operating Reports System (MORS) component of the Operations IMS to the Wastewater Division. As part of the implementation of the Enhanced Spill Application Module Functionality, a GIS Viewer was developed to display previous Sanitary Sewer Overflows (SSO) and identify repeat SSOs. At this time, the 59 hotspot locations are monitored by Smart Cover technology. Level Trend Rise Reports can be produced as needed. Alerts are automatically generated when hotspot's manhole levels reach a set high level advisory point resulting in the creation of maintenance work order. Maintenance field crew are deployed to address the root cause of the surcharged conditions and prevent the occurrence of SSOs. For the WWCTLD Inspection Tools Functionality, the upgrade from Granite XP to GraniteNET has been implemented and the second phase which involves the integration into EAMS will commence.

2. Paragraph 19.(c).(iii). of the CD requires that the IMS Program provide a maintenance IMS component including maintenance reports and standard maintenance forms. Please provide an update of implementation of this component, especially GraniteXP to Granite Net within EAMS.

RESPONSE: MDWASD is in the process of upgrading from GraniteXP to GraniteNET. This is scheduled to be completed by the end of June, 2017. Following the completion of the upgrade, MDWASD plans to begin analyzing requirements to integrate GraniteNET with EAMS such that CCTV videos will be available through EAMS work order to staff in the field.

3. Paragraph 19.(c).(iv). of the CD requires that the IMS Program provide a description of the work reports that will be prepared and submitted, including periodicity of review of such reports. Section 11 of the IMS Program gives a general description of the work reports and states most work reports are generated on demand. More specificity should be given to the periodicity of review of each of these type of work reports.

RESPONSE: Each Division within MDWASD uses EAMS in the manner needed to support its needs. As such, different divisions review reports at different levels of frequency depending on their needs. A list of the work reports, indicating the most frequent typical periodicity of review of each report, is provided in Attachment A.

4. Paragraph 19.(c).(iv). of the CD requires that Miami-Dade update its GIS database to include all as-builts and Active As-built Supplemental Information System (AASIS) forms, including new and corrected asset attribute data by June 6, 2017. Please provide an update of the status of this work.

RESPONSE: As of the end of March 2017, all of the sanitary sewer backlog as-builts have been incorporated within the GIS database. Remaining to complete are 457 sanitary sewer Active As-built Supplemental Information System (AASIS) forms. MDWASD resources are currently working to incorporate all remaining AASIS forms within the GIS database. MDWASD fully expects to meet the June 6, 2017 schedule.

5. Paragraph 19.(c).(iv). of the CD requires that Miami-Dade measure elevations of all manhole rim elevations and sewer inverts at connections to manholes and pump stations and their inclusion into GIS by June 6, 2017. At the time of the IMS submittal, Miami-Dade had only collected 17% of the required elevations. Please provide an update of the status of this work.

RESPONSE: As of the end of March 2017, 92% of the manhole rim elevations and 92% of the manhole pipe inverts have been collected in the field. MDWASD contractors continue with this task, and fully expect to complete the remaining 8% field data collection and GIS update task prior to the June 6, 2017 CD compliance date. At the April 2017 WASD/EPA/FDEP CD Program Update Meeting, WASD proposed that the data that was not obtained in the field, for reasons ranging from encroachments to surcharged manhole or manhole located on private property, be performed as an implementation activity to be added in the CMOM Consolidated Implementation Schedule (CIS). EPA and FDEP agreed that the remaining data, that could not be collected for the aforementioned reasons, could be added to the CIS.

6. Paragraph 19.(c).(xi). of the CD requires that Miami-Dade develop performance indicators. The number of SSOs per mile, or per hundred miles, of gravity sewer is listed in 4 places, under 3 programs, but the number of SSOs per mile of force main only appears under the IMS program. This suggests either an incomplete description was given, or the KPIs are not well developed and correlated across the CMOM Programs.

RESPONSE: The Key Performance Indicator (KPI), "Number of SSOs per mile of Force Main" was not included in the FMOPMARP because the wastewater industry does not generally recognize the value of such a KPI as force main-related SSOs. The number of Force Main SSOs is not considered a function of the length of pipe because it is a closed system. Force mains are unlike gravity sewers, which can have inflow and infiltration (I/I) due to cracked and damaged infrastructure that will contribute to overflows. The length of pipe that could have I/I is irrelevant to Force Mains. The more appropriate KPI as referenced in the FMOPMARP is "Annual number of force main-related SSO events" with a MDWASD Target of "Continuous Improvement". However, "Number of SSOs per mile of Force Main" is shown on Table 05.1 of the IMSP entitled "KPIs from All CMOM Programs" because it was required by the Consent Decree; MDWASD will track this KPI in deference to the CD requirement.

7. Paragraph 19.(c).(xi). of the CD requires that Miami-Dade track maintenance activities by type of maintenance (i.e. corrective, preventative, or emergency). Miami-Dade insists it will continue to use its current system. Add a column to Table 16.1 and a field/category/etc. to the IMS trackers to group the numerous existing User and System Types into these three categories. The existing User and System Types can still be used under the three required headings.

RESPONSE: The updated Table 16.1 is shown below. If needed for operational purposes, EAMS reports can be generated based on the Maintenance Types. The IMSP document has been updated with this table replacing the original Table 16.1.

*Table Error! No text of specified style in document..1 (Updated)
 EAMS Work Order Maintenance and System Types*

Maintenance Type	User Type	System Type	Description	Comments
Corrective	AD	BR	Supervision	Used to track Supervisor time. Could be related to managing a repair or for general overhead hours. Would not be used for Preventive or Emergency work supervision.
Corrective	BRKD	BR	Breakdown	Equipment failure that is not considered an emergency which is noticed during normal course of operations. Equipment will not function.
Corrective	CAL	CAL	Calibration	Not Used.
Corrective	CM	BR	Corrective Maintenance	Equipment correction noticed during normal course of operations. Equipment continues to function until repair can be executed.
Corrective	CPM	BR	Corrective for PM	Equipment correction noticed during Preventive Maintenance. Equipment continues to function until repair can be executed.
Corrective	CRM	BR	Corrective from RM	Equipment correction noticed during Routine Maintenance. Equipment continues to function until repair can be executed.

Maintenance Type	User Type	System Type	Description	Comments
Emergency	EM	BR	Emergency	Emergency Work Order
Preventative	IN	BR	Inspection	Work Order includes an inspection.
Emergency	NAT	BR	Natural Disaster	Work results from natural disaster.
Corrective	NI	BR	New Install / Upgrade	Work is to install new equipment.
Corrective	OPER	BR	Operations	Work is performed by operators. Work is not generally for equipment repair, but for periodic “checks”.
Preventative	PM	PM	Preventative Maintenance	Scheduled work that enhances equipment performance.
Preventative	PRED	BR	Predictive Maintenance	Scheduled work that checks for potential equipment failures.
Preventative	RM	PM	Routine Maintenance	
Corrective	RP	RP	Repairable Spares	Not currently in use. Work Order is to track the internal repair of Parts that will be put back into the storeroom for future use.
Corrective	SR	BR	Service Request	

8. Table 15.1: The table shows 1139 feet of emergency overflow. Please provide a detailed location(s) of these emergency overflows. Please evaluate whether these overflows need to be eliminated, revised, or replaced.

RESPONSE: MDWASD has investigated the above-referenced “emergency overflows” totaling approximately 1,139 linear feet of pipe. The pipe was previously reported as “emergency overflow” because older information was imported into the GIS without field verification. After investigation, MDWASD has found that none of the reported 1,139 feet of pipe is actually for “emergency overflow”. Almost all of the pipes in question are out of service and plugged off. One exception is at NW 23 Street between NW 2nd Ave. and NW 1st Place in Miami. That pipe is effectively a bypass from one

portion of the local wastewater collection system to another. It is not a point of overflow. Table 15.1 in the IMSP has been updated accordingly to eliminate the inaccurate reference to "1,139 feet of emergency overflow"

9. Appendix A: Please provide a completion date for each of the tasks listed in the Appendix.

RESPONSE: Within 30 days after EPA/FDEP approval of all MDWASD CMOM submittals to-date to EPA/FDEP required under CD Section VI., paragraphs 19 (b), (c), (d), (e), (f), (g) & (h), MDWASD will update the CMOM Programs Consolidated Implementation Schedule (CIS) submitted to EPA/FDEP on March 31, 2016 (attached). The update will include re-baselined start and finish dates of each of the implementation activities as the CIS start and finish dates were provisionally set with an April 1, 2016 schedule baseline pending final EPA/FDEP approval of the respective CMOM Programs. With completion of the CIS update, MDWASD will provide a completion/finish date for each listed task in Appendix A as a subsequent supplement/revision to the Information Management System Program dated December 4, 2015.

The above responses serve to clarify the intent of the IMSP submitted to EPA/FDEP on December 4th, 2015, to fully comply with the requirements set forth in Paragraph 19(c) of the CD. Should you have any further questions regarding this matter, please call me at (786) 552-8120.

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,



Bertha M. Goldenberg, P.E., ENV SP, LEED® Green Associate
Assistant Director, Planning and Regulatory Compliance

Attachments: **Attachment A** – List of Work Reports by Periodicity of Review
 Attachment B – Revised Information Management System Program (IMSP)

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Attachment A

List of Work Reports and Periodicity

List Of Work Reports And Periodicity						
Category	Report	Daily	Weekly	Monthly	As Needed	
Inspections	•Inspection route report			X		
	•List of inspection results			X		
	•List of points to be inspected				X	
	•Status of inspection points				X	
Work	•Actual Labor Hours Against Estimated		X			
	•Expired Warranties				X	
	•Daily hours worked per employee	X				
	•VMRS Activities		X			
	•Vehicle Ticket Report	X				
	•Future Maintenance cost			X		
	•Hours needed for task		X			
	•List of WOs Bypassed due to nesting				X	
	•Long term WO list	X				
	•Short Term WO list (Activities)				X	
	•Short term WO list (WOs)			X		
	•Tool Usage	X				
	•WO backlog report	X				
	•WO aging		X			
	•WO cost list				X	
	•WO on - time delivery by employee			X		
	•WO on-time delivery by trade				X	
	•WO Statistics				X	
	Scheduling	•Daily trade schedule	X			
		•Labor required per day or trade		X		
•List of all PM schedules		X				
•Material requirements analysis		X				
•Meter based PM due report		X				
•Schedule Attainment					X	
•Schedule Activities		X				
•Schedule vs. Actual - Detail		X				

List Of Work Reports And Periodicity					
Category	Report	Daily	Weekly	Monthly	As Needed
	•Shift Employee	X			
Projects	•Cost summary by Project and Area	X			
	•EAMS Project detailed costs		X		
	•List of WOs for Project			X	
	•Project cost summary			X	
	•Project POs			X	
	•Project budget code cost summary				X
	•Project costs with overhead details				X
	•Projects with optional AFA				X
•Qualification	•Qualification expiration report				X
	•Qualification requirement report				X
Permits	•List of Permit issues				X
	•Permits for WOs				X
	•Permits Material Accounting		X		
•Inventory Management	•Daily Inventory by Store	X			
	•Monthly Inventory				X
	•Inactive Parts by Store				X
	•Min Max Realignment				X
	•Min Max Realignment with Issues				X
	•Average Monthly Usage			X	
•Parts Issues/Parts Return	•Parts Issue Summary				X
	•Parts Return Summary	X			
	•ROS with Parts Pending Issue	X			
	•Pick Ticket with Parts Pending	X			
	•Divisional STS Parts Pending Issue	X			
	•Stock Issues per Part	X			
	•Stock Issues per Employee	X			
	•Fulfill an ROS	X			
	•Fulfill a pick ticket	X			
	•Fulfill an STS Transfer	X			
General Reports	•ROS Ticket	X			
	•Pick Ticket	X			
	•Parts Issued or Returned by Division	X			

List Of Work Reports And Periodicity		Daily	Weekly	Monthly	As Needed
Category	Report				
	•Parts Issued or Returned by Organization	X			
	•Request of Stores Report Per Cost Code	X			
	•Parts Catalog List		X		
	•Part Issue Summary Associate to Job Order		X		
	•Stores Productivity Report				X
	•Storeroom Individual Productivity		X		
•Physical Inventory	•Daily Inventory by Store		X		
	•Physical Inventory Variances not counted				X
	•Physical Inventory Discrepancies by Aisle		X		
	•Physical Inventory Discrepancies by Column	X			
	•Physical Inventory Complete		X		
•GL Reconcile	•GL Transaction History	X			
	•Store Transaction		X		
•PO Receipts/ PO Returns	•PO Receipts	X			
	•Void Receipt			X	
	•Good Received Note				X
	•Good Return Note				X
	•Return Summary		X		
	•Pending RO Receipts Older than 7 days		X		
	•Divisional Part Inspection By Stores Personnel				X
	•Out of Sync Receipts			X	
Transfers	•Store to Store Issue				X
	•STS Requisitions Approved	X			
	•STS Requisitions Parts Ready	X			
	•STS Requisitions in Transit		X		
Purchasing	•Approved POs Awaiting Delivery		X		
	•Purchase History Per PO/ Supplier		X		
	•PO Cost Summary		X		
	•PO Status		X		
	•POs out Sync		X		
•Equipment	•Cost of WOs per Equipment				X
	•Future Maintenance cost			X	
	•Equipment Hierarchies				X
	•Orphan Equipment- NO Parent Structure				X

List Of Work Reports And Periodicity					
Category	Report	Daily	Weekly	Monthly	As Needed
	•Equipment History				X
	•Equipment Transfer Log				X
	•Equipment (Position/Assets) without a PM			X	
	•Fault trend analysis				X
	•List of Classes				X
	•List of categories per class				X
	•List of Equipment			X	
	•List of Equipment details				X
	•Mean time between failures			X	
	•Mean time between failures per Equipment				X
	•Meter history		X		
	•Table of Equipment with custom fields			X	
	•Warranty Claims	X			
	•WO cost by Equipment		X		
	•WO by Type, Cost, Code or Dept.			X	
	•WO cost of Equipment per location		X		
	•WO cost summary		X		
Communications Center	•Logs and Statistics	X			
	•Disruptions in Water Service		X		
	•Daily Divisional		X		
Distribution	•Administration				X
	•Maintenance & Repair Section				X
	•Service Section				X
	•System Improvement & Relocation Section				X
	•Support & Water Accountability Section				X
	•Division JO Report				X
	•Booked Hours Per Employee per Cost Code				X
	•Work Order Labor Summary				X
	•Distribution ERP Project Cost by Task Profile				X
	•Water Distribution SQL Reports				X
SCADA	•SCADA Biannual RTU-Radio PM Points		X		
	•SCADA Closed WO's by Cost Code		X		
	•SCADA Daily Assignment Report	X			
	•SCADA Work Orders Aging Report			X	
	•SCADA Work Order Report				X

List Of Work Reports And Periodicity					
Category	Report	Daily	Weekly	Monthly	As Needed
	•Overtime Pre-Authorization Form		X		
	•Projects		X		
Fleet	•Equipment Activity Report	X			
	•Equipment Cost Summary			X	
	•Equipment by Division Report		X		
	•Equipment Inventory Report		X		
	•Equipment Inventory with Last PM		X		
	•Equipment Not on a PM Schedule			X	
	•Overdue PM		X		
	•Overdue PM WOs per garage		X		
	•Preventive Maintenance Report		X		
	•PM's Completed Per Equipment		X		
	•Sun Pass Report			X	
	•WO History Report			X	
	•Productivity			X	
	•Loaner Pool Vehicles			X	
General Maintenance	•Distribution ERP Project Cost by Task Profile				X
	•General Maintenance Service Requests	X			
	•Contaminated Fuel				X
	•Fuel Issued Inventory				X
	•Fuel Receipt Inventory				X
	•New Refrigerant			X	
	•Refrigerant Recovery			X	
	•Ballasts and Lamps				X
	•GM Non Standard Work Hours	X			
	•GM PM On Time Performance		X		
	•GM PM Performance HVAC				X
	•GM PM WOs per Facility per Trade			X	
	•GM Life Safety WOs				X
	•GM Life Safety Inspections WOs				X
•PSD Permits	•EAMS Projects Detailed Costs				X
	•PSMD Projects by Status				X
	•PSMD Retired Value				X
	•PSMD Under Blanket				X
	•PSMD Projects Ready to go			X	

List Of Work Reports And Periodicity					
Category	Report	Daily	Weekly	Monthly	As Needed
	•PSMD Projects Progress			X	
	•PSMD Projects Ongoing			X	
	•PSMD Projects on Hold		X		
	•PSMD Project Work Distribution		X		
•PSD Projects	•PSMD Projects Construction Schedule				X
	•PSMD Project Costs by Station number				X
	•PSMD Project Costs ERP Project Number				X
	•PSMD pending Projects				X
	•PSMD Expenditure not in blanket				X
	•PSMD Completed Projects Costs ALL ERs				X
	•PSMD Projects Cost Reconciliation				X
•Overtime	•Overtime Summary Over 10 hours	X			
	•Overtime Summary Over 10 hours with work orders comment	X			
	•Overtime Detail by Comm Center Incident	X			
	•Overtime Detail for all Employees	X			
	•Overtime detail by Employee per trade	X			
	•Overtime detail by Employee per division	X			
•Inspection Work Order Report	•Percent of WOs Changed from Closed to QC				X
	•Percent of WOs changed from QC to Closed				X
	•Percent of WOs Closed with review status of Reviewed				X
	•Water Plants WOs in Data entry QC status over 90 Days				X
	•Water Plants Reviewed by Supervisor				X
	•Water Plants WOs waiting to be corrected by Supervisor				X
	•Water Production Closed work orders				X
	•Water Production Completed work orders				X
Wastewater Collection	•System Valve Exercising Report			X	
	•Wastewater Work Order Report			X	
	•Work Order Issuance Report		X		
	•Work Orders without OT Justification			X	
	•Wastewater Emergency Permit Required				X
	•Emergency CallOut Response Time Anomalies				X

List Of Work Reports And Periodicity		Daily	Weekly	Monthly	As Needed
Category	Report				
	•Emergency CallOut Average Response Time				X
	•FOG Cost Summary				X
	•Monthly Report			X	
	•VSCO			X	
	•Wellfield			X	
	•Dye Test			X	
	•DERM Smoke Test Defect Report				X
	•High Vent Time			X	
	•Manual Air Release Valve Exercising Results			X	
	•Manual Air Release Valve Exercising Report			X	
	•Manual Air Release Valve Route			X	
	•Sewer Cleaning			X	
	•Smoke Test Defect Report			X	
	•Smoke Test Report			X	
	•System Valve Exercising Results				X
Wastewater Treatment	•Wastewater Equipment PM Schedules		X		
	•Wastewater Treatment FY Total Hours and Cost				X
	•Wastewater Treatment Overtime Exceeding 10 Hours		X		
	•Wastewater Treatment Overtime Summary		X		
	•Wastewater Treatment Usage Statistics by Cost Code			X	
	•Wastewater Treatment Work Order				X
	•WWTP Inspection Work Order Report				X
	•WWTP WO Hours Booked by Type Hours Reported				X
	•Wastewater PPMs Estimate vs Actual				X
	•Equipment Out of Service Report		X		
	•Wastewater PM Aging Report		X		
	•Wastewater Work Orders Aging Report		X		
	•Wastewater Equipment Out of Service			X	
	•Wastewater Equipment PM Schedules				X
	•Wastewater Treatment Daily Assignment Report	X			
	•Sewer Cleaning		X		
	•Smoke Test Defect Report		X		
	•Smoke Test Report		X		

List Of Work Reports And Periodicity					
Category	Report	Daily	Weekly	Monthly	As Needed
	•System Valve Exercising Results			X	
General Reports	•Book Labor By Employee	X			
	•Booked Hours per Employee per Cost Code	X			
	•Booked Hours per Employee per Cost Code with Audit	X			
	•Summary of Hours by Work and Hour Type	X			
	•Pump Station WO Summary by Date		X		
	•Divisional WO Summary		X		
	•Vehicle Usage Report		X		
	•Vehicle-Tools Status Report			X	
	•Vehicles Awaiting Repair				X
	•Vehicles Ready to be Picked Up				X
	•All Work Orders by Employee		X		
	•WO Scheduled Labor	X			
	•Overtime Authorization Form	X			
	•Overtime Detail for All Employees	X			
	•Overtime Detail by Comm Center Incident	X			
	•Overtime Justification	X			
	•Time Report	X			
	•Time Report for Cost Code	X			
	•Time Report for Cost Code with Timecode Detail		X		
	•Time Report with Timecode Detail		X		
	•Non Stock Purchases per Division				X
	•WO Aging Report - Detail			X	
	•PMs Upcoming	X			
	•Work Order Type and Hours Summary	X			
	•WO Costs per Task Profile	X			
	•Work Orders with Req/PO Ready to Close	X			
	•Completed JO's Report				X
	•Work Order Labor Summary				X
	•Vehicle Downtime				X
	•Work Order	X			
	•EAMS Usage Statistics			X	
	•GSA Fuel History				X
	•DAR Fema Report				X

List Of Work Reports And Periodicity		Daily	Weekly	Monthly	As Needed
Category	Report				
	•FEMA Cost Estimate				X
	•FEMA Cost Estimate by Work Order				X
	•FEMA Labor Costs				X
	•Non Work Order Time Entry Report	X			
	•Tool Report		X		
	•Auditor Request All Booked Labor				X
Administration	•Application Configuration Guide				X
	•Audit Log				X
	•List of Documents				X
	•List of Infor EAM Codes				X
	•List of Functions				X
	•User Group Configuration				X
	•Rate Checker				X
	•Screen Caching Activated				X
	•Task Profiles				X
	•Who has A Report				X
	•Who has A Grid				X
Complaint Tracking	•Complaint Tracking Summary		X		
	•Complaint Tracking with Customer Info		X		
	•Complaint Tracking Labs Letter	X			
	•Complaints Tracking Labs Results	X			
	•Wastewater Customer Complaints		X		
	•Complaints Summary Per Division				X
	•Complaints per Liaison				X
	•High Level Complaints Summary		X		
Quick Reference Documents	•Pump Stations ERP info				X
	•Pump Stations WO Job Aid				X
Training Materials	•Navigation				X
	•Work				X
	•PM Schedules				X
	•Materials				X
	•Equipment	X			
	•Mobile				X
	•Mobile Inspections				X

List Of Work Reports And Periodicity					
Category	Report	Daily	Weekly	Monthly	As Needed
	•ROS Process				X
	•Service Requests	X			
	•Complaint TRN				X
	•ERP and WASD Systems				X
	•Distribution				X
	•Pump Stations				X
	•Water Production				X
	•General Maintenance				X
	•Communication Center				X
	•Wastewater Collection				X
	•Wastewater				X

Attachment B

Revised Information Management System Program (IMSP)

CMOM Program Information Management System Program



December 4, 2015
Updated on May 17, 2015

Prepared by

**The Miami-Dade Water and Sewer Department and
the Consent Decree CMOM Program Team**

Prepared for

United States Environmental Protection Agency and
Florida Department of Environmental Protection

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Information Management System Program

PREPARED FOR:

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00. Acronyms/Glossary

00.01 Acronyms

Table 00.1
Abbreviations Used in the IMS Program

Abbreviation	Description
AMLG	Asset Management Leadership Group
APTTC	Adequate Pumping Transmission & Treatment Capacity Program
ASE	Active Strategy Enterprise
BI	Business Intelligence
BRE	Business Risk Exposure
CAFR	Comprehensive Annual Financial Report
CC&B	Customer Care and Billing
CCTV	Closed Circuit Television
CD	Consent Decree
CMOM	Capacity, Management, Operations, and Maintenance
CoF	Consequence of Failure
COTS	Commercial-off-the-Shelf (software)
County	Miami-Dade County
CWA	Clean Water Act
EAMS	Enterprise Asset Management System
ERP	Enterprise Resource Planning
ETMS	Elapsed Time Management System
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FMOPMARP	Force Main Operations, Preventative Maintenance, and Assessment / Rehabilitation Program
FMTS	Force Main Transmission System
FOG	Fats, Oils, and Grease
GIS	Geographic Information Systems
GL	General Ledger
GSS	Gravity Sewer System
GSSOMP	Gravity Sewer System Operations and Maintenance Program
IAM	Institute for Asset Management
IMS	Information Management System
IMSP	Information Management System Program
IS	Information Systems
ISO	International Organization for Standardization
IT	Information Technology

Table 00.1
Abbreviations Used in the IMS Program

Abbreviation	Description
KPI	Key Performance Indicator
LIMS	Laboratory Information Management System
LOS	Level of Service
MDWASD	Miami-Dade Water and Sewer Department
MGD	Million gallons per day
MIR	Management IMS Repository
MMSG	Maintenance Management Support Group
MOM	Management, Operations, and Maintenance
MORS	Monthly Operating Report System
MYCIP	Multi-Year Capital Improvement Program
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
OOL	Ocean Outfall Legislation
PAS 55	Publicly Available Standard 55
PCTS	Project Control and Tracking System
PMCM	Program Management and Construction Management
PoF	Probability of Failure
POPS	Put or Pay System
Program	Consent Decree Program or Program Management and Construction Management Services Program
PSD	Pump Station Division
PSIP	Pump Station Improvement Program
PSOPMP	Pump Station Operations and Preventative Maintenance Program
QA/QC	Quality Assurance/Quality Control
R&R	Rehabilitation and Replacement
RAP	Remedial Action Plan
RER-DERM	Miami-Dade Department of Regulatory Economic Resources – Division of Environmental Resource Management
RDII	Rainfall Derived Inflow and Infiltration
SCADA	Supervisory Control And Data Acquisition
SOP	Standard Operating Procedures
SORP	Sewer Overflow Response Plan
SPP	Spare Parts Program
SSES	Sanitary Sewer Evaluation Survey
SSO	Sanitary Sewer Overflow
SSRS	Sewer Spill Reporting System
SSAMP	Sewer System Asset Management Program

Table 00.1
Abbreviations Used in the IMS Program

Abbreviation	Description
SSRS	Sewer Spill Reporting System
USACE	U.S. Army Corps of Engineers
WCTS	Wastewater Collection and Transmission System
WWCTLD	Wastewater Collection and Transmission Line Division
WWTMD	Wastewater Treatment Maintenance Division
WWTP	Wastewater Treatment Plant
WWTP OMP	Wastewater Treatment Plant Operations and Maintenance Program
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) and which is considered a Sanitary Sewer Overflow under the Consent Decree. A wastewater backup or release that is caused by blockages, flow conditions, or other malfunctions of a Private Lateral or internal building plumbing is a Private Building Backup, not a Public Building Backup, and is not considered a Sanitary Sewer Overflow.

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 Miami-Dade 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, entered between Miami-Dade County, Florida (Defendant), the State of Florida, 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, institutions and businesses processing or serving food and other products. A FOG Control Program aims to prevent FOG accumulation in sewer systems.

Florida Department of Environmental Protection (FDEP): State of Florida Department of Environmental Protection and any of its successor departments or agencies.

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 of the 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.

Infiltration and Inflow (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) comprised of pumps which lift wastewater to a higher hydraulic elevation, including related electrical, mechanical, and structural systems necessary to the operation of the lift station (referenced in this document as pump station). As defined in MDWASD's 1996 O&M Manual, lift stations discharge to a downstream gravity main.

Manhole or Junction Box: Part of the gravity sewer system. A structure that 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 successors 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 or to a public sewer in a proper easement.

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 (MDWASD) is required to make a copy of CD designated deliverables available within one business day from the submission of the deliverable to EPA/FDEP in a PDR. MDWASD's PDR is located at 3071 SW 38th Ave and the Miami-Dade Water and Sewer Department's website, <http://www.miamidade.gov/water>.

Public Lateral: The portion of a sanitary sewer conveyance pipe that extends from the private lateral, which typically has a cleanout located at the property line or at the easement line, to the sewer main.

Pump Station: A facility in the WCTS (not at the WWTPs) comprised of pumps which transport wastewater from one location to another location, including all related electrical, mechanical, and structural systems necessary to that pump station. As defined in MDWASD's 1996 O&M Manual, pump stations discharge to a force main, to a booster station, or to a WWTP.

Pump Station Operations and Preventative Maintenance Program (PSOPMP): The Consent Decree stipulated CMOM deliverable that sets forth the protocols and procedures associated with the operations and maintenance of the sewer pump station system.

Repeat SSO: Any SSO event that recurs at the same point within a 12-month period.

Sanitary Sewer Overflow (SSO): Any discharge of wastewater to waters of the United States or the State from Miami-Dade's WCTS 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 building backups. A wastewater overflow, backup, or release that is caused by blockages, flow conditions, or other malfunctions of a Private Lateral or internal building plumbing is not a SSO. MDWASD refers to SSOs that are large (roughly 50,000 gallons or more), on-going, or endanger public health or the environment as "major spills," with the Water Quality Impact Committee (WQIC) making the determination as a group as to which spills are considered major spills requiring public notifications.

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, backups, or releases.

Sewer System: The Wastewater Collection and Transmission System (WCTS) and the Wastewater Treatment Plants (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 (or pump 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 Miami-Dade Water and Sewer Department 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 Water and Sewer Department, including but not limited to the North District WWTP, the Central District WWTP, and the South District WWTP, and all components of those plants.

WWTP Operations and Maintenance Program (WWTP OMP): The Consent Decree stipulated CMOM deliverable that sets forth the protocols and procedures associated with the operations and maintenance of the wastewater treatment plants.

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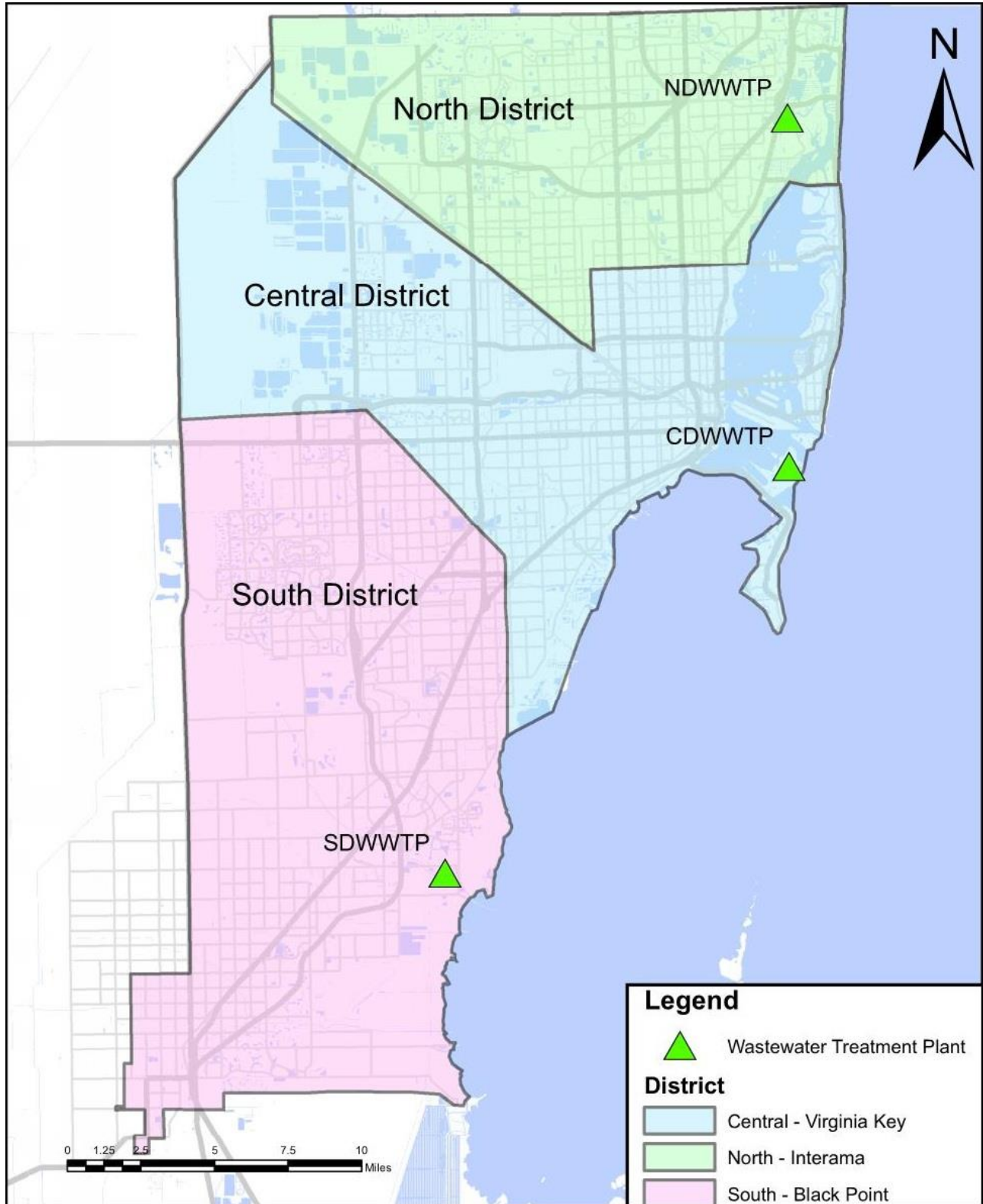
01. Introduction

The Miami-Dade Water and Sewer Department (MDWASD) prepared this Information Management System (IMS) Program in compliance with Paragraph 19(c) 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 wastewater collection and transmission system (WCTS) and wastewater treatment plants (WWTPs) to eliminate, reduce, prevent, or otherwise control sanitary sewer overflows (SSOs); to correct effluent limit violations; and to properly manage, operate, and maintain its WCTS and WWTPs.

01.01 Summary of the Sewer System

As of February 1, 2015, MDWASD's WCTS consists of approximately 6,300 miles of pipelines, 1,028 MDWASD pump stations, 19 pump stations maintained under maintenance agreement with other agencies and departments. The WCTS conveys wastewater to three WWTPs. In addition, there are numerous private pump stations and private collection systems discharging wastewater into MDWASD's WCTS. The numbers cited herein, especially the number of pump stations, are subject to change due to additions and abandonments in a dynamic, urban service area such as Miami-Dade County. The current service area boundaries tributary to each of the three treatment plants are shown on Figure 01.1.

Figure 01.1
MDWASD Wastewater Treatment Plant Service Areas



01.02 Existing Information Management Systems at MDWASD

Over the years, MDWASD has invested millions of dollars and over 120 staff members in developing and maintaining multiple information management systems to support the sewer system. The systems are outlined in Table 01.1.

Table 01.1
Existing Information Management Systems

Information System	Name (Product)	Major Functions
myWASD	Intranet (Microsoft SharePoint)	Entry point to applications, repository of text documents
EAMS	Enterprise Asset Management System (Infor EAM)	Maintenance Management and Reporting
GIS	Esri ArcGIS	Asset inventories and automated mapping
CC&B	Oracle Customer Care and Billing	Water/sewer billing and customer management
BI	Business Intelligence (Cognos and Microsoft SQL Server Reporting Services)	Reporting from existing information management systems
PCTS	Project Control and Tracking System	Tracks schedule and budgets for capital projects
SCADA	Supervisory Control and Data Acquisition	Real-time process monitoring and control
LIMS	Laboratory Information Management System	Manages laboratory sampling and analyses
ETMS	Elapsed Time Management System (Oracle)	Stores pump station equipment runtime data and generates reports
MORS	Monthly Operating Report System	Incorporates SCADA, Laboratory, and operator data to generate monthly treatment plant operating reports and NPDES discharge reports.
SSRS	Sewer Spill Reporting System	Stores reported spill details, includes all iterations of spill report, notifies agencies, and generated spill evaluation report
Granite	CCTV inspection Data	Stores tabular and video data from CCTV inspections

Information System	Name (Product)	Major Functions
POPS	Put or Pay Sludge Hauling database	Stores data regarding sludge hauling activities.
Permits	New permits for water/sewer services	New permits for water/sewer services
Compliance Suite	Training and Certification data	Tracks training classes, employee training requirements and certifications

01.03 Regulatory Drivers

Compliance with the requirements of the Clean Water Act (CWA) is the primary regulatory driver for the IMS Program. 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 WCTS and which are referred to as SSOs.

To support realization of the goal of reducing, preventing, or otherwise controlling SSOs and prohibited discharges to waters of the United States, the CD, Paragraph 18 requires MDWASD to continue programs initiated under previous CDs, and Paragraph 19 stipulates the development of new Capacity, Management, Operations, and Maintenance (CMOM) programs across all areas of the wastewater, collection, transmission, and treatment systems, and include: pump stations, force mains, gravity sewers, and wastewater treatment plants. The Paragraph 18 “existing” programs and Paragraph 19 “new” programs are listed below. The CD Programs listed in ***bold italics*** have direct impact on elements and requirements of the IMS Program.

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

9. **19 (e) Gravity Sewer System Operations and Maintenance Program (GSSOMP);**
10. **19 (f) Pump Station Operations and Preventative Maintenance Program (PSOPMP);**
11. **19 (g) Force Main Operations, Preventative Maintenance and Assessment / Rehabilitation Program (FMOPMARP);**
12. **19 (h) WWTP Operations and Maintenance Program (WWTP OMP);**
13. *19 (i) Specific Capital Improvements Projects; and*
14. *19 (j) Financial Analysis Program.*

Paragraph 19(c) requires that within twenty-four months after the Effective Date of this Consent Decree, MDWASD shall submit to EPA and FDEP for review and comment an IMS Program, as more particularly described below. At a minimum, the IMS Program shall include the following:

- §19(c)(i). A management IMS component to provide MDWASD managers with guidance and instruction to adequately evaluate operations, maintenance, customer service, and Sewer System rehabilitation activities so that overall WCTS performance can be determined and utility planning can be conducted. This IMS component shall utilize management reports and standard management forms.
- §19(c)(ii). An operations IMS component to provide MDWASD managers and field supervisors with guidance to adequately track scheduled operational activities and to enhance operational performance. This IMS component shall utilize operating reports and standard operation forms used by field personnel and shall provide for field supervisor review.
- §19(c)(iii). A maintenance IMS component to provide MDWASD managers and field supervisors with guidance to adequately track scheduled maintenance activities and to enhance maintenance performance. This IMS component shall utilize maintenance reports and standard maintenance forms used by field personnel. The system shall provide for field supervisor review.
- §19(c)(iv). A description of what information will be fed into the system, how it will be entered and by what means it will be recorded.

- §19(c)(v). A description of the management reports that will be generated from the input data (i.e., work reports), including examples and periodicity for review of such reports.
- §19(c)(vi). A description of the work reports that will be prepared and submitted, including examples and periodicity for review of such reports.
- §19(c)(vii). Standard forms that will be used by both field personnel and management for the IMS Program, where applicable.
- §19(c)(viii). A detailed description of how the records will be maintained.
- §19(c)(ix). If computer software will be utilized, a description of the software to be used with cited references for software training and procedures for utilizing the software.
- §19(c)(x). Implementation of a Geographic Information Systems (GIS) map of the entire WCTS with the following improvements:
 - Updated GIS database to include all as-builts and Active As-built Supplemental Information System (“AAS IS”);
 - Streamlining of GIS data entry process for new assets, including electronic as-built data as necessary standards so that all new assets are added to the GIS system within ninety calendar days of their activation in the field. Included shall be the development of a system of interface with the Miami-Dade WCTS hydraulic computer model so that the information can be efficiently exported to the WCTS hydraulic computer model;
 - Simplification of the AAS IS process to facilitate wider usage;
 - Development of a “flagging process” for damage investigators to note GIS inaccuracies;
 - Provision for additional GIS training and refresher training;
 - Use of Dade On-Line Facilities Information Network Version II (DOLFIN II); and
 - Determination of elevations of all manhole rim elevations and sewer inverts at connections to manholes and pump stations and their inclusion into GIS.

- §19(c)(xi). Development and implementation of KPIs to provide MDWASD managers with guidance to adequately evaluate data collected in the IMS for use in determining the condition of the sewer system and an evaluation of MDWASD's CMOM programs. KPIs shall include:
 - linear footage of gravity sewer line and force main inspections,
 - linear footage of gravity sewers cleaned,
 - number of manholes inspected,
 - number of manholes cleaned/maintained,
 - number of inverted siphons inspected,
 - number of inverted siphons cleaned/maintained,
 - number of SSOs per mile of gravity sewer,
 - number of SSOs per mile of force main,
 - number of SSOs per pump station,
 - per capita wastewater flow,
 - NPDES Permit effluent compliance, and
 - such other KPIs as MDWASD may suggest and EPA/FDEP approve.
- §19(c)(xii). Maintenance activity tracked by type (corrective, preventative, and emergency).

In addition to the specific requirements of Paragraph 19, the CD references specific guidance tools 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 fourteen separate management programs listed above plus the IMS Program, which in many ways brings all the other programs

together. The programs' inherent interdependencies require an interdisciplinary and integrated approach to wastewater system management, operations, and management.

01.04 **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 multiple Departments, each led by a Mayor-appointed Director.

01.04.1 **Water and Sewer Department Organization**

As shown in Figure 01.2 on the following page, two Deputy Directors manage MDWASD under the authority of the Director: the Deputy Director of Operations and the Deputy Director of Regulatory Compliance and Planning. There are two Assistant Directors under the Deputy Director of Operations and are two Assistant Directors under the Deputy Director of Regulatory Compliance and Planning.

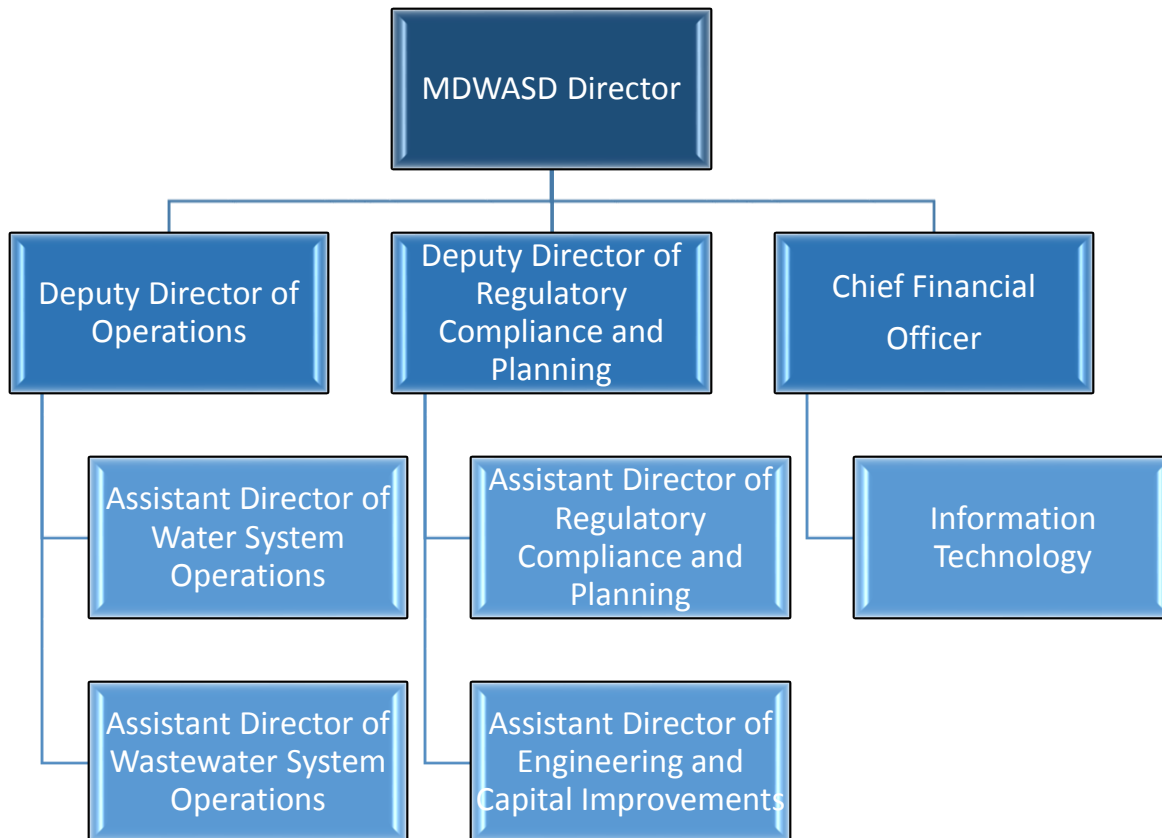
The WWCTLD has the primary responsibility for CMOM activities relating to gravity sewer and force main assets. The PSD has the primary responsibility for CMOM activities relating to pump station assets. The WWTMD has the primary responsibility for CMOM activities related to treatment plant influent pump station assets and at the treatment plants. Each of these Divisions reports to the Assistant Director for Wastewater System Operations.

The Information Technology (IT) Division reports to the Chief Financial Officer, and is responsible for supporting and managing MDWASD's computing systems. The IT Division consists of approximately 130 staff members of which approximately 45 are contract employees.

In addition to IT, user support and training for three enterprise technology systems, Customer Care and Billing (CC&B), Enterprise Resource Planning (ERP), and Enterprise Asset Management System EAMS, is provided by the Business Process Support section of approximately 20 staff members located in the Finance Division. For the three systems they cover,

the Business Process teams identify needed technology improvements and work closely with IT staff to help those improvements become operational.

Figure 01.2
MDWASD Organization Chart



01.05 IMS Program Document Organization

This IMS Program is organized to meet both the requirements of the CD as well as MDWASD's business needs. The IMS Program document's organization is listed in Table 01.2. Where applicable, the corresponding CD paragraph reference is listed adjacent to the section or subsection name and the associated document page number.

Table 01.2
Location of CD Requirements in the IMS Program

CD Paragraph	IMS Program Section	Page #
	00 Acronyms / Glossary	00-1
	01 Introduction	01-1
Paragraph 19	02 IMS Program Purpose and Goals	02-1
Paragraph 19	03 Phased IMS Program Development	03-1
Paragraph 19	04 IMS Program Performance Measures	04-1
Paragraph 19(c)(xi)	05 IMS Requirements	05-1
Paragraph 19(c)(i)	06 Management IMS	06-1
Paragraph 19(c)(ii)	07 Operations IMS	07-1
Paragraph 19(c)(iii)	08 Maintenance IMS	08-1
Paragraph 19(c)(iv)	09 Description of Information to be Fed Into the System	09-1
Paragraph 19(c)(v)	10 Description of the Management Reports	10-1
Paragraph 19(c)(vi)	11 Description of the Work Reports	11-1
Paragraph 19(c)(vii)	12 Standard Forms	12-1
Paragraph 19(c)(viii)	13 Description of How the Records Will be Maintained	13-1
Paragraph 19(c)(ix)	14 Description of the Computer Software, Training and Operating Procedures	14-1
Paragraph 19(c)(x)	15 GIS Program	15-1
Paragraph 19(c)(xii)	16 Maintenance Activities Tracked by Type	16-1
	17 Staffing and Funding Plan	17-1
	Appendix A Consolidated List of CMOM Implementation Tasks	
	Appendix B MDWASD Work Reports	
	Appendix C MDWASD Standard Forms	

02. IMS Program Purpose and Goals

In accordance with the CD requirement to establish a written, defined purpose and written, defined goals, Section 02.01 provides the IMS Program purpose and Section 02.02 provides the IMS Program goals.

02.01 IMS Program Purpose

The purpose of the IMS Program is to:

- Develop tools to support the Management, Operations, and Maintenance information management needs (i.e., data acquisition, management, and reporting) of MDWASD's wastewater divisions.
- Provide the content necessary to comply with the Consent Decree requirements.

02.02 IMS Program Goals

The IMS Program goals are to:

- Provide a management tool which gathers, aggregates, and evaluates data from multiple input systems to report performance metrics allowing managers and supervisors to more quickly identify problem areas.
- Standardize operational data collection, data retention and compliance reporting procedures.
- Streamline maintenance tracking and reporting activities to allow for increased maintenance operational efficiency.

This document contains the initial phase of the IMS Program and a schedule of specific recommendations intended to transition the IMS Program into subsequent phases.

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03. Phased IMS Program Development

IMS Program development and implementation will be phased to ensure cohesiveness and proper integration of the IMS Program with other CD-required CMOM Programs currently under development. The IMS Program relies upon the management and implementation efficiencies gained through incorporation of specific knowledge area policies, procedures, activities, technologies, and tools inherent to other CMOM Programs. Portions of the IMS Program that are independent of other CD activities will be initiated upon approval by EPA/FDEP of this document. Portions of the recommended IMS Program activities that will require integration of efforts to be performed as part of other CD components will be part of the phased implementation process. The phased implementation is summarized in Section 03.02, Planned Supportive Actions, as well as noted in the applicable detailed section of this plan document devoted to that particular implementation activity.

03.01 IMS Program Review and Revision

In accordance with the CMOM philosophy of continuous improvement, MDWASD has developed internal performance measures as described in Section 04, IMS Program Performance Measures, to evaluate IMS Program progress toward established goals. Monthly performance measure reports will be generated and evaluated on a semi-annual and annual basis.

The defined performance measures may be modified to better suit the business needs of the County. Material changes to the IMS Program will be submitted to the EPA/FDEP for review and approval and documented in the Annual Report submitted to EPA/FDEP as part of CD reporting compliance.

During the annual review, the monthly reports and the semi-annual evaluation will be reviewed, and lessons learned will be noted to enable MDWASD to continuously improve the IMS Program 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 sewer system. As the IMS Program matures, less frequent evaluations may be recommended. The results will continue to be documented in the Annual Report to EPA/FDEP as part of CD reporting compliance.

03.02 Planned Supportive Actions

The proposed IMS Program depends on other CMOM Programs. The disparity between the required EPA/FDEP submittal dates for these CMOM Programs not only demonstrates a need for a phased implementation approach, but the need to consolidate new CMOM Program implementation schedules. After submittal of the IMS Program to EPA/FDEP for approval, MDWASD will prepare and submit to EPA/FDEP a proposed consolidated implementation plan and schedule to include all CMOM Programs. This will facilitate the task of tracking implementation for CMOM Programs, individual CMOM elements, required resources, and schedules.

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

- Submittal, and subsequent EPA/FDEP approval, of the GIS, GSSOMP, PSOPMP, FMOPMARP, WWTP OMP, SORP, and the SSAMP CMOM Programs;
- Implementation of the GIS, GSSOMP, PSOPMP, FMOPMARP, WWTP OMP, SORP, and SSAMP components, each of which will generate updated asset inventories, database structures, and condition assessment data;
- Implementation of a SCADA Historian;
- Allocation and acquisition of IMS Program staffing and funding resources to provide additional information management resources; and
- Selection, acquisition, and implementation of the necessary hardware and software systems to manage the massive amount of asset data and implement the complex reporting.

03.02.1 Phased Implementation Actions

The proposed staffing and associated funding for the phased implementation of the IMS Program is detailed in Section 17, Staffing and Funding Plan. Table 03.1 summarizes the key phased implementation activities. Implementation of these activities will require additional staff and equipment as detailed in Table 17.1 as well as the consultant/vendor resources.

03.02.2 IMS Program Implementation Activities

The IMS Program will be implemented in phases. Upon EPA/FDEP approval of this IMS Program and the other CMOM Program documents for which IMS Program dependencies exist, the activities listed in Table 03.1 will be implemented.

Table 03.1
Proposed IMS Program Phased Implementation Activities

Activity	Abbreviated Description
Develop Management IMS Dashboards	Leverage existing IT tools to develop management dashboards which meet the requirements of the CD and other CMOM programs. The dashboards will have drill down capability to access the data underlying the individual KPIs, create and run reports, and provide links to the specific source transactional database application user interfaces (i.e., EAMS, PCTS, MORS, etc.).
SCADA Archives Team	Create Business Process Group to administer the SCADA historian.
Enhance MORS Functionality	MORS will be enhanced to support Wastewater Treatment Plant (WWTP) operations by capturing data from SCADA, LIMS, EAMS, Management IMS repository, and user input to develop standardizing reporting functionality at all three WWTPs. Other functionality enhancements will include a mobile device interface for data input that can edit data in a disconnected state.
Implement GraniteNet & Integrate with EAMS	MDWASD will implement GraniteNET. This is a server-based system which will consolidate all the local GraniteXP databases and also create a central repository of CCTV data. MDWASD will integrate the GraniteNET system with EAMS in order to not to have to manually generate repair work orders and reduce entering data twice into two systems.
Enhanced Spill Application Module	The functionality of the Spill Application module will be enhanced to display data pertinent to SSO prevention on a map.
Night Flow Identification Tool	An algorithm will be created to assist WWCTLD personnel in the use of a basin's night-flow in decision making.
WCTS Basin Prioritization Tool	Table joins, tools, and scripts can be written to semi-automate the basin prioritization process and generate the GSS Evaluation Priority Data Report table within a dedicated .mxd file. Due to the limited use this tool will receive throughout the year and the server based deployment of the IMS, this tool will not be a part of the core IMS functionality.
EAMS Functionality Enhancement for WWCTLD	The implementation of EAMS for the WWCTLD will incorporate the following functionality enhancements: incorporation of detailed sewer line cleaning/inspection data; incorporation of manhole cleaning/inspection data collected on a digital form; incorporation of detailed sewer line and manhole repair results, (including costs which are also needed for SSAMP); incorporation of the desired easement functionality; and development of additional reports.

Activity	Abbreviated Description
Update PSD EAMS Configuration	The PSD EAMS configuration will be updated to provide a more robust solution that leverages existing EAMS software and mobile computing functionality that has not yet been implemented for the PSD.
Update WWTMD EAMS Configuration	The WWTMD EAMS configuration will be updated to provide a more robust solution that leverages existing EAMS software and mobile computing functionality that has not yet been implemented at for the WWTMD.
Construction Contracts Management project closeout business practices	The Construction Contracts system manages data at the project level, rather than at the individual asset level as in EAMS and GIS. The IMS Program implementation plan will define a business practice and algorithms for allocating cost information and project completion date/status to the impacted assets within EAMS with notification to WWCTLD staff.
GIS Program	MDWASD will implement all elements of the GIS Program as defined in the CD.
Records Retention and Disposal Policy	MDWASD will develop a records retention and disposal policy.
Additional IT User Training	MDWASD will provide additional self-directed on-line and instructor led IT training in basic computer skills, Microsoft Office, all IMS components, and additional product specific training for applications that are not currently supported by the Business Process Section. In addition to the training itself, computer training curricula need to be developed so as to define a set of prerequisites for selected staff positions, document proficiency, and track employee progress via a Learning Management System.

03.02.3 Consolidated CMOM Implementation Activities

Previous CD submittals have indicated that a consolidated schedule of all CMOM implementation activities would be included in the IMS deliverable. However, by agreement with the EPA/FDEP, the consolidated implementation schedule will be developed after the final CMOM program document (i.e., IMS Program) is submitted for approval. Per this agreement the consolidated implementation schedule will be submitted by March 31, 2016. In support of the development of a consolidated schedule, a list of CMOM Implementation Activities has been developed and is presented in Appendix A. This list consolidates data from all previously submitted CMOM CD documents, as well as those activities identified in this IMS Program document.

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04. IMS Program Performance Measures

In accordance with the CD requirement that MDWASD establish performance measures and develop written procedures for periodic review, Section 04.01 establishes the purpose for the performance measure program; Section 04.02 lists the IMS Program performance measures; and Section 04.03 describes the on-going evaluation and review activities.

04.01 Purpose of Performance Measures

Performance measures, which compare actual performance against an established performance standard, benchmark, target, or level of service (LOS), help identify the relative health and efficiencies of specific operational areas. Performance measures include a subset of measures termed key performance indicators (KPIs). KPIs measure the relative health of the IMS reporting, response, and prevention measures by comparison of actual system performance to system LOS targets. System managers use performance measures to justify, allocate, and/or reallocate resources to underperforming areas; plan and develop budgets for additional resources; and 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 performance measures to make comparisons of systems across time and geography. MDWASD will implement a performance measure and KPI target system to evaluate IMS progress towards achieving the CD goal in accordance with the CMOM philosophy for continuous improvement.

04.02 Established Performance Measures

MDWASD has not previously adopted performance measures or KPIs to meet IMS Program goals. The IMS Program-related measures and KPIs shown in Table 04.1 will assess the overall effectiveness of the IMS Program and will enable MDWASD to make adjustments in the program to achieve the established MDWASD performance goal or target to meet CD and LOS requirements. Table 04.1 presents the KPIs that MDWASD will employ to measure, track, and report performance of the IMS Program activities. Table 04.1 also presents the initial target for each KPI performance measure.

Table 04.1
Key IMS Program Performance Indicators

Key Performance Indicator	Target
# Faults (Bugs) identified per month	Continuous improvement
Dashboard usage monitoring	Monitor and address anomalies
Application up time	Greater than 98%

04.03 Performance Metric Reviews and Revisions

Since one purpose of MDWASD's CMOM Programs is to achieve continuous improvement, the MDWASD management team will periodically evaluate each performance measure and may revise or change performance measures based on relevancy and value to the successful implementation and management of the IMS Program. MDWASD's management team will review KPI actual performance versus target measures on a quarterly basis to track performance versus progress toward the goal. The quarterly reviews will be designed to identify areas where additional resources or attention is required to meet the annual target.

Overall performance will be assessed on an annual basis, and appropriate corrective measures identified and implemented to improve performance. MDWASD's management team will perform the annual reviews. The annual reviews will assess trends and needs for adjustments to preventative maintenance schedules and staffing and funding levels. These annual reviews may also drive modification of other CMOM Program element changes or revisions.

MDWASD's management review team will be comprised of:

- WWCTLD Chief (or delegate),
- PSD Chief (or delegate),
- WWTMD Chief (or delegate),
- IT Division Chief (or delegate),
- Assistant Superintendents (as assigned by the respective Division Chief).

05. IMS Requirements

In general, an IMS refers to the networks of hardware and software that people and organizations use to collect, filter, process, create, and distribute data. The IMS will largely consolidate and display information that already exists within various information systems currently in use, and those that are scheduled for implementation. These current and future information systems can support an IMS program; however, no single core software system consolidates the data from these systems and meets the management, operations, and maintenance requirements of the CD.

05.01 Overview of IMS Functionality Requirements

The goal of the three IMS components is to assist MDWASD staff at all levels of the organization in operating the entire wastewater system more effectively so that all elements of system performance can be enhanced and utility planning can be conducted. MDWASD intends to leverage the large existing investment that has already been made in computing technology, and to develop the three IMS components to add the additional functionality needed to satisfy the CD requirements. As part of this process, the three IMS components will also be designed to address the many information management requirements that have been created as part of the previously created CD documents.

05.02 Existing Information Management Reporting Systems

MDWASD employees have access to a number of transaction systems which provide, individually, some management, operations and maintenance information. For instance, EAMS tracks all maintenance and some operations and customer service activities against sewer system infrastructure. Additionally, details of customer service interactions are managed within the Oracle CC&B system. Ongoing sewer system rehabilitation activities that fall under MDWASD's capital program are tracked by PCTS. Other data required for management reporting might come from other information management systems such as ETMS, MORS, SCADA, or LIMS. MDWASD also possesses multiple business intelligence software tools, which could be configured to report data from multiple sources into a dashboard-style management-oriented user interface.

MDWASD does not currently have a comprehensive management-level IMS that provides guidance and instruction so that overall sewer system performance can be determined and utility planning can be conducted as required by the CD. Furthermore, MDWASD has no enterprise level comprehensive operations IMS that is consistent throughout all divisions. The functionality of the MORS system, already implemented in MDWASD's Water Treatment Plants, may serve as the nucleus for development of an operations IMS.

MDWASD's maintenance IMS functions are currently being performed through the use of EAMS. Some improvements to the business processes governing EAMS will be needed to fully meet the CD requirements.

05.03 **IMS Data Reporting Needs**

Data reporting needs were developed in each of the previous CMOM Program submittals. Some of these needs are at a management level, while others are at operations or maintenance levels. These needs are presented in Table 05.1, and their applicability to each level of reporting is shown. The KPIs required by the Section 19(c)(xi) of the CD are also included in Table 05.1.

Table 05.1
KPIs from All CMOM Programs

CMOM Program	KPI	KPI Goal	Management	Operations	Maintenance
GSSOMP	SSOs per mile of gravity sewer	Annual Reduction	X	X	
	SSOs per pump station basin	Annual Reduction	X	X	
	Number of manholes inspected	10% of total number per year	X	X	
	Linear feet of gravity sewers inspected	10% of total length per year	X	X	
	Number of inverted siphons inspected	20% per year	X	X	
	Number of manholes cleaned	10% of total number per year	X	X	
	Linear feet of gravity sewers cleaned	10% of total length per year	X	X	
	Number of inverted siphons cleaned	20% per year	X	X	
	SSOs per 100 miles of gravity sewer	Annual Reduction	X	X	
	% SSOs by cause	Monitor	X	X	
	% of SSOs due to capacity related Issues	Annual Reduction	X	X	
	% of manholes inspected	10% of total number per year	X	X	
	% of manholes cleaned		X	X	
	% of GSS Cleaned	10% of total length per year	X	X	
	% of Gravity Sewer Inspected ¹	10% of total length per year	X	X	
	% of WPO Area sewers inspected	20% of total length of GSS in Wellhead Protection Area (WPA	X	X	
	% of WPO Areas inspected via new or emerging technologies	5% of GSS in WPAs per year	X	X	
	% of GSS below the GPDIM standard. ²		X	X	
	Ratio of reactive/emergency work to preventative work	Annual Reduction	X	X	X

¹ Excluding portions of GSS in WPO regulated Wellfield Protection Areas.

² 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.

Table 05.1
KPIs from All CMOM Programs

CMOM Program	KPI	KPI Goal	Management	Operations	Maintenance
	% of total maintenance and repair work as unscheduled/reactive/emergency	Annual Reduction	X	X	X
	% of Annual Scheduled work completed by initial or regulatory deadline	Annual Increase	X	X	X
	% of annual WPO Area defects repaired by regulatory deadline	100%	X	X	X
	Contracted work. Number of days to complete and validate effectiveness of repair.	Monitor	X	X	X
PSOPMP	Annual number of pump station-related SSO events	9	X	X	
	Percentage of pumps in service	99%	X	X	X
	SCADA network availability ³	100%	X	X	X
	Ratio of planned work orders to unplanned work orders	70%	X	X	X
	Annual average time a budgeted position remains vacant	3 months	X		
	Annual average percentage of end of month vacant budget positions within PSD ⁴	7%	X		
	Annual hours of PSD employee technical training	20	X		
WWTP OMP	Annual number of plant-related effluent discharge non-compliance events	0	X	X	
	Percent of time effluent CBOD is in compliance with effluent discharge limits	100%	X	X	
	Percent of time effluent TSS is in compliance with effluent discharge limits	100%	X	X	

³ MDWASD system-wide.

⁴ The average of the 12 end of month values

Table 05.1
KPIs from All CMOM Programs

CMOM Program	KPI	KPI Goal	Management	Operations	Maintenance
	Percent of time effluent Fecal Coliform is in compliance with effluent discharge limits	100%	X	X	
	Annual number of reportable SSOs within each treatment plant site	0	X	X	
	Ratio of planned work orders to unplanned work orders	Continuous Improvement	X	X	X
	Percentage of highly critical assets with an assigned condition rating	95%	X	X	X
	Annual average time a position remains vacant after authorization is given to fill	3 months	X		
	Annual hours of WWTMD site specific technical training per employee	48	X		
FMOPMARP	Percent of total aerial crossing inspections per year	100%	X	X	X
	Annual number of force main-related SSO events	Continuous Improvement	X	X	X
	Ratio of planned work orders to unplanned work orders	Continuous Improvement	X		X
	Annual average time a budgeted position remains vacant after authorization is given to fill	3 months	X		
	Bimonthly maintenance of manual ARVs (percent of total)	100%	X		X
	Semi-annual maintenance of automatic ARVs (percent of total)	100%	X		X
	Annual exercising of system valves (percent of total)	100%	X	X	X

Table 05.1
KPIs from All CMOM Programs

CMOM Program	KPI	KPI Goal	Management	Operations	Maintenance
SORP	Annual average SSO response time ⁵	90 Minutes	X	X	
	Annual average SSO control time: ⁶		X	X	
	<ul style="list-style-type: none"> For small diameter gravity sewers 	90 Minutes	X	X	
	<ul style="list-style-type: none"> For large diameter gravity sewers 	120 Minutes	X	X	
	<ul style="list-style-type: none"> For force mains 	120 Minutes	X	X	
	<ul style="list-style-type: none"> For pump stations 	4 Hours	X	X	
	<ul style="list-style-type: none"> For Regional Pump Stations ⁷ 	8 Hours	X	X	
	Annual number of SSO events per 100 miles of gravity sewer ⁸	< 2 / 100 mi	X	X	
	Annual number of pump station-related SSO events per 100 pump stations ⁹	< 1 / 100 PSs	X	X	
	Annual hours of SORP preparedness training per employee ¹⁰	4 hours	X		
IMS	Linear footage of Gravity Sewer Line and Force Main inspections	10% Total Length for Gravity	X	X	

⁵ Average of the time from the initial notification is received at the Communications Center until the time the MDWASD response crew arrives on-site for all confirmed SSO events, excluding Building Backups, occurring during the previous year.

⁶ Average of the time from the MDWASD response crew arrival on-site until the time the SSO, excluding Building Backups, discharge from the stated asset is stopped for SSO events occurring during the previous year.

⁷ Regional Pump Stations are stations categorized as “regional” through a combination of station function and geographic location. Regional stations typically receive flow from other lift stations and were frequently constructed to replace small package-type wastewater treatment facilities that had been acquired by MDWASD.

⁸ Annual number of confirmed gravity sewer-related SSO events divided by the year-end total miles of gravity sewer within MDWASD’s WCTS for the previous year.

⁹ Annual number of confirmed pump station-related SSO events divided by the year-end total number of MDWASD owned and maintained pump stations within MDWASD’s WCTS for the previous year.

¹⁰ Total hours of SORP preparedness training divided by the number of MDWASD staff assigned to SSO response crew duties during the previous year.

Table 05.1
KPIs from All CMOM Programs

CMOM Program	KPI	KPI Goal	Management	Operations	Maintenance
	Linear footage of Gravity Sewers cleaned	10% of total length per year	X	X	X
	Number of manholes inspected	10% of total number per year	X	X	
	Number of manholes cleaned/maintained	Performed at time of inspection	X	X	X
	Number of inverted siphons inspected		X	X	
	Number of inverted siphons cleaned/maintained		X	X	X
	Number of SSOs per mile of Gravity Sewer	Annual Reduction	X	X	
	Number of SSOs per mile of Force Main	Annual Reduction	X	X	
	Number of SSOs per Pump Station	< 1 / 100 PSs	X	X	
	Capita wastewater flow	Monitor	X		
	NPDES Permit effluent compliance	100%	X		
SSAMP	IAM Maturity Assessment Tool	Monitor	X		
	Such other Key Performance Indicators as MDWASD may suggest and EPA/FDEP approve	TBD			

05.03.1 Hauled Waste Program KPIs

The Hauled Waste Control Program includes a feedback mechanism for continuous improvement of the program. Section 11.05 of the WWTP OMP stated that, upon completion of the IMS portion of this CMOM Program, performance measures will be identified to monitor the Hauled Waste Program and adjust procedures to ensure effective management of the program. Table 05.2 lists the KPIs identified for the Hauled Waste Program.

Table 05.2
Hauled Waste Program KPIs

KPI	KPI Goal	Management	Operations	Maintenance
# of Operating Permits	Monitor	X		
Volume of Liquid Waste Received	Monitor	X	X	
# of Trucks per day	Monitor	X	X	
Revenue generated	Monitor	X		
Cost of Solids Hauling	Monitor	X		
Tons of Solids Received	Monitor	X	X	

06. Management IMS

Section 6 briefly outlines the Management IMS as required by Paragraph 19(c)(i) of the CD. The section is organized into requirements, existing management reporting, proposed functionality, and development.

Specific requirements for the management component of the IMS were developed within three of the previously created CMOM program documents and are addressed in Sections 06.01 thru 06.03.

06.01 Requirements from GSSOMP

Various requirements for the IMS were defined in the GSSOMP dated February 6, 2015. These requirements are listed below:

- Section 04.06 of the GSSOMP requires that the IMS user interface should allow flexible reporting and querying functionality to support the evaluation of the gravity sewer system 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.
- Section 06.04 of the GSSOMP requires that the IMS program provide technology to save and access annual reports documenting the monitoring, assessment, screening, as well as scheduled maintenance activities, work orders and logs for repairs.
- Section 12 of the GSSOMP requires that the IMS make technology available to WWCTLD staff to support the IT/IMS/GIS/SCADA requirements described in the GSSOMP Including the following GIS layers:
 - SSO Layer – distinguished by cause and severity;
 - Pipe Material Identification Layer – distinguished pipe segments with undetermined material types;
 - Annual Performance Measure Layers – Summarize specific performance measures for the entire system, with the capability to drill down to basin level as

- scale increases. Specific color codes were specified for level of deviation from goal; and
- Provide functionality to compare performance over time.

The proposed Management IMS component will have capabilities meeting these requirements which are discussed further in Section 06.06.

06.02 Requirements from WWTP OMP

Requirements for the IMS were defined in the WWTP OMP dated May 5, 2015, including Section 11.05 of the WWTP OMP requiring the IMS Program identify performance measures to monitor the Hauled Waste Program.

Performance measures for the Hauled Waste Program have been identified in Table 05.2 of this document.

06.03 Requirements from SORP

Requirements for the IMS were defined in the SORP dated July 2, 2015, including Section 03.02 of the SORP requiring that the IMS facilitate performance measure monitoring and provide accurate data for repeat SSOs.

Performance measures for the SORP have been included in Table 05.1 of this document.

06.04 Existing Management KPI Reporting

Miami-Dade County has implemented a business reporting tool called “Active Strategy Enterprise” (ASE). This tool allows different levels of management to get a quick snapshot of how any department is performing against its business plan goals and objectives. Although MDWASD does not currently have a similar consolidated management level evaluation tool that meets the CD requirements, MDWASD does have an intranet site referred to as “myWASD” which can be used to provide links to standard forms and reports as well as disseminate information throughout the organization.

MDWASD as a County department participates in the ASE program. This program captures many of the KPIs identified in previous CMOM programs; however, the process for calculating or determining these KPI values is often manual with input data being consolidated from different information systems into a spreadsheet. The results are then input into an online form on a monthly or annual basis. While ASE provides some of the KPI values identified, and can be expanded to include additional measures, it must be updated manually. The lack of automated updates will not allow MDWASD to use ASE comprehensively evaluate operations, maintenance, customer service, and sewer system rehabilitation activities at the level of detail and at the frequency required to satisfy the requirements of the CD.

06.05 **Proposed Management IMS Functionality**

The overall functionality of the management component of the IMS has been defined in previous CMOM programs. The KPIs listed in Section 04 for the IMS Program and in Section 04 for all CMOM programs will form the basis for the development of the management level IMS. The interface will consist of color “dashboards” that can be configured for different users and user types. The dashboards will be capable of displaying a GIS map of the system, zoom-able to the pump station basin level, presenting KPI ranges; visualization “widgets” for reporting KPI values; lists or tables of data; and the capability to visualize trends. MDWASD has tools available to facilitate this functionality as described below.

MDWASD’s intranet site was developed on the Microsoft SharePoint platform. SharePoint is a web application platform in the Microsoft Office server suite. MDWASD’s SharePoint intranet, myWASD, is used to centralize access to enterprise information and applications. It is a tool that helps the department manage its internal communications, applications and information.

The SharePoint product includes PerformancePoint Services which is a set of tools and services that allow the creation of dashboards in SharePoint.

MDWASD also utilizes SQL Server Reporting Services that provides a full range of ready-to-use tools and services to create, deploy, and manage reports. With SQL Server Reporting Services, interactive, tabular, graphical, or free-form reports can be created from relational, multidimensional, or XML-based data sources. Reports can include rich data visualization,

including charts, maps, and graphs. The reports can be published, scheduled for processing, or accessed on-demand.

The proposed management IMS component implementation plan will leverage these existing tools to develop management dashboards meeting the requirements of the CD and other CMOM programs. The dashboards will have drill down capability to access the data underlying the individual KPIs, create and run reports, and provide links to the specific source transactional database application user interfaces (i.e., EAMS, PCTS, MORS, etc.). Configurable dashboards will allow each user to choose and view KPIs relevant to their work. The management IMS will also support user development of new metrics and have the capability to analyze trends in the data and leverage MDWASD's existing BI tools.

06.06 Proposed Management IMS Development

The Management IMS component will be developed by leveraging existing systems and products already in use by MDWASD. The existing SharePoint and BI products will be used to develop management dashboards for implementation at MDWASD. The process for developing this component is focused on integration with existing databases and design of systems architecture. The management IMS development process will include the following phases:

06.06.1 Requirements Phase

During this phase, the Management IMS requirements will be refined and a Software Requirements Specification document will be developed.

- Define potential users and scope for each group's component;
- Interview users within each group and gather specific improvement requirements (note that some of this has been done); and
- Define management IMS repository to support the requirements.
- Develop Software Requirements Specification.

06.06.2 Development Phase

During this phase, the Management IMS will be constructed.

- Acquire hardware and software needed to host the Management IMS repository database;

- Design user interface to support desired functionality; and
- Develop communication protocols with transactional databases.

06.06.3 Testing Phase

During this phase, the performance and functionality of the Management IMS will be tested.

- Perform performance testing of dashboards;
- Perform user testing of Management IMS functionality; and
- Perform testing of information source download/upload.

06.06.4 Deployment Phase

During this phase, the Management IMS will be deployed to the organization.

- Perform user training;
- Conduct user roll out in stages; and
- Provide ongoing user support and enhancements.

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07. Operations IMS

Section 7 briefly outlines the requirements of Paragraph 19(c)(ii) of the CD. The section is organized into CD and program requirements, existing operations KPI reporting, proposed functionality, specific data integration issues and development.

Additional requirements for the operations component of the IMS that have been developed within the previously created CMOM program documents are addressed in the Sections 07.01.

07.01 Requirements from GSSOMP

Requirements for the IMS were defined in the GSSOMP dated February 6, 2015. These requirements are listed below.

- Section 05.04 of the GSSOMP requires that the IMS Program develop and implement a GIS based prioritization tool that displays specific prioritization criteria, as defined in Table 05.2 of the GSSOMP document, graphically in the GIS as follows:
 - The prioritization system will be designed to have simple qualifying criteria, i.e., “yes/no” flags or numerical ranges, driven by GIS polygon overlays;
 - After all prioritization criteria are applied, the priority for evaluation will be assigned to each basin by the total number of matching priority characteristics; and
 - 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 WCTS basin prioritization tool defined in the GSSOMP document is performed on an annual basis. The functionality specified in this tool requires an ArcGIS for Desktop installation. Table joins, tools, and scripts can be written to semi-automate this process and generate the GSS Evaluation Priority Data Report table within a dedicated .mxd file. Due to the limited use this tool will receive throughout the year and the server based deployment of the IMS, this tool will not be a part of the core IMS functionality. However, as part of the IMS implementation, a dedicated

ArcMap (““.mxd”) file will be developed most likely using table joins and scripts to accomplish the functionality specified in the GSSOMP.

07.02 Existing Operations KPI Reporting

The Monthly Operational Reporting System (MORS) and the Active Strategic Enterprise (ASE) system currently capture the majority of Key Performance Indicators as required by the CD.

MORS is a system developed by MDWASD and currently has the capability to report historical SCADA data. MORS allows users to set up report formats, automatically capture historical SCADA data, and manually enter data. Once a report has been defined, the program automatically captures SCADA data and allows the user to overwrite the data if necessary due to inaccuracies or system outage. The program keeps a record of any user changes. The historical SCADA data currently used by MORS consists of specific SCADA signals, identified by SCADA tag, captured in near real time and stored in an SQL database. Further, the SCADA tags are not defined in the database; through MORS the end user defines the tags used in each report. Only signals for which IT has received a request to capture at some point in the past are stored in the historical database and are therefore available to MORS, although additional signals can be added as needed. The validity, applicability, and accuracy of the historical SCADA data are not currently assessed.

The three WWTPs use different means and methods to track and report KPIs and other metrics required by the CD, their NPDES permit, and to facilitate process control. However, all use spreadsheets to track operational and performance data and LIMS to store laboratory data. There is currently no link between MORS and LIMS often requiring operators to wait up to 24-hours to see laboratory data.

MDWASD currently tracks SSOs in the Sewer Spill Reporting System (SSRS) and creates monthly, quarterly, and annual SSO reports. As outlined in the SORP, MDWASD will develop an SSO Consolidated database which will incorporate building backup tracking capabilities. The WWCTLD currently conducts root cause analysis on any SSO on a monthly basis using a spill application module. This module is an ASP.NET web application that connects to the Sewer Spill database. This tool allows data from the SSRS for each SSO to be displayed and root cause

information to be input into the database. Additionally, EAMS queries for asset data are used to provide supporting asset information.

MDWASD currently inspects gravity pipes using CCTV and performs preventative maintenance on gravity infrastructure scheduled based upon the Wellfield Protection Ordinance (WPO) and the Volume Sewer Customer Ordinance (VSCO). Preventative maintenance is prioritized and performed in VSCO basins with a GPDIM greater than 5,000. MDWASD uses GraniteXP to collect, manage and review the CCTV pipe inspection data, and employs a find-and-fix type solution that ensures all noted defects get scheduled for repair as they are found.

Cleaning and Inspection activities are tracked by basin rather than by asset, unless a defect is found, in which case staff creates a work order on the asset in EAMS. Manhole inspections are documented on paper forms if a defect is found. These forms are then manually input into EAMS to generate a repair work order. Monthly reports for the CD required KPI's are manually compiled from both EAMS and GraniteXP.

PSD operational requirements are currently satisfied by the real time SCADA system. Due to the nature of pump station-related problems, the PSD Supervisors generally have to conduct root cause analysis as part of the process of determining the cause of a pump station related SSO. Thus, follow-up monthly SSO root cause analysis meetings are not necessary for the PSD.

07.03 **Proposed Operations IMS**

MORS has already been implemented in MDWASD's water treatment plants to assist in operations and generate regulatory compliance reports, but not in the Wastewater treatment plants. It can be expanded to use in the wastewater plants to capture and store historical SCADA and other operational data to generate and report KPI's and other operationally-important metrics. Gravity sewer inspections are performed using GraniteXP and EAMS. These systems can be updated and integrated to improve performance. The expanded MORS; the integrated cleaning and inspection tools, and the Spill Application Module will make up the systems that MDWASD proposes to serve as the CD-required Operations IMS.

07.03.1 SCADA Archives Staffing

Some historical SCADA data are currently being captured through MORS, but not leveraged to provide meaningful information for decision-making. Upon full implementation of the IMS Program, historical SCADA data will be managed and validated by a small SCADA Archives team. The SCADA Archives team will consist of one IT person and one Business Process person and will collectively be responsible for administering the capture, validation, dissemination, and disposal of historical SCADA and CCTV data based upon requests from planning and the operating divisions through the use of a SCADA historian.

The new SCADA Archives team will maintain the SCADA historian by:

- Onboarding new SCADA signals;
- Retiring obsolete signals;
- Generating summary statistics such as annual metrics prior to the disposal of more granular data;
- Implementing the SCADA data retention and disposal policy; and
- Validating and marking bad data.

Development of a SCADA Master Plan is underway, however, the Master Plan will take a number of years to become reality. Once the SCADA Master Plan is fully implemented consideration of transitioning MORS to use the historian rather than the current SQL database should be considered. Integration of the SQL data into the historian per the data retention policy would then allow the database to be retired.

07.03.2 Enhanced MORS Functionality

MORS will be enhanced to support WWTP operations by capturing data from SCADA, LIMS, EAMS, the Management IMS repository, and user input to standardize reporting functionality at all three WWTPs. Other functionality enhancements will include a mobile device interface for data input that can edit data in a disconnected state. The South District WWTP has the most comprehensive system for tracking operational and process performance data and is recommended as the model for implementation of the Operations IMS at the WWTPs.

07.03.3 Enhanced Spill Application Module Functionality

The WWCTLD conducts a monthly review of SSO events that occurred during the previous month to identify “lessons learned” and define potential corrective actions. A Spill Application module is currently used to track spill data for these meetings. The functionality of the Spill Application module will be enhanced to display data pertinent to SSO prevention on a map. Pertinent data could include:

- Previous SSOs;
- Hotspot locations;
- Industrial Permits;
- Work orders on nearby assets, by type; and
- Waters of the US.

07.03.4 Integrated WWCTLD Inspection Tools Functionality

The integration and enhancement of the existing inspection tools used by WWCTLD will enhance operational performance of the inspection teams. The functionality of the proposed integrations and enhancements discussed below will be in place under full implementation of the IMS Program.

MDWASD will upgrade the current GraniteXP solution to GraniteNET, a server based system which will consolidate all the local GraniteXP databases and create a central repository of CCTV data. As part of the upgrade implementation, MDWASD will integrate GraniteNET with EAMS which will avoid manually entering data from one program to another. Work order generation will become automated as a part of CCTV review as defects are identified. This eliminates the need to enter data in multiple systems in order to generate a work order.

Currently, manhole inspections are done on paper and only if there is an identified defect. Digital manhole inspection forms will be created in EAMS to replace the paper forms.

EAMS will be enhanced to automate asset-level cleaning and inspection status and work order record creation from the digital manhole inspection forms for the basin-level inspections currently done in EAMS. This will allow a more granular trend analysis and reporting. The Operational IMS will also have the functionality to create reports showing defects found by type with running totals.

A basin's night flow determined from SCADA data is an important parameter in prioritizing basins for maintenance. Currently, night flow is determined by hand. As part of the Operational IMS an algorithm will be created to assist in the identification of a basin's night flow.

07.04 Proposed Operations IMS Development

Since the Operations IMS essentially aggregates and consolidates data from other systems at MDWASD, the process for development of this component is focused on integrating disparate systems and designing an information system architecture that can be easily maintained and enhanced for future uses. The operations IMS development process for each operating division (i.e., WWTMD, PSD, and WWCTLD) will include the following phases:

07.04.1 Requirements Phase

During this phase, the Operations IMS requirements will be refined and a Software Requirements Specification document will be developed.

- Define potential users and scope for each major functional component;
- Interview users within each group and gather specific improvement requirements (note that much of this has been completed);
- Develop Software Requirements Specification for any missing functionality.

07.04.2 Development Phase

During this phase, the Operations IMS will be constructed.

- Develop new capabilities within the Operations IMS to support desired functionality;
- Develop mobile configurations that leverage mobile hardware; and
- Validate/upgrade mobile networks at WWTPs.

07.04.3 Testing Phase

The performance and functionality of the Operations IMS will be tested in this Phase.

- Perform performance testing of mobile hardware and networks;
- Perform user testing of the operations IMS functionality; and
- Perform user testing of mobile functionality.

07.04.4 Deployment Phase

During this phase, the Operations IMS will become operational.

- Perform user training;
- Conduct user roll out in stages; and
- Provide ongoing user support and enhancements.

The implementation of the Operations IMS component must be carefully coordinated and integrated with the operational activities of the water treatment divisions as it is currently deployed and in use.

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08. Maintenance IMS

Section 8 briefly outlines the requirements of Paragraph 19(c)(iii) of the CD. The section is organized into CD and program requirements, requested improvements, proposed maintenance IMS updates and development.

Additional requirements for the maintenance component of the IMS have been developed within the previously created CD response documents as described below.

08.01 Requirements from GSSOMP

Various requirements for the IMS were defined in the GSSOMP dated February 6, 2015. These requirements are as follows:

- Section 04.06 of the GSSOMP defined requirements for a data connection between SCADA and IMS to allow access to relevant SCADA data. It also defined report templates and the development of color “dashboards” to display performance data;
- Section 06.02.1 of the GSSOMP requires that all gravity sewer cleaning records be maintained in the IMS;
- Section 06.02.4 of the GSSOMP requires that the paper manhole inspections be converted into an electronic manhole inspection process for use in the field and office and that the data be stored in the IMS;
- Section 06.04 of the GSSOMP requires that reports documenting the monitoring, assessment, screening, as well as scheduled maintenance activities, work orders and logs for repairs be produced by the IMS;
- Section 08.01 of the GSSOMP requires that the IMS will include an easement accessibility checkbox on the electronic field work order forms to document easement accessibility at a particular location. In the work order form’s comment box, the crew supervisor will document observed extraordinary conditions; and

- Section 14 of the GSSOMP documents the need to include reports which list equipment problems and the status of work orders generated during the prior month. These reports will be developed as part of the maintenance IMS.

08.02 Requirements from the PSOPMP

Various requirements for the IMS were defined in the PSOPMP dated April 6, 2015. These requirements are as follows:

- Section 05.03 of the PSOPMP requires significant improvements in EAMS, including:
 - Developing fields to capture pertinent data for pump station components;
 - Developing fields to capture operational data for each pump;
 - Bar coding of assets within pump stations;
 - Reconfiguring the repairable spares functionality;
 - Developing a complete asset inventory and storing the data within EAMS (also needed for SSAMP);
 - Performing condition assessments of critical pump station assets (also needed for SSAMP); and
 - Developing workflows and applications to maintain asset inventories and condition assessments.

08.03 Requirements from FMOPMARP

Various requirements for the IMS were defined in the FMOPMARP dated August 6, 2015. These requirements are as follows:

- Section 05.02 of the FMOPMARP requires the development of a Force Main Criticality Assessment and Prioritization Report which will be developed within the Maintenance IMS; and
- Section 08.05 of the FMOPMARP requires development of reports which list equipment problems and the status of work orders generated during the prior month. These reports will be included in the maintenance IMS.

08.04 Proposed Maintenance IMS

While the current EAMS product nominally satisfies the defined requirements of the CD, there are a number of issues that should be addressed in the maintenance IMS. The current EAMS implementation is not efficient in supporting the needs of users, and it needs to be reconfigured for ease of use and to support mobile technology. Additionally, there are functional requirements defined in the previously submitted CD documents that will require development of new functionality. Each of these are described below.

08.04.1 Maintenance IMS Update

The core maintenance IMS requirement is currently being met by the EAMS application for a large number of MDWASD maintenance staff. However, as described above, the existing EAMS maintenance IMS implementation took place in stages. The implementation increased in sophistication for each division. As such, the WWTMD configuration included more functionality and complexity than the PSD configuration which was the first to be implemented. Since the initial deployments, advances in technology and understanding gained through use have led to a desire for significant improvements in the use of EAMS particularly among mobile users. These suggested improvements are described below.

08.04.1.1 Wastewater Collection and Transmission Line Division

The improved functionality of EAMS for the WWCTLD will incorporate the following functionality enhancements as defined below:

- Incorporate detailed sewer line cleaning/inspection data into EAMS via integration with GraniteNet;
- Incorporate manhole cleaning/inspection data into EAMS;
- Incorporate sewer line and manhole repair results, including costs, within EAMS (which are also needed for SSAMP);
- Incorporate desired easement inspection functionality within EAMS; and
- Develop additional reports as required.

08.04.1.2 Pump Station Division

The PSD EAMS configuration is in need of a substantial update. It will be updated to provide a more robust solution and leverage new EAMS functionality that currently exists in the latest versions of the software and to fully leverage mobile technology. The functionality to be included consists of the following:

- Implement the new functionality defined in Section 05.03 of the PSOPMP;
- Deploy connected/disconnected mobile technology on tablet computers with simplified workflows that are tailored to the specific tasks of the individual users;
- Simplify and tailor workflows for standard maintenance activities;
- Input failure codes for equipment classes to codify work activities;
- Incorporate preventative maintenance inspections or task lists to collect quantitative and qualitative observations and run-time meters on equipment;
- Incorporate operator task lists to facilitate operator checks and to record their activities in more detail; and
- Improve the ability to check out parts for a specific work order so that users follow the best practice procedure.

08.04.1.3 Wastewater Treatment Division

The WWTMD EAMS configuration is operational, but is in need of an update. It will be updated to provide a more robust solution and leverage new EAMS functionality that currently exists in the software and mobile technology. The functionality to be included consists of the following:

- Deploy connected/disconnected mobile technology on tablet computers with simplified workflows that are tailored to the specific tasks of the individual users;
- Simplify and tailor workflows for standard maintenance activities;
- Improve the ability to check-out parts for a specific work order so that users follow the best practice procedure; and
- Improve calculation of vehicle run time.

08.04.2 Data Integration Improvements

In some cases, data that is available from existing information systems is not currently structured so as to support MDWASD's reporting needs. Circumstances in which data will require transformation or summarization are noted below.

Construction Contracts Management tracks sewer system rehabilitation and replacement projects performed by outside contractors. The Construction Contracts system manages data at the project level, rather than at the individual asset level as in EAMS and GIS. Dates and costs from completed construction projects need to be properly allocated to the impacted assets within EAMS/GIS.

The IMS Program implementation plan will define business practices and algorithms for allocating cost information and project completion date/status to the impacted assets within EAMS with notification to WWCTLD staff.

08.05 Proposed Maintenance IMS Development

Since the Maintenance IMS is an improvement to the existing Infor EAMS implementation at MDWASD, the process for development of this component is focused on the upgrading and enhancement of the existing implementation. The maintenance IMS development process for each major functional component (WWTMD, PSD, and WWCTLD) will include the following phases:

08.05.1 Requirements Phase

The requirements for the enhanced Maintenance IMS will be developed in this phase.

- Define potential users and scope for each major functional component;
- Interview users within each group and gather specific improvement requirements (note that much of this has been done);
- Develop new data schemas within EAMS to support the new requirements; and
- Develop a hardware/software/network strategy to employ mobile technology.

08.05.2 Development Phase

During this phase, the Maintenance IMS will be constructed.

- Revise configuration screens/develop new screens within EAMS to support desired functionality;
- Develop mobile configurations that leverage mobile tablet-based hardware; and
- Validate/upgrade mobile networks at WWTPs.

08.05.3 Testing Phase

The performance and functionality of the enhanced Maintenance IMS will be tested in this Phase.

- Perform performance testing of mobile hardware and networks;
- Perform user testing of EAMS functionality ; and
- Perform user testing of mobile functionality.

08.05.4 Deployment Phase

During this phase, the enhanced Maintenance IMS will become operational.

- Perform user training;
- Conduct user roll out in stages; and
- Provide ongoing user support and enhancements.

The implementation of the maintenance IMS component must be carefully coordinated and integrated with the maintenance related activities of the other CD-driven initiatives, especially those of the SSAMP as many of those activities depend on improvements to EAMS.

09. Description of Information to be Fed into the System

As previously described, the IMS is composed of three components: Management, Operations, and Maintenance. The Operations and Maintenance IMS components are transactional systems and will receive their data via manual input, SCADA, or LIMS. The Management IMS is primarily a reporting tool. The information to be fed into the Management IMS comes almost entirely from other systems which are primarily transactional in nature. Figure 09.1 documents the linkages between the source systems and the three IMS.

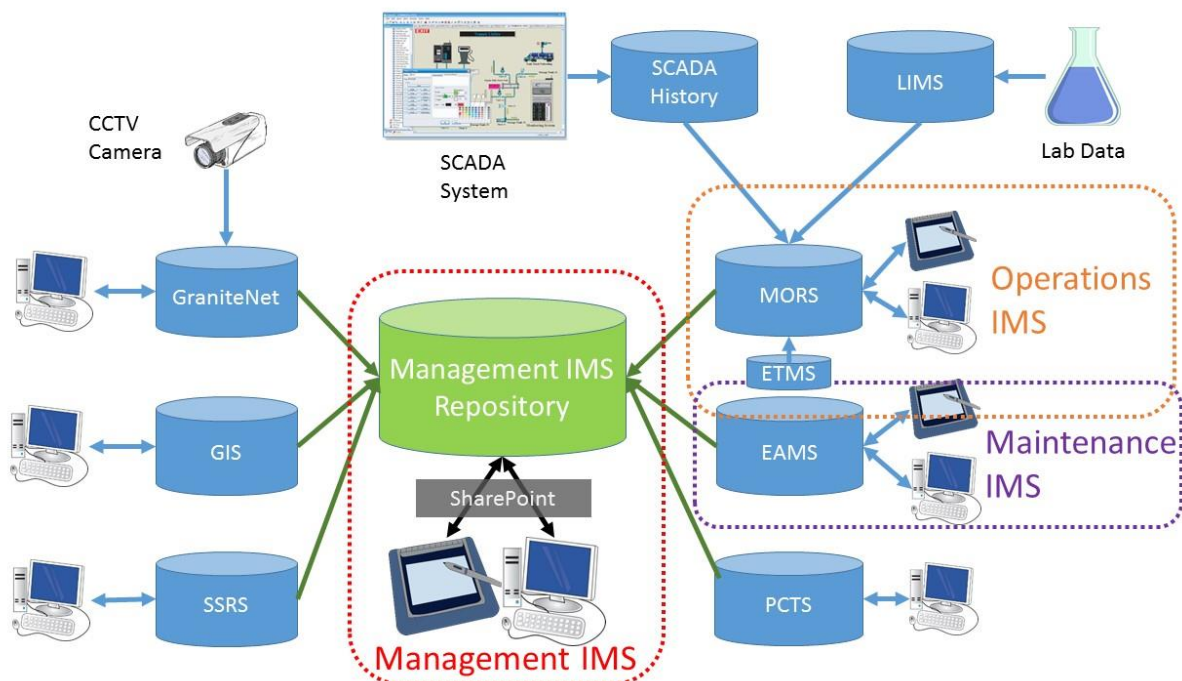


Figure 09.1
IMS Interfaces with Other Systems

As shown in Figure 09.1, three of the information systems: GraniteNet, SCADA History, and LIMS receive real-time data from field/lab systems. Some data from the SCADA History tables and LIMS is then extracted into MORS. As part of the IMS development, automated data exchanges will be used to extract data from GraniteNet, GIS, SSRS, MORS, EAMS, and PCTS, via background processes, and feed it into a series of structured tables in the Management IMS Repository (MIR). The Management IMS will consist of a series of SharePoint/SQL Server Reporting dashboards which will draw from data within the MIR. In this way, reporting into the

Management IMS application will be fast and will not be impacted by the performance of the source systems or their interfaces.

As shown in Figure 09.1, the Operations IMS will utilize both MORS and EAMS databases. Input to MORS can be manual, via direct linkage to SCADA history, or via direct linkage to LIMS. Also shown is an interface from ETMS to MORS to store historic pump run information. A plan currently exists to migrate the functionality of ETMS into MORS, and when that occurs the ETMS application will be retired.

The Maintenance IMS uses the EAMS database, which is populated by manual input.

10. Description of the Management Reports

MDWASD's existing information systems are capable of generating hundreds of different reports. Many of these reports are used as Management Reports. A listing of Management Reports, the source system from which they are generated, and the periodicity of each is documented in Table 10.1. The proposed management IMS as discussed in Section 06 will have the ability to generate the KPIs identified in Table 05.1 as well as display the information in a graphical form.

Table 10.1
Management Reports

Report Name	Primary Users	Source System	Periodicity
Active Strategy Enterprise (ASE) (See Section 6.04)	Upper Management	Manual	Monthly
Cost Summary by Project and Area	Division Management	EAMS	As needed
Summary of Hours by Work and Hour Type	Division Management	EAMS	As needed
Divisional Work Order Summary	Division Management	EAMS	As needed
Complaint Tracking Summary	Division Management	EAMS	As needed
Wastewater Treatment FY Total Hours and Cost	WWTP Management	EAMS	As needed
Pump Station Work Order Summary by Date	PSD Management	EAMS	As needed
Treatment Plant Monthly Operating Reports	WWTP Management	Manual	Monthly
Sewer System Spill Reports	Upper Management	Sewer Spill Database	Monthly

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11. Description of the Work Reports

MDWASD's information systems are capable of generating hundreds of different reports. Most of these reports are used as Work Reports. The Work Reports are produced by EAMS, and are generally run on demand. A listing of the Groupings of the Work Reports is documented in Table 11.1. Lists of the reports within each category are shown in Appendix B. The proposed maintenance IMS is an updated version of the current EAMS system. Therefore, the core work report functionality will be as described, although a few additional work reports will be added as part of the maintenance IMS update as described in Section 08.

Table 11.1
Work Reports

Report Grouping	Appendix
Inspections	B-1
Work	B-2
Scheduling	B-3
Projects	B-4
Qualification	B-5
Permits	B-6
Inventory Management	B-7
Parts Issues/ Parts Return	B-8
General Reports	B-9
Physical Inventory	B-10
GL Reconcile	B-11
PO Receipts/ PO Returns	B-12
Transfers	B-13
Purchasing	B-14
Equipment	B-15
Communications Center	B-16
Distribution	B-17
SCADA	B-18
Fleet	B-19
General Maintenance	B-20

Pump Stations	B-21
Water Production & Maintenance	B-22
Wastewater Collection	B-23
Wastewater Treatment	B-24
MDWASD General Report	B-25
Administration	B-26
Complaint Tracking	B-27
Quick Reference Documents	B-28
Training Materials	B-29

12. Standard Forms

MDWASD’s information systems use hundreds of standard forms. The proposed operations IMS component will in some cases automate information capture, or facilitate direct digital capture of information currently obtained through the standard forms; however it will not supplant the use of all standard forms within MDWASD. A listing of the standard groupings of forms and their source is documented in Table 12.1. A detailed listing of Forms is provided in Appendix C.

Table 12.1
Standard Forms

Form Groupings	Source	Appendix
Online Forms	EAMS	C-1
Miscellaneous Forms	myWASD	C-2
IT Forms	myWASD	C-3
Power Forms	myWASD	C-4
Personnel Forms	myWASD	C-5
Property Forms	myWASD	C-6
Quality Assurance & Performance Auditing Forms	myWASD	C-7
Telecommunications Forms	myWASD	C-8
Training Forms	myWASD	C-9
Contracts Processing Forms	myWASD	C-10
Construction Sign Order Forms	myWASD	C-11
CIS – Customer Information System Forms	myWASD	C-12
Engineering Forms	myWASD	C-13
Fleet Forms	myWASD	C-14

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13. Description of How the Records Will be Maintained

As described in Section 09, the records in the IMS are largely created and maintained in other information systems, and are then displayed within the IMS. In general records will be maintained in the following methods as shown in Table 13.1.

Table 13.1
Record Maintenance Methods

Maintenance Method	Applicable Systems
Manually Input in office	All
Input via mobile device	EAMS, MORS
Input via CCTV system	GraniteNet
Input via SCADA Sensors	SCADA, MORS
Input via laboratory equipment	LIMS, MORS
Transferred from another system	GIS, EAMS, IMS Repository

13.01 Records Retention & Disposal Policy

MDWASD collects large amounts of data daily from a number of systems including SCADA, EAMS, CCTV crews, and other sources. The current records retention policy for this data is to retain and store all of this information forever.

Current SCADA historical data is captured and stored in near real time into in-house database tables. Only parameters that have been requested by staff in the past are captured and stored. These values are identified as SCADA signal tags which then have to be matched to operational systems. Currently, IT collects 74,523 SCADA signals which create 3,975,840 records per day plus 43,482 records per hour of hourly totals derived from the other records. The current in-house SCADA History databases will be replaced by a commercial VTScada Historian product which will manage the historic data from MDWASD's SCADA systems. When that occurs, any systems that integrate with the existing SCADA history databases will be redirected to integrate with the VTScada Historian database. However, very large volumes of SCADA data will continue to be collected even with the commercial SCADA historian product.

These data retention requirements create an unnecessary burden on IT hardware. Specific examples of the need for a data retention policy includes, at a minimum:

- SCADA data from the same sensor being stored as “3-minute” data as well as an hourly total or average; and
- CCTV data from previous inspection cycles are being retained along with the current cycle. CCTV files are very large; approximately 1 Megabyte (MB) per foot of pipe, and keeping redundant or outdated data requires a large amount of unnecessary storage space.

The benefits of an effective records retention and disposal policy are many including: compliance with legal retention requirements; faster retrieval of information; space savings; and fewer lost or misfiled records.

As part of the IMS Implementation MDWASD will develop a records retention and disposal policy that is based on the laws of the State of Florida, the requirements of Miami-Dade County, and the requirements of the EPA, FDEP, and other regulatory agencies. This policy will follow the guidelines established by the Florida Division of Library and Information Services of the Department of State and by Miami-Dade County. The records retention policy will include the following elements:

- Retention – Develop a records retention schedule to identify what records to retain and the retention time required to meet legal and operational requirements;
- Policies & Procedures – Determine procedure for the creation, retention, security, destruction, access, and storage of records as well as a system of “holds” for records subject to legal constraints due to litigation, audit, or governmental investigation;
- Access & Indexing – Index records in a systematic manner, by subject matter and establish a consolidated records management system that links records to the retention schedule through a record classification scheme. Implement a proper authorization process to ensure protection of the confidentiality the records;
- Compliance & Accountability – Designate a Records Management Liaison Officer to ensure: destruction timelines are followed; update retention schedule to accurately reflect

the latest laws and regulations; update classification scheme for new records; and administer record “holds”; and

- Disposal – Determine an appropriate method of disposal by records class or media type and institute a consistent and secure system for the disposal of records in accordance with the records retention schedule while recognizing the disposal suspension of records on “hold”.

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14. Description of the Computer Software, Training, and Operating Procedures

This section describes the computer software that is and will be utilized by MDWASD to manage the wastewater system, documentation of existing and proposed software training, and documentation of procedures for utilizing the software.

14.01 Description of Software in Use

The software products that are used by MDWASD to manage information for use in the IMS are shown in Table 14.1. The table documents the existence of training programs and of standard operating procedures that have been developed for each software product.

Table 14.1
Existing Information Management Systems at MDWASD

Information System	Name (Product)	Major Functions	Training Programs	Operating Procedures
myWASD	Intranet (Microsoft SharePoint)	Entry point to all applications, repository of text documents	Not Required	Not Required
EAMS	Enterprise Asset Management System (Infor EAM)	Maintenance Management and Reporting	Yes	Yes
GIS	Esri ArcGIS	Asset inventories and automated mapping	Yes	Yes
CC&B	Oracle Customer Care and Billing	Water/sewer billing and customer management	Yes	Yes
BI	Business Intelligence (Cognos and Microsoft SQL Server Reporting Services)	Reporting from all systems	Not Required	Not Required
PCTS	Project Control and Tracking System	Tracks schedule and budgets for capital projects	No (limited users)	Yes

Information System	Name (Product)	Major Functions	Training Programs	Operating Procedures
SCADA	Supervisory Control and Data Acquisition	Real-time process monitoring and control	Yes	Yes
LIMS	Laboratory Information Management	Manages laboratory sampling and analyses	No (limited users)	Yes
ETMS	Elapsed Time Management System (Oracle)	Stores pump station equipment runtime data and generates reports	No (limited users)	No
MORS	Monthly Operating Report System	Incorporates SCADA, Lab, and operator data to generate monthly treatment plant operating reports and NPDES discharge reports.	No (limited use in wastewater)	Yes
SSRS	Sewer Spill Reporting System	Stores reported spill details, includes all iterations of spill report, notifies agencies, and generated spill evaluation report	No (limited users)	No
Granite	CCTV inspection Data	Stores tabular and video data from CCTV inspections	No (limited users)	Yes
POPS	“Put or Pay System” - Sludge Hauling database	Stores data regarding sludge hauling activities.	No (limited users)	No
Permits	New permits for water/sewer services	New permits for water/sewer services	No (limited Users)	No
VTSCADA Historian	SCADA Historian	New SCADA Historian to be implemented over 2-3 years	No	No

14.01 Computer Software Training and Operating Procedures

MDWASD has an active ongoing IT training program consisting of both self-paced training and instructor-led training, supported by online user documentation. Certain applications, including

EAMS, ERP, and CC&B have dedicated Business Process Analysts which regularly conduct user training.

As it relates to the IMS, the EAMS Business Process Section team consists of four individuals who are each assigned to support several operating divisions. Typically, focused end-user EAMS training efforts are conducted when a group of new employees require training or a new function / software version is rolled out and a significant number of users need to be trained on new functionality.

MDWASD has also developed a set of User Operating Procedure Documents for EAMS that are available directly to the user via EAMS. These documents provide information regarding the information needed by EAMS for both new users to learn how to use the system and for experienced users who are trying to learn about new functionality. This documentation goes beyond simple software instructions. It includes sample exercises to reinforce learning and tests to measure retention.

Additional but less formal software training programs and documented operating procedures exist for other externally and internally developed software programs as listed in Table 14.1. However, additional IT training is required in both basic computer skills and Microsoft Office, plus additional product specific training for applications that are not currently supported by MDWASD's Business Process Section. MDWASD also intends to enhance the operational procedures to support the new functionality defined for the Maintenance IMS component and develop additional software operating procedures as needed to support the use of the Management and Operational IMS components.

MDWASD will add training functionality to support the additional IT training needs defined above plus all the IMS components described in this document. This includes computer-based and online self-directed training to provide common skills on demand, and instructor-led training for specialized needs.

In addition to the training itself, computer training curricula need to be developed so as to define a set of prerequisites for selected staff positions, document proficiency, and track employee progress via a Learning Management System.

15. GIS Program

Over the years, MDWASD has invested millions of dollars in developing and maintaining an Enterprise GIS for the water and sewer systems. This GIS includes the following sewer asset categories:

Table 15.1
GIS Sewer Asset Categories

Asset Category ¹	Length (feet)	Length (miles)
Force Main	4,933,128	934.30
Force Main Crossing	7,992	1.51
Gravity	16,429,468	3,111.64
Gravity Crossing	65	0.01
Interceptor	97,706	18.50
Inverted Siphon	1,026	0.19
Outfall	15,603	2.96
Sludge	123,218	23.34
Unknown	970	0.18
Totals	21,610,318	4,092.86

¹ Table does not include Sewer Lateral pipes. Data totals as of April 7, 2015.

This section defines the specific implementation actions being undertaken by MDWASD to address the requirements of the GIS sub-paragraph, Paragraph 19(c)(x), the Geographic Information System Program as defined in the CD and listed in Section 1.03 of this IMS Program document. Compliance with the CD for the GIS Program will be demonstrated as part of required semi-annual and/or annual programmatic reporting to EPA. A summary of MDWASDs activities to meet the requirements of the GISP are summarized in Table 15.2.

Table 15.2
GISP Implementation Actions

CD Section	GIS Requirement	Summary Status
§19(c)(x)(A)	<i>“An updated GIS database to include all as-builts and Active As-built Supplemental Information System (“AASIS”) forms, including new and corrected asset attribute data.”</i>	Ongoing through existing contract. It is fully expected that the backlog will be completed prior to the deadline of June 7, 2017.
§19(c)(x)(B)	<i>“Streamlining of the GIS data entry process for new assets, including electronic as-built data and necessary standards so that all new assets are added to the GIS system within ninety (90) calendar days of their activation in the field. Included shall be the development of a system to interface with the Miami-Dade WCTS hydraulic computer model so that the information can be efficiently exported to the WCTS hydraulic computer model.”</i>	Streamlining / Electronic As-built standards will be completed through existing GIS contract. Hydraulic Model / GIS Integration will be completed through CMOM contract.
§19(c)(x)(C)	<i>“Simplification of the AASIS process to facilitate wider usage.”</i>	MDWASD has revised the process of submitting AASIS tickets. Documentation and training for revised submittal process will be completed through §19(c)(x)(E).
§19(c)(x)(D)	<i>“Development of a “flagging process” for damage investigators to note GIS inaccuracies.”</i>	Proper training of damage investigators in the use of the AASIS ticket process will be achieved through §19(c)(x)(E).
§19(c)(x)(E)	<i>“Provision for additional GIS training and refresher training.”</i>	MDWASD will develop a GIS training and refresher program through CMOM contract.
§19(c)(x)(F)	<i>“Use of Dade On-Line Facilities Information Network version II (“DOLFIN II”) to facilitate more widespread access to GIS resources to remote staff.”</i>	DOLFIN 3 will be a large component of effort defined in Paragraph 19(c)(x)(E).
§19(c)(x)(G)	<i>“Determination via suitable as-built drawings, or GPS or traditional surveying field measurements, elevations of all manhole rim elevations and sewer inverts at connections to manholes and Pump Stations and their inclusion into GIS.”</i>	MDWASD will field collect the RIM elevations and reliable pipe inverts. 17% of requirement already completed under CMOM contract.

16. Maintenance Activity Tracked by Type

Maintenance Activity is tracked within EAMS based on the type of activity. On every Work Order a field called “Type” must be populated. The system types determine whether the work order is regularly occurring (preventative, predictive, etc.) or not (corrective, emergency, etc.). The User Types alias the System Types into a more granular level of detail, thus, one System Type can have multiple User Types. Table 16.1 lists each work order type and its related System Type. Work Orders where the System Type is “BR” indicate a reactive task and Work Orders where the System Type is “PM” indicate a planned / regularly schedule task. MDWASD intends to continue tracking maintenance activity in this manner.

Table 16.1
EAMS Work Order and System Types

Maintenance Type	User Type	System Type	Description	Comments
Corrective	AD	BR	Supervision	Used to track Supervisor time. Could be related to managing a repair or for general overhead hours. Would not be used for Preventive or Emergency work supervision.
Corrective	BRKD	BR	Breakdown	Equipment failure that is not considered an emergency which is noticed during normal course of operations. Equipment will not function.
Corrective	CAL	CAL	Calibration	Not Used.
Corrective	CM	BR	Corrective Maintenance	Equipment correction noticed during normal course of operations. Equipment continues to function until repair can be executed.
Corrective	CPM	BR	Corrective for PM	Equipment correction noticed during Preventive Maintenance. Equipment continues to function until repair can be executed.
Corrective	CRM	BR	Corrective from RM	Equipment correction noticed during Routine Maintenance. Equipment continues to function until repair can be executed.
Emergency	EM	BR	Emergency	Emergency Work Order
Preventative	IN	BR	Inspection	Work Order includes an inspection.

Maintenance Type	User Type	System Type	Description	Comments
Emergency	NAT	BR	Natural Disaster	Work results from natural disaster.
Corrective	NI	BR	New Install / Upgrade	Work is to install new equipment.
Corrective	OPER	BR	Operations	Work is performed by operators. Work is not generally for equipment repair, but for periodic "checks".
Preventative	PM	PM	Preventative Maintenance	Scheduled work that enhances equipment performance.
Preventative	PRED	BR	Predictive Maintenance	Scheduled work that checks for potential equipment failures.
Preventative	RM	PM	Routine Maintenance	
Corrective	RP	RP	Repairable Spares	Not currently in use. Work Order is to track the internal repair of Parts that will be put back into the storeroom for future use.
Corrective	SR	BR	Service Request	

17. Staffing and Funding Plan

17.01 Staffing Needs

Current staffing in the MDWASD Information Technology Division is approximately 130 people. Thirty-six of the staff are contract staff working to convert data to remedy the GIS backlog as required by §19(c)(x)(A) of the CD, and they are expected to complete their work before June 2017, at which time the GIS backlog contract will end. However, ongoing staffing will be needed to meet the requirement that all new assets will be added to the GIS system within ninety (90) calendar days of their activation in the field on a continuing basis. Staff will be needed at two levels: Utility GIS Data Maintenance Technicians who will create GIS data, and Utility GIS Quality Assurance (QA) Specialists who will prepare data and validate the edits to the GIS.

Additional operational support for specific applications is provided by approximately 20 Business Process Analysts working for the Finance Division. Currently, MDWASD's Business Process Analysts support only three key enterprise applications: CC&B, ERP, and EAMS.

Any modern organization is highly dependent on information technology for its success. Virtually every significant activity performed by MDWASD leverages and depends on the information systems used to support and manage those activities. Therefore, IT staff play a critical role in helping all of the other staff within the organization perform their jobs as efficiently and effectively as possible.

Dade County has an IT Department (ITD) that supports the IT needs of many of the County's operational Departments. This can lead to a gap between the needs of the individual Department and the overall needs of the ITD. Because of the critical importance of the IT function to the success of MDWASD's mission, MDWASD intends to maintain its own IT Division under its control.

Currently, MDWASD does not have adequate IT staffing to support its current IT user needs. This is especially true for the users not located at the MDWASD headquarters building (roughly 67 percent of MDWASD's total staff), as no IT staff or support services currently operate from remote

sites. Roving IT support staff are needed to address this deficiency. The proposed additional roving IT support technicians, each of which will be equipped with a pickup truck and commonly used spare equipment are shown below:

- 1 – North District WWTP
- 1 – Central District WWTP
- 1 – South District WWTP
- 1 – Westwood Lakes Maintenance Center
- 1 – South Miami Heights Water Treatment Plant
- 2 – Alexander Orr Water Treatment Plant
- 1 – Water Transmission and Distribution

The implementation of the Management, Operational, and Maintenance IMS components as described in this document will further exacerbate the current staffing deficiencies in supporting enterprise applications. Implementation of these systems will require additional staffing to support the Management IMS, the Operations IMS, the Maintenance IMS, and the new SCADA Historian.

The staffing recommendations defined in Table 17.1 are intended as the minimum necessary to provide the IT Division and the Business Process Group with the staffing needed to support the operational needs of the entire wastewater operations team.

Table 17.1
Recommended Staffing Additions for IMS Program-Related Activities

Position	Personnel	Abbreviated Description
Information Technology Division		
Utility GIS Data Maintenance Technicians	6 (6 desktop computers)	Maintain the GIS, including all incoming AASIS tickets, to meet the required 90-day turnaround after the current program ends in 2017.
Utility GIS QA Specialists	6 (6 desktop computers)	Prepare/validate the GIS data changes, including all incoming AASIS tickets, to meet the required 90-day turnaround after the current program ends in 2017.
Computer Technicians	8 (8 laptops and trucks with spare computers and equipment)	Computer Technicians to support the needs of the remote sites. Acts as a roving support position, traveling to a different site each day to address computer support needs. Improves operational efficiency of operational staff by minimizing their need to travel to solve basic computer problems.
SCADA Historical Senior Systems Administrator	1 (1 laptop)	Manage the administration of the SCADA Historical databases. Implement the data retention policy and provide support to users of the SCADA Historical systems. Requires systems and database administration experience. Also serves as Records Management Liaison Officer.
Management IMS Manager	1 (1 laptop)	Lead the development and implementation of the Management IMS, and lead the development and application of Business Analytics for MDWASD. Requires education/experience in staff management, database management and business analytics.
Management IMS Data Scientist/ BI Analyst	1 (1 laptop)	Perform complex data analyses and business intelligence-based decision support activities. Support needs of all operational divisions as a “data guru”. Requires education/experience in both database management and business analytics.
Management IMS Senior Systems Analyst	1 (1 laptop)	Provide high level user support and updating of the Management IMS solution on a continuing basis. Requires experience in database management, business intelligence, and user interface design.
Management IMS Senior Systems Administrator	1 (1 laptop)	Provide systems support for Management IMS integration tools and database administration. Requires systems and database administration experience.
Operational IMS (MORS) Senior Systems Administrator	1 (1 laptop)	Provide systems support for MORS integration tools and database administration. Requires systems and database administration experience.
IT Training Specialist	2 (2 laptops)	Provide ongoing IT training for basic computer skills, Microsoft Office, and those applications not covered by Business Analysts.
PCTS/Primavera Senior Systems Analyst	1 (1 laptop)	Provide high level user support and management of the PCTS and Primavera systems on a continuing basis. Requires experience in database management, business intelligence, and user interface design.

Position	Personnel	Abbreviated Description
PCTS/Primavera Systems Analyst	1 (1 laptop)	Provide level user support and management of the PCTS and Primavera systems on a continuing basis. Requires experience in database management, and user interface design.
Proposed Additional IT/GIS Staff		31
Business Analysis Group		
SCADA Historical Business Process Analyst	1 (1 laptop)	Manage data integrity and data reliability for Historical SCADA Data. Interface with SCADA operational team, Planning, Engineering, and other data users. Address data appropriateness, consistency and quality issues. Requires an understanding of SCADA systems, MDWASD business processes, and database management.
EAMS Treatment Plants Business Process Analyst	1 (1 laptop)	Assist EAMS users at treatment plants in using EAMS effectively. Work with users to suggest changes in EAMS database structure and configuration to better support user's needs. Requires an understanding of EAMS, MDWASD maintenance processes, and database management.
	2 (2 laptops)	Assist PCTS (Proliance) and Primavera users in leveraging the full capabilities of these systems. Work with users to suggest changes in PCTS and Primavera structure and configuration to better support user's needs. Requires an understanding of Proliance, Primavera, MDWASD capital planning processes, and database management.
Proposed Additional Business Process Staff		4
SCADA Section		
SCADA Historian Manager	2 (2 laptops)	Manage interaction between operational SCADA systems and SCADA Historian. Focus is on SCADA data integrity, accuracy, and completeness. Requires an understanding of SCADA systems, MDWASD business processes, and database management.
Proposed Additional SCADA Section Staff		2
Proposed Total Additional Staff		37

17.02 Implementation Products/Services Needs

In addition to the staffing needs defined above to support the continuing CMOM-related IT services needs of MDWASD, a number of one-time costs will be incurred by MDWASD for hardware and software products, and for IT-related implementation services provided by various vendors. These costs are listed below in Table 17.2.

Table 17.2
Recommended Products and Services Needs for IMS Program-Related Activities

Item	Description	Budget
CAPITAL ITEMS		
Asset Management Lifecycle Cost Analysis Hardware, Software, and Services	Lifecycle Cost Analysis Hardware, Software, and Services as defined in SSAMP Table 03.1.	\$500,000
Management IMS Hardware and Software	Management IMS Database software licensing, and ancillary products as defined in Section 06.06.	\$200,000
Maintenance IMS Hardware and Software	Improved Maintenance IMS Mobile solution for the Treatment Plants as defined in Section 08.05.	\$500,000
IT Training systems and programs	IT Training hardware, software, and systems as defined in Section 14.02.	\$500,000
Management IMS Implementation Services	Management IMS implementation consulting services as defined in Section 06.06.	\$800,000
Operational IMS Implementation Services	Operational (MORS) IMS implementation consulting services as defined in Section 07.05.	\$500,000
Maintenance IMS Implementation Services	Maintenance IMS implementation consulting services as defined in Section 08.05.	\$600,000
Hydraulic Model/GIS Integration Services	Services to integrate Hydraulic Model and GIS as defined in Table 15.2.	\$300,000
Vehicles for new staff	Vehicles for roving computer technicians	\$200,000
SUBTOTAL		\$4,100,000
OPERATIONAL ITEMS		
GIS Refresher Training program Services	GIS Refresher Training program Services as defined in Table 15.2.	\$140,000
Development of GIS rim elevation and invert data	Development of GIS rim elevation and invert data as defined in Table 15.2. Note that additional costs for this effort are already included in FY 15/16 budget.	\$1,300,000
SUBTOTAL		\$1,440,000
	ESTIMATED TOTAL	\$5,340,000

17.03 Total Funding Needs

The total IMS Program funding needs over five years are shown below based on proposed staff (as listed in Table 17.1), and implementation products and services (as listed in Table 17.2).

Table 17.3
Proposed IMS Program Phased Implementation Funding Needs

Item	Description	Budget
Recommended Staff	Additional 35 staff positions as detailed in Table 17.1	\$12,981,164 ¹
Capital Equipment	Additional hardware, software, vehicles, and services as detailed in Table 17.2	\$4,100,000
Operational Services	Implementation services as defined in Table 17.2	\$1,440,000
	ESTIMATED TOTAL	\$18,521,164²

¹ Requested employees based on average salary budgets, which includes a 39% fringe rate.

² Preliminary capital and operating budget estimates are based on average salaries, estimated training budgets, typical equipment costs, and preliminary vendor estimates. These estimates may vary depending on growth factors and implementation schedule.

APPENDIX A Consolidated List of CMOM Implementation Tasks

Task Name	Source
GSSOMP	
Provide data connection between SCADA system and IMS to allow access to relevant SCADA data	GSSOMP, Table 04.3
Develop report and query templates in the IMS to calculate the listed PMs.	GSSOMP, Table 04.3
Develop color “Dashboards” which graphically display performance data.	GSSOMP, Table 04.3
Develop GIS based prioritization tool that displays the criteria graphically in the GIS.	GSSOMP, 05.03
WWCTLD will transition and expand its preventative O&M focus to include additional activities.	GSSOMP 06
Night Flow Monitoring.	GSSOMP 06.01
Implement GSS evaluation prioritization list strategy.	GSSOMP 06.02
Develop integrated electronic manhole inspection data collection form for use in the field and office and will populate a manhole inspection database archive.	GSSOMP 06.02.4
Update to the WCTS hydraulic model (comprehensive update is currently underway as part of the existing CMOM programs).	GSSOMP 06.03
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.	GSSOMP 06.03
Cease reporting on the VSCO requirements and follow the reporting requirements included in the Consent Decree.	GSSOMP 06.04
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.	GSSOMP 08.01
Conduct an engineering evaluation of corrosion control options with recommendations suited to the unique environmental conditions	GSSOMP 10.01
Implement WWCTLD’s FY2015/16 initial budget proposal that 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.	GSSOMP 11.05

Task Name	Source
Updated current and rolling five year budget proposals and resource requests annually to contain the performance measure rationale for deviations from the planning and proposed budgets.	GSSOMP 11.05
Provide the tools and technology access in support of the other IT/IMS/GIS/SCADA requirements described in the GSSOMP or the IMS Program to specifically address the IT/IMS/GIS/SCADA requirements of these CMOM Programs.	GSSOMP 12
Develop reports which list equipment problems and the status of work orders generated during the prior month.	GSSOMP 14.01
PSSOMP	
Add PSD wet well crews to conduct routine inspections of wet well conditions, observe and document inspections, and subsequently perform wet well cleaning.	PSOPMP Table 03.1
Add PSD staff to manage various consultant resources to conduct field site inspections of existing pump stations and to input resulting data into the EAMS database.	PSOPMP Table 03.1
Subsequent to the completion of the Pump Station Technical Specifications Data Attribution, the asset inventory will be used to update and refine the spare parts.	PSOPMP Table 03.1
Add Mechanical trade staff for PSD to accomplish pump station emergency generator and portable pump diesel equipment maintenance.	PSOPMP Table 03.1
Move SCADA alarm monitoring function to the PSD and add required shifts to ensure 24/7 monitoring.	PSOPMP Table 03.1
Add both PS Operations staff and Instrumentation Technician staff to maintain instrumentation located in the pump stations.	PSOPMP Table 03.1
Establish and provide oversight and development of maintenance scheduling for routine, preventative, and predictive maintenance in EAMS.	PSOPMP Table 03.1
Oversee the EAMS software for PSD. Work with in-house engineer to manage and maintain accurate database of assets in EAMS.	PSOPMP Table 03.1
Add PSD Mechanical trade staff to repair submersible pumps and PS Supervisor staff to adequately manage the current submersible pump repair shops.	PSOPMP Table 03.1
Provide support to O&M staff and manage capital improvements to mechanical equipment.	PSOPMP Table 03.1

Task Name	Source
Addition of new PSD staff to accomplish Predictive Maintenance activities, including vibration analysis, thermal imaging, insulation resistance, and oil analysis, which are used to find defects not typically discovered during routine or preventative maintenance	PSOPMP Table 03.1
Analyze communications options, such as radio, cellular, beeper, etc., to determine best means of communications between field personnel and supervisors.	PSOPMP Table 03.1
Properly analyze the viability of EAMS and then move forward with a full implementation of an asset management system that can efficiently capture and report detailed information about the PSD system. The implementation of EAMS will include bar coding.	PSOPMP 05.03
Complete a total system inventory utilizing a mobile data acquisition tool (i.e. laptop, tablet, etc.) to populate the existing list of pump stations with detailed information necessary for PSD to operate and maintain their assets.	PSOPMP 05.03
Develop a protocol to update the database with replaced components due to maintenance or rehabilitation to include the addition of new pump stations to the system to ensure the database remains populated with accurate inventory information.	PSOPMP 05.03
During the implementation phase of the program, PSD intends to increase efficiency of the work order process by modifying the business process and implementing a mobile solution within EAMS	PSOPMP 07.02.1
Upon full implementation of program recommendations, spare parts will be checked out of the inventory using a bar coding system and the EAMS system tracks the transaction, the quantity in stock, and the location of the parts.	PSOPMP 08.03
PSOPMP implementation will include a staff hiring plan and equipment recommendations to allow PSD to operate at a higher level.	PSOPMP, 09.01
The PSD is planning to institute a training program for PSD personnel to promote a higher training level, including certifications for selected job positions.	PSOPMP 09.02
Climate resiliency feature be incorporated into the pump station upgrade and replacement design processes based on asset life.	PSOPMP, 10.01
WWTP OMP	
Additional resources are planned to support the Maintenance Planning and Scheduling functions of the existing CMMS/EAMS group within WWTMD. The primary function of this group is to manage various maintenance practices as described in a newly developed Maintenance Management Support Group.	WWTPOMP, Table 03-1, 06.04

Task Name	Source
Develop the Maintenance Work Management Guideline to enhance the existing EAMS Functional Requirements Document and set forth policies and procedures (including SMPs/SOPs) to effectively manage repair and renewal activities throughout the plants.	WWTPOMP, Table 03-1, 06.03
As part of the Maintenance Work Management Guideline, develop the Asset Register Management Plan to set forth the procedures and responsibilities for maintaining an accurate asset register with the correct asset class attributes reconciliation of field positions, criticality ratings, condition status, and new asset	WWTPOMP, Table 03-1, 06.02
As part of the Maintenance Work Management Guideline develop the Inventory Management Plan to set forth the procedures and responsibilities to effectively manage all materials to perform maintenance activities including the association of parts to equipment	WWTPOMP, Table 03-1
Include the existing CM Program as part of the Maintenance Work Management Guideline. The enhanced Corrective Maintenance Program will set forth procedures to prioritize Planned and Unplanned Corrective Maintenance activities.	WWTPOMP, Table 03-1
Include the existing PM Program as part of the Maintenance Work Management Guideline. The enhanced PM Program will set forth procedures to prioritize preventative and predictive maintenance activities.	WWTPOMP, Table 03-1
Develop a SCADA Master Plan to establish a strategy to improve operational control, monitoring, and alarming of treatment plant processes and set forth a plan to improve condition based monitoring of equipment. Another outcome should be the establishment	WWTPOMP, Table 03-1, 05.03.4
Develop condition based monitoring improvements to be included the MDWASD SCADA Master Plan.	WWTPOMP, Table 03-1, 05.03.4
Develop a plan to capture knowledge of unique operating and maintenance characteristics or techniques specific to each facility and unit processes.	WWTPOMP, Table 03-1
As part of the Knowledge Capture Plan, identify emergency and/or critical operational events and develop Standard Operating Procedures to provide written instructions to properly perform tasks.	WWTPOMP, Table 03-1
As part of the Maintenance Work Management Guideline, develop templates that provide work instructions to perform maintenance tasks or to develop job plans within EAMS.	WWTPOMP, Table 03-1
Implement a SCADA data historian with the ability for the user to access to archived SCADA data on a daily basis.	WWTPOMP, 04.04, 05.03.4
Define analyses, queries, reports and condition based monitoring desired for integration with EAMS	WWTPOMP, 04.04, 05.03.4

Task Name	Source
Modify EAMS functional requirements to query/accept SCADA variables	WWTPOMP, 04.04, 05.03.4
Once fully implemented, the public can find general information about the WWTMD activities such as; septic waste disposal and public tours by visiting the County’s website and selecting Wastewater Treatment Plant Information.	WWTPOMP, 05.01.3
Data integration between SCADA and EAMS, LIMS, GIS, Finance and IT.	WWTPOMP, 05.03.4
Improvements to Wastewater Treatment Plant Automation.	WWTPOMP, 05.03.4
Cyber Security	WWTPOMP, 05.03.4
Under full implementation of the WWTP OMP, condition-based monitoring will be added to the current PdM activities. Additional predictive maintenance activities will include Condition-Based Monitoring of vibration and other indicators.	WWTPOMP, 07.02
Upon full implementation of the WWTP OMP, spare parts will be associated to equipment or multiple pieces of equipment within the EAMS database.	WWTPOMP, 08
The Inventory Management Plan (IMP) will determine warehousing practices so as to protect and maintain highly critical parts as well as store them in a manner so as to not hinder the warehousing of less critical, more frequently used parts.	WWTPOMP, 08.02
Upon full implementation an equipment / asset criticality rating system will be described in the Asset Register Management Plan. Per the performance measures in this program, 95 percent of all highly rated critical equipment will be regularly assessed to	WWTPOMP, 09
Once the plan is fully implemented scheduled condition assessments will be performed on highly critical (#5 – Hazard) equipment and systems.	WWTPOMP, 09.01
Once implemented, the Staffing and Funding Plan will use previous plant performance records and newly established performance measurement goals to objectively plan, and adjust, resource and funding levels to meet the adopted performance measure targets.	WWTPOMP, 10.01, Table 10-1
Improvements to the SDWWTP Plant FOG Removal Facility are currently in the planning stage. Planning is anticipated to be complete by May 2015. Design of improvements to the station is scheduled to begin in June 2015.	WWTPOMP, 11.04.3
Upon completion of the IMS portion of this CMOM performance measures will be identified to monitor the Hauled Waste Program and adjust procedures to ensure effective management of the program.	WWTPOMP, 11.05

Task Name	Source
FMOPMARP	
Provide a comprehensive inspection of force main easements utilizing vendor services and identify current encroachments.	FMOPMARP, Table 03.1, 06.05
Develop a more detailed process for evaluating corrosion control methodologies for metallic pipelines. Also, develop an SOP for the evaluation of soils.	FMOPMARP, Table 03.1
Implement a pilot program to monitor the pH of sewage flow from select MDWASD industrial customers	FMOPMARP, Table 03.1, 05.01.4
Work with in-house engineer to manage and maintain accurate database of assets in EAMS. The task will include the development of a mobile solution for EAMS work order management and a monthly reporting system.	FMOPMARP, Table 03.1
The purpose of the Criticality Assessment and Prioritization Report is to assess the risk or probably of failure and consequence of failure, to assess the structural integrity and to identify the critical force mains which require further assessment or R&R	FMOPMARP, Table 03.1, 05.02, 5.03
Provide additional training to new and existing construction management staff with regards to proper pipe handling, bedding, coating and field repair to ensure proper installation during construction by outside forces.	FMOPMARP, Table 03.1
Proposed specifications for the use of inert materials are being developed and will be included as part of the FMOPMARP implementation activities.	FMOPMARP, 05.01.3
The Staffing and Funding Plan details presented below contain present and transitional recommendations.	FMOPMARP, 07, Table 07.3
Paragraph 19(g)(i)(F) of the CD requires reports which list equipment problems and the status of work orders generated during the prior month.	FMOPMARP, 08.05, Table 08.1
SORP	
MDWASD IT staff will include additional fields in the notification form to incorporate repeat SSO identification for each SSO incident.	SORP, Table 03.1
MDWASD IT staff will develop a Building Backup notification form based on the example in the SORP Appendix B, Example Building Backup Notification, similar to the Domestic Wastewater/Abnormal Event Notification form for use in reporting and tracking Building Backups.	SORP, Table 03.1
MDWASD IT staff will complete on-going improvements to incorporate additional tracking capabilities to ensure the elements of the separate tracking systems are incorporated into an Enterprise system application that allows for access across departmental barriers, including RER-DERM access to read data.	SORP, Table 03.1

Task Name	Source
<p>MDWASD IT staff will incorporate the Building Backup tracking capabilities into the SSO Consolidated Database activity to ensure compatibility and ease of access.</p>	<p>SORP, Table 03.1, 05.03.2</p>
<p>In conjunction with the Information Management System (IMS) Program, MDWASD IT staff will implement measures to record, track, and report on SORP performance measures as listed in Table 04.1.</p>	<p>SORP, Table 03.1</p>
<p>MDWASD staff involved in SORP-related activities will attend training activities, including workshops, field training, and/or coordination/training meetings to ensure staff are fully informed of the SORP-provisions; are able to effectively implement such SORP-provisions; and are equipped with the appropriate knowledge and resources to carry out their job responsibilities in a prompt and efficient manner. The training will also include an emphasis on environmental and public health protection measures. For example, response crews will be trained to recognize the boundaries of the Critical Wildlife Area in Biscayne Bay so that appropriate measures can be implemented to reduce the potential spill impact to sensitive habitat areas.</p>	<p>SORP, Table 03.1, 07.02</p>
<p>Utility Locations and Special Billings staff will attend refresher training on the Active As-built Supplemental Information System (AASIS) process to ensure asset location or data attributes found during field activities to be incorrectly input into the GIS mapping and the EAMS asset inventory databases are corrected according to the field-determined findings in a prompt, efficient, and accurate manner.</p>	<p>SORP, Table 03.1, 07.02</p>
<p>Utility Locations and Special Billings staff will offer a Contractor Outreach Workshop, or other educational activity as might be identified, to assist contractors and other third parties to effectively use the Sunshine Ticket program to improve utility locations response times and location accuracy thus minimizing the potential for contractor damage to MDWASD’s infrastructure.</p>	<p>SORP, Table 03.1, 07.02</p>
<p>The current low manholes identified upstream of pump stations is a preliminary identification that may not include all pump stations and is subject to refinement in elevations that are being developed in MDWASD’s GIS Program. Once the refined GIS data is available, the PSD Operations Engineer (new staff position) will refine the identification of low manholes upstream of MDWASD-owned pump stations (excluding private pump stations and private collection systems).</p>	<p>SORP, Table 03.1</p>
<p>The listing in Appendix E, Pump Station Upstream Low Manhole Identification, will be continuously replaced as additional data and more accurate data become available.</p>	<p>SORP, 05.03.3</p>
<p>Under the CD, the County is required to maintain all records documenting the steps taken, and which will be taken, to prevent the SSO from recurring. These records are to be maintained for a period of not less than 5 years.</p>	<p>SORP, 05.04</p>
<p>MDWASD staff and resources are required for effective implementation of the SORP</p>	<p>SORP, 07.01, Table 07.1</p>

Task Name	Source
Under the GIS program improvements, efforts are underway to ensure manholes with the lowest rim elevations are identified upstream of pump stations.	SORP, 08.03.4
GIS	
An updated GIS database to include all as-builts and Active As-built Supplemental Information System (“AASIS”) forms, including new and corrected asset attribute data.	GIS TM, 02.01.1, 03.01
All new assets are added to the GIS system within ninety (90) calendar days of their activation in the field.	GIS TM, 02.02.1, 03.01
Included shall be the development of a system to interface with the Miami-Dade WCTS hydraulic computer model so that the information can be efficiently exported to the WCTS hydraulic computer model.	GIS TM, 02.02.1, 03.01
Simplification of the AASIS process to facilitate wider usage.	GIS TM, 02.03.1, 03.01
Development of a “flagging process” for damage investigators to note GIS inaccuracies.	GIS TM, 02.04.1, 03.01
Create a training and refresher program so that staff can receive standardized training to learn how to access GIS information, how to report GIS errors for correction, and how their work and production can be improved	GIS TM, 02.05.3, 03.01
Use of Dade On-Line Facilities Information Network version II (“DOLFIN II”) to facilitate more widespread access to GIS resources to remote staff.	GIS TM, 02.06.1, 03.01
Determination via suitable as-built drawings, or GPS or traditional surveying field measurements, elevations of all manhole rim elevations and sewer inverts at connections to manholes and Pump Stations and their inclusion into GIS.	GIS TM, 02.07.1, 03.01
Pilot Manhole Rim and Invert Determination.	GIS TM, 02.07.1, 03.01
Full System Manhole Rim and Invert Determination.	GIS TM, 02.07.1, 03.01
SSAMP	
Hire or Appoint an Asset Management Program Manager.	SSAMP Table 03.1
Develop / Assemble Program foundational elements such as Policies, Strategies, Objectives and Plans.	SSAMP Table 03.1
Oversee / guide / facilitate the implementation of the Sewer System Asset Management Program (SSAMP) activities.	SSAMP Table 03.1

Task Name	Source
Oversee / guide / facilitate the implementation of the O&M Plans defined in the Gravity Sewer System Operations and Maintenance Program (GSSOMP).	SSAMP Table 03.1
Oversee / guide / facilitate the implementation of the O&M Plans defined in the Force Main Operations, Preventive Maintenance Assessment / Rehabilitation Program (FMOPMARP).	SSAMP Table 03.1
Oversee / guide / facilitate the implementation of the O&M Plans defined in the Pump Station Operations and Preventative Maintenance Program (PSOPMP).	SSAMP Table 03.1
Oversee / guide / facilitate the implementation of the O&M Plans defined in the Wastewater Treatment Plant Operations and Maintenance Program (WWTPOMP).	SSAMP Table 03.1
Define the organizational resource needs (skillsets and number of resources) to sustain the SSAMP and O&M Plans beyond their initial execution.	SSAMP Table 03.1
Hire or assign resources to the Asset Management program Team.	SSAMP Table 03.1
Perform market research to identify the potential software tools/products that support asset-based life cycle costing and work with MDWASD's existing computing environment.	SSAMP Table 03.1
If necessary, develop and issue an RFQ, select a solution (new product or new functionality implemented on an existing product), and implement the solution on MDWASD systems.	SSAMP Table 03.1
Implement the life cycle costing product, one Division at a time. Replicate the effort across the entire MDWASD WCTS dataset. (Note that asset inventories, identification of critical assets, and condition assessments must be available for these analyses to be performed).	SSAMP Table 03.1
Use the software to perform multiple life cycle costing what-if scenarios.	SSAMP Table 03.1
Select one proposed life cycle costing scenario for future cost projections.	SSAMP Table 03.1
Develop long term life cycle cost projections for 5 to 50 year planning period.	SSAMP Table 03.1
IMS Program	
Develop Management IMS Dashboards.	IMSP Table 03.1
Establish SCADA Archive Group.	IMSP Table 03.1
Enhance MORS Functionality.	IMSP Table 03.1
Implement GraniteNet & Integrate with EAMS.	IMSP Table 03.1

Task Name	Source
Develop enhanced Spill Application Module.	IMSP Table 03.1
Night flow identification tool.	IMSP Table 03.1
WCTS basin prioritization tool.	IMSP Table 03.1
EAMS functionality enhancement for WWCTLD.	IMSP Table 03.1
Update PSD EAMS Configuration.	IMSP Table 03.1
Update WWTMD EAMS Configuration.	IMSP Table 03.1
Construction Contracts Management project closeout business practices.	IMSP Table 03.1
Records Retention and Disposal Policy.	IMSP Table 03.1
Additional IT user training.	IMSP Table 03.1

APPENDIX B MDWASD Work Reports

Appendix B.1. Inspections

Inspections

- Inspection route report
- List of inspection results
- List of points to be inspected
- Status of inspection points

Appendix B.2. Work

Work

- Actual Labor Hours Against Estimated
- Expired Warranties
- Daily hours worked per employee
- VMRS Activities
- Vehicle Ticket Report
- Future Maintenance cost
- Hours needed for tasks
- List of WOs Bypassed due to nesting
- Long term WO list
- Short Term WO list (Activities)
- Short term WO list (WOs)
- Tool Usage
- WO backlog report
- WO aging
- WO cost list
- WO on - time delivery by employee
- WO on-time delivery by trade
- WO Statistics

Appendix B.3. Scheduling

Scheduling

- Daily trade schedule
- Labor required per day or trade
- List of all PM schedules
- Material requirements analysis
- Meter based PM due report
- Schedule Attainment
- Schedule Activities
- Schedule vs. Actual - Detail
- Shift Employee

Appendix B.4. Projects

Projects

- Cost summary by Project and Area
- EAMS Project detailed costs
- List of WOs for Project
- Project cost summary
- Project POs
- Project budget code cost summary
- Project costs with overhead details
- Projects with optional AFA

Appendix B.5. Qualification

Qualification

- Qualification expiration report
- Qualification requirement report

Appendix B.6. Permits

Permits

- List of Permit issues
- Permits for WOs

Appendix B.7. Inventory Management

Inventory Management

- Daily Inventory by Store
- Monthly Inventory
- Inactive Parts by Store
- Min Max Realignment
- Min Max Realignment with Issues
- Average Monthly Usage

Appendix B.8. Parts Issues/ Parts Return

Parts Issues/Parts Return

- Parts Issue Summary
- Parts Return Summary
- ROS with Parts Pending Issue
- Pick Ticket with Parts Pending
- Divisional STS Parts Pending Issue
- Stock Issues per Part
- Stock Issues per Employee
- Fulfill an ROS
- Fulfill a pick ticket
- Fulfill an STS Transfer

Appendix B.9. General Reports

General Reports

- ROS Ticket
- Pick Ticket
- Parts Issued or Returned by Division
- Parts Issued or Returned by Organization
- Request of Stores Report Per Cost Code
- Parts Catalog List
- Part Issue Summary Associate to Job Order
- Stores Productivity Report
- Storeroom Individual Productivity

Appendix B.10. Physical Inventory

Physical Inventory

- Daily Inventory by Store
- Physical Inventory Variances not counted
- Physical Inventory Discrepances by Aisle
- Physical Inventory Discrepances by Column
- Physical Inventory Complete

Appendix B.11. GL Reconcile

GL Reconcile

- GL Transaction History
- Store Transaction

Appendix B.12.-PO Receipts / PO Returns

PO Receipts/ PO Returns

- PO Receipts
- Void Receipt
- Good Received Note
- Good Return Note
- Return Summary
- Pending RO Receipts Older than 7 days
- Divisional Part Inspection By Stores Personnel
- Out of Sync Receipts

Appendix B.13.-Transfers

Transfers

- Store to Store Issue
- STS Requisitions Approved
- STS Requisitions Parts Ready
- STS Requisitions in Transit

Appendix B.14. Purchasing

Purchasing

- Approved POs Awaiting Delivery
- Purchase History Per PO/ Supplier
- PO Cost Summary
- PO Status
- POs out Sync

Appendix B.15. Equipment

Equipment

- Cost of WOs per Equipment
- Future Maintenance cost
- Equipment Hierarchies
- Orphan Equipment- NO Parent Structure
- Equipment History
- Equipment Transfer Log
- Equipment (Position/Assets) without a PM
- Fault trend analysis
- List of Classes
- List of categories per class
- List of Equipment
- List of Equipment details
- Mean time between failures
- Mean time between failures per Equipment
- Meter history
- Table of Equipment with custom fields
- Warranty Claims
- WO cost by Equipment
- WO by Type, Cost, Code or Dept.
- WO cost of Equipment per location
- WO cost summary

Appendix B.16. Communications Center

Communications Center

- Logs and Statistics
- Daily Divisional

Appendix B.17. Distribution

Distribution

- Administration
- Maintenance & Repair Section
- Service Section
- System Improvement & Relocation Section
- Support & Water Accountability Section
- Division JO Report
- Booked Hours Per Employee per Costcode
- Work Order Labor Summary
- Distribution ERP Project Cost by Task Profile
- Water Distribution SQL Reports

Appendix B.18. SCADA

SCADA

- SCADA Biannual RTU-Radio PM Points
- SCADA Closed WO's by Cost Code
- SCADA Daily Assignment Report
- SCADA Work Orders Aging Report
- SCADA Work Order Report
- Overtime Pre-Authorization Form
- Projects

Appendix B.19. Fleet

Fleet

- Equipment Activity Report
- Equipment Cost Summary
- Equipment by Division Report
- Equipment Inventory Report
- Equipment Inventory with Last PM
- Equipment Not on a PM Schedule
- Overdue PM
- Overdue PM WOs per garage
- Preventive Maintenance Report
- PM's Completed Per Equipment
- Sun Pass Report
- WO History Report
- Productivity
- Loaner Pool Vehicles

Appendix B.20. General Maintenance

General Maintenance

- Distribution ERP Project Cost by Task Profile
- General Maintenance Service Requests
- Contaminated Fuel
- Fuel Issued Inventory
- Fuel Receipt Inventory
- New Refrigerant
- Refrigerant Recovery
- Ballasts and Lamps
- GM Non Standard Work Hours
- GM PM On Time Performance
- GM PM Performance HVAC
- GM PM WOs per Facility per Trade
- GM Life Safety WOs
- GM Life Safety Inspections WOs

Appendix B.21. Pump Stations

PSD Permits

- EAMS Projects Detailed Costs
- PSMD Projects by Status
- PSMD Retired Value
- PSMD Under Blanket
- PSMD Projects Ready to go
- PSMD Projects Progress
- PSMD Projects Ongoing
- PSMD Projects on Hold
- PSMD Project Work Distribution

PSD Projects

- PSMD Projects Construction Schedule
- PSMD Project Costs by Station number
- PSMD Project Costs ERP Project Number
- PSMD pending Projects
- PSMD Expenditure not in blanket
- PSMD Completed Projects Costs ALL ERs
- PSMD Projects Cost Reconciliation

Overtime

- Overtime Summary Over 10 hours
- Overtime Summary Over 10 hours with work orders comment
- Overtime Detail by Comm Center Incident
- Overtime Detail for all Employees
- Overtime detail by Employee per trade
- Overtime detail by Employee per division

Inspection Work Order Report

- Percent of WOs Changed from Closed to QC
- Percent of WOs changed from QC to Closed
- Percent of WOs Closed with review status of Reviewed
- Water Plants WOs in Data entry QC status over 90 Days
- Water Plants Reviewed by Supervisor
- Water Plants WOs waiting to be corrected by Supervisor
- Water Production Closed work orders
- Water Production Completed work orders

Appendix B.23. Wastewater Collection

Wastewater Collection

- System Valve Exercising Report
- Wastewater Work Order Report
- Work Order Issuance Report
- Work Orders without OT Justification
- Wastewater Emergency Permit Required
- Emergency CallOut Response Time Anomalies
- Emergency CallOut Average Response Time
- FOG Cost Summary
- Monthly Report
- VSCO
- Wellfield
- Dye Test
- DERM Smoke Test Defect Report
- High Vent Time
- Manual Air Release Valve Exercising Results
- Manual Air Release Valve Exercising Report
- Manual Air Release Valve Route
- Sewer Cleaning
- Smoke Test Defect Report
- Smoke Test Report
- System Valve Exercising Results
- Manual Air Release Valve Exercising Report
- Manual Air Release Valve Route
- Sewer Cleaning
- Smoke Test Defect Report
- Smoke Test Report
- System Valve Exercising Results

Appendix B.24. Wastewater Treatment

Wastewater Treatment

- Wastewater Equipment PM Schedules
- Wastewater Treatment FY Total Hours and Cost
- Wastewater Treatment Overtime Exceeding 10 Hours
- Wastewater Treatment Overtime Summary
- Wastewater Treatment Usage Statistics by Cost Code
- Wastewater Treatment Work Order
- WWTP Inspection Work Order Report
- WWTP WO Hours Booked by Type Hours Reported
- Wastewater PPMs Estimate vs Actual
- Equipment Out of Service Report
- Wastewater PM Aging Report
- Wastewater Work Orders Aging Report
- Wastewater Equipment Out of Service
- Wastewater Equipment PM Schedules
- Wastewater Treatment Daily Assignment Report
- Sewer Cleaning
- Smoke Test Defect Report
- Smoke Test Report
- System Valve Exercising Results

Appendix B.25. MDWASD General Report

MDWASD General Reports

- Book Labor By Employee
- Booked Hours per Employee per CostCode
- Booked Hours per Employee per Costcode wirh Audit
- Summary of Hours by Work and Hour Type
- Pump Station WO Summary by Date
- Divisional WO Summary
- Vehicle Usage Report
- Vehicle-Tools Status Report
- Vehicles Awaiting Repair
- Vehicles Ready to be Picked Up
- All Work Orders by Employee
- WO Scheduled Labor
- Overtime Authorization Form
- Overtime Detail for All Employees
- Overtime Detail by Comm Center Incident
- Overtime Justification
- Time Report
- Time Report for Cost Code
- Time Report for Cost Code with Timecode Detail
- Time Report with Timecode Detail
- Non Stock Purchases per Division
- WO Aging Report - Detail
- PMs Upcoming
- Work Order Type and Hours Summary
- WO Costs per Task Profile
- Work Orders with Req/PO Ready to Close
- Completed JO's Report
- Work Order Labor Summary
- Vehicle Downtime
- Work Order
- EAMS Usage Statistics
- GSA Fuel History
- DAR Fema Report
- FEMA Cost Estimate
- FEMA Cost Estimate by Work Order
- FEMA Labor Costs
- Non Work Order Time Entry Report
- Tool Report
- Auditor Request All Booked Labor

Appendix B.26. Administration

Administration

- Application Configuration Guide
- Audit Log
- List of Documents
- List of Infor EAM Codes
- List of Functions
- User Group Configuration
- Rate Checker
- Screen Caching Activated
- Task Profiles
- Who has A Report
- Who has A Grid

Appendix B.27. Complaint Tracking

Complaint Tracking

- Complaint Tracking Summary
- Complaint Tracking with Customer Info
- Complaint Tracking Labs Letter
- Complaints Tracking Labs Results
- Wastewater Customer Complaints
- Complaints Summary Per Division
- Complaints per Liaison
- High Level Complaints Summary

Appendix B.28. Quick Reference Documents

Quick Reference Documents

- Pump Stations ERP info
- Pump Stations WO Job Aid

Appendix B.29. Training Materials

Training Materials

- Navigation
- Work
- PM Schedules
- Materials
- Equipment
- Mobile
- Mobile Inspections
- ROS Process
- Service Requests
- Complaint TRN
- ERP and WASD Systems
- Distribution
- Pump Stations
- Water Production
- General Maintenance
- Communication Center
- Wastewater Collection
- Wastewater

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APPENDIX C MDWASD Standard Forms

Appendix C.1. Online Forms

Online Forms

- Barricades Order Form
- Density Request Form
- Paving Restoration Order Form
- Portable Toilet Request Form
- ERP Task Profile Request Form
- Utility Line Damage Report Form
- Planned Emergency Overtime Form
- Planned Overtime Form
- General Maintenance Overtime Report
- Fleet Loaner Pool request Form
- New Equipment Input Form
- Blockage Notification Form
- Notice of Accident or Property Damage
- Confined Space Permit
- Hot Work Permit
- Planned Emergency Overtime Form
- Planned Overtime Form
- General Maintenance Overtime Report

Appendix C.2. Miscellaneous Forms

Miscellaneous Forms

- MDC-WASD Business Card Request Form
- Management Report Comments
- Request for New Stock Form
- Stores/Procurement Authorized Signature Form
- SCADA Pump Station Entry Form

Appendix C.3. IT Forms

IT Forms

- Establishing Information on Intranet
- Network Account Form
- Request for Change Management
- Sign up for DOLFIN Training
- Application Access Request
- EAMS Access Request

Appendix C.4. Power Forms

Power Forms

- Efficiency Report
- Efficiency Report (Word)
- Idea Form/ (Print version [Click here](#))
- PIT Initiation
- PIT Implementation Status Report
- POWER Idea Evaluation Form

Appendix C.5. Property Forms

Property Accounting Forms

- Capital Equipment Change Form Sample
- Capital Equipment Release Form Sample
- ER Form

Appendix C.6. Quality Assurance & Performance Auditing Forms

Quality Assurance & Performance Audit Forms

- Quality Assurance Forms

Appendix C.7. Telecommunications Forms

Telecommunications Forms

- Radio & Paper Assigment Approval Form
- 800 MHZ Radio Request Form
- Pager Request Form
- Wireless Telecommunications Device and Service Request
- VHF "In- Plant" Radio Request Form

Appendix C.8. Training Forms

Training Forms

- WASD Class Signup Request Form
- Computer Class Enrollment Form
- Dolfin Training Registration Form
- Procurement Request
- Special Training Request

Appendix C.9. Contracts Processing Forms

Contracts Processing Forms

- Contracts Oversight Forms

Appendix C.10. Construction Sign Order Forms

Construction Sign Order Forms

- Request to Repair/ Replace Construction Sign
- Request for New Construction Sign

Appendix C.11. Customer Information System (CIS) Forms

CIS - Customer Information System Forms

- Business Process Section - Query Request Form

Appendix C.12. Engineering Forms

Engineering Forms

- PSIP Pump Station Start- Up / Certification Form
- Active As- built Supplemental Information System Form (AASIS)
- Engineering Services Form (See examples below).
- Item Example
- Request for Waiver Example
- Technical Certification Categories

Appendix C.13. Fleet Forms

Fleet Forms

- Driving a County Car Form
- Driving Rules
- Extension to a Fleet Loaner Pool Request 2011
- Fleet Loaner Pool Request
- Heavy Equipment Rental Procedure & Forms
- Notice of County Motor Vehicle Accident
- Mileage of County Motor Vehicle Accident
- 24 Hour Assignment Vehicle Request Form
- Vehicle Work Request Form
- WASD Mobile Equipment Request Form

