

# City of Sparks Electronic Operations and Maintenance Manual (EOMM) Scope of Work

Carollo Engineers April 18, 2013

#### **Project Overview**

The Truckee Meadows Water Reclamation Facility (TMWRF) is a vital asset for the cities of Reno and Sparks (Cities) that must be operated and maintained in an efficient and reliable manner that is in compliance with all regulatory requirements. TMWRF staff understands the need and importance of having an up-to-date, accurate, and user-friendly Operation and Maintenance (O&M) Manual that provides the basis for operating the facility according to these requirements. Furthermore, the development of the electronic operations & maintenance manual (EOMM) will guard against the loss of institutional knowledge through a retiring workforce, which is an ongoing challenge for TMWRF and most of the wastewater industry.

The EOMM developed under this project, will cover the function, operation, and control of all equipment and systems at TMWRF, including major upgrades and changes to the treatment processes since its original construction in 1964. This project will also consolidate the previous O&M Manual efforts, with new information for upgraded and additional equipment, as well as develop standard operating procedures (SOPs) for major areas of the plant. Furthermore, the EOMM will be provided in an electronic format that allows TMWRF staff the ability to update and expand the information contained in the O&M Manual on an ongoing, as-needed basis to reflect changes in the facility and operations activities.

## **Scope of Work**

Carollo Engineers (Carollo) will provide the following Scope of Work in order to develop an up-to-date EOMM for TMWRF.

#### Task 1 - Project Initiation, Management, and Coordination

#### 1.1 - Conduct Project Initiation Meeting

Carollo will conduct a project initiation meeting with TMWRF, City of Sparks, City of Reno, and Farr West staff following notice to proceed. Information presented at the meeting will include the tasks, schedule, budget, team contact information, and coordination plan for the TMWRF EOMM project. Considerations such as availability of information, coordination needs with the O&M staff, and schedule for development, will also be discussed.

#### 1.2 - Conduct Project Management and Coordination Meetings

Carollo will review budget status, provide supervision of project activities, and review deliverables throughout the course of the project. In addition, this task will include attendance at up to nine (9) coordination/review meetings that will be conducted monthly either on-site during other project activities or off-site via conference call. For budgeting purposes, it is assumed that four (4) of these meetings will be conducted on-site and five (5) will be conducted via conference call. A status report noting the activities on this task will be provided to TMWRF staff as part of regular coordination meetings.

#### Task 2 - Data Collection and Information Gathering

#### 2.1 – Collect and Review O&M Information

Carollo will work with Farr West to review existing O&M manuals, SOPs, and related documentation to understand the current state of O&M information for TMWRF. We will also review existing unit process documentation for major facility projects that have been completed subsequent to the original O&M Manual, including engineering drawings and specifications for near-term projects that will require additions to the O&M content. Finally, we will interview current O&M staff to gain insight into existing unit process equipment, conditions, O&M procedures, and planned capital improvement program project schedules, as they directly relate to the O&M Manual update. This task will provide the basis of the information needed to prepare the text and graphics for the EOMM in the following steps.

#### Task 3 - Prepare Prototype EOMM Chapter

#### 3.1 – Populate Prototype Chapter

O&M Manual content will be populated into the EOMM in phases, beginning with a prototype chapter, with appropriate checkpoints for review and approval by TMWRF staff. The purpose of the prototype chapter is to populate a complete section of the O&M Manual in order to get full approval of the format and structure of the information before proceeding with the development of the remaining chapters. The prototype EOMM chapter will be populated according the standards utilized by Carollo for similar wastewater treatment facilities.

In order to populate the EOMM prototype chapter, Carollo will establish a base configuration of the Microsoft® SharePoint® EOMM on an external hosted web site. The base EOMM platform will be configured using standards developed and used effectively for EOMMs for similar utilities. After the prototype chapter has been populated into the EOMM, a workshop will be held with TMWRF staff to review and gather feedback on any further changes that need to be made. Carollo will complete these changes and gain final approval before proceeding with the remaining facility chapters.

#### 3.2 - Conduct Prototype EOMM Review Workshop

Carollo will conduct a 2-hour Prototype EOMM Review Workshop to discuss detailed information for the development of O&M content, and to obtain approval on the layout and content, prior to proceeding with the development of the full EOMM. During this workshop, we will present the prototype EOMM chapter and discuss the desired specifications and O&M needs for TMWRF. The EOMM content considerations will include the extent, format, and organization of the O&M information, including the content templates used for each O&M section to allow easy information retrieval and uniformity in data collection and entry. The specific O&M Manual templates will be discussed and are anticipated to follow TMWRF's proposed standards, as follows:

- Process Schematic
- Functional Description and Theory of Operation
- Design Criteria
- Equipment/Instrument Specifications
- Control Descriptions
- Area Procedures & Expectations (APE)
- Standard and Emergency Operating Procedures (SOPs/EOPs)
- Safety Plans
- Troubleshooting
- Maintenance Procedures for Operations
- Record Drawings
- Photos
- Vendor O&M Manuals

The workshop will also include a discussion of the EOMM system requirements such as screen layouts, file formats, administration, and integration needs. During the workshop, we will discuss the desired information technology specifications and system requirements for TMWRF. Following the workshop, we will document the EOMM content and system requirements to be used in the development of the remaining O&M chapters.

#### Task 4 - Develop Complete EOMM Content

#### **4.1 - Populate Subsequent EOMM Chapters**

Following TMWRF's review and approval of the prototype EOMM chapter, Carollo will populate the EOMM with the remaining O&M Manual chapters according to the agreed-upon schedule and review timeline. The EOMM will follow the documented O&M content and system specifications, with each unit process chapter separated into the sections developed and approved for the prototype EOMM chapter. The chapters will be made available to TMWRF in the EOMM format as they are developed, to facilitate a manageable review process. The complete chapters of the EOMM are anticipated to include the following:

- Plant Overview
- Headworks
- Primary Treatment
- Secondary Treatment
- Nitrification
- Denitrification
- Filtration
- Disinfection
- Digestion
- Sludge Thickening
- Sludge Dewatering
- Utility Systems

Additional reference information will be included in the EOMM as available, or created as placeholder libraries for future system integration. Examples of the reference information include:

- Permits
- CAD Drawings
- Training Videos
- Vendor O&M Manuals
- Photo Libraries
- Asset Management Program
- DCS Links
- CMMS Links

#### **Task 5 - Review and Finalize EOMM**

#### 5.1 - Review O&M Content and Finalize EOMM

TMWRF staff will review all EOMM chapters for content completeness, accuracy, and sufficient detail. The review will also be conducted to confirm the EOMM functionality and ease-of-use, including links to appropriate information, editing capabilities, and overall navigation. Comments from staff and management will be incorporated into the revised and final versions of each EOMM chapter to improve the knowledge, accuracy, and usefulness of the O&M information.

#### Task 6 - Install and Configure EOMM

#### 6.1 - System Configuration

Carollo will coordinate with TMWRF staff to finalize procedures and activities required for the EOMM on existing TMWRF information system hardware/software or approved outside information system infrastructure. The SharePoint®-based system will be configured based on the EOMM Standards Document, including file formats, menu hierarchy and navigation, workflow and approval process,

content sources and formats, standard content templates, and other EOMM functions as specified. The system configuration will include capabilities to retrieve information, create content, upload documents/images, edit/map images, approve content, and manage links to other information.

#### 6.2 – System Deployment

Carollo will support the migration and deployment of the EOMM application and content from the external hosted site to the live production system on TMWRF servers. Upon completion of the EOMM deployment, Carollo will support the testing of the production system by TMWRF staff to confirm that all functionality and content is accessible and functioning properly.

#### Task 7 - Train Staff Using EOMM

#### 7.1 - System User Training

Carollo will provide one training classes on the general use of the EOMM by TMWRF staff. The basic system user training will be provided to TMWRF O&M staff that will access, search, and find information in the system to perform their daily functions. TMWRF will provide a list of staff that will participate in the user training sessions and coordinate the schedules for efficient use of training time.

#### 7.2 - Content Management Training

Carollo will provide one training class on content management for the EOMM by TMWRF staff. The content management training will be provided for TMWRF staff that will be updating and maintaining the information in the EOMM. TMWRF will provide a list of staff that will participate in the content management training sessions and coordinate the schedules for efficient use of training time. As part of the training, Carollo will provide documentation on the content administration of the EOMM including use of all editing tools, web site management tools, and content development standards.

#### 7.3 - System Administration Training

Carollo will provide one training class on system administration for the EOMM by TMWRF staff. The system administration training will be provided for TMWRF staff on EOMM system administration, maintenance, security, and general support. As part of the training, Carollo will provide documentation on the system administration of the EOMM including the system configuration, administration functions, and technical support resources.

### **Assumptions and Responsibilities**

1. TMWRF staff and Farr West will be responsible for reviewing, consolidating, and scanning into electronic format (as-needed) the existing facility documentation (drawings, specifications, vendor O&M manuals, safety procedures, etc.) to provide to Carollo the supporting information, in the proper format, for EOMM content development in Tasks 3 and 4. Carollo has assumed limited support of the Task 2 data collection effort to provide input as to the required information and document formats.

- 2. Procurement of EOMM server hardware and software licenses is not included in this Scope of Work.
- 3. Integration of EOMM with DCS, CMMS, or other TMWRF information systems is not included in this Scope of Work.
- 4. TMWRF staff will provide one, conformed version of comments to Carollo for each interim review submittal.
- 5. Deliverables will be provided in electronic format only. For review purposes during development, TMWRF staff will be provided access to the EOMM on a secure Internet web site.
- 6. Project meetings are limited to the number specified in Task 1.
- 7. A decision log will be used to document, approve, and manage key decisions made during the course of the work. Changes to frozen decisions may impact costs and schedule.

#### **Project Schedule**

Carollo's proposed EOMM project schedule with estimated task start dates and durations is shown in Attachment A. The estimated duration for the project is twelve (12) months starting June 2013 and ending June 2014.

#### **Fee Estimate**

Carollo's fee estimate by task for the EOMM project is shown in Attachment B.

## ATTACHMENT A Truckee Meadows Water Reclamation Facility Electronic Operations and Maintenance Manual Carollo Engineers Proposed Schedule



			2013						2014					
Task	Description	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Project Initiation, Management, and Coordination													
	1.1 Conduct Project Initiation Meeting													
	1.2 Conduct Project Management & Coordination Meetings		-	•	-		-	-	-		-	-	-	
	Task 1 Durat	ion												
2	Data Collection and Information Gathering													
	2.1 Collect and Review O&M Information													
	Task 2 Durat	ion												
3	Prepare Prototype EOMM Chapter													
	3.1 Populate Prototype Chapter			•										
i	3.2 Conduct Prototype EOMM Review Workshop			-										
	Task 3 Durat	ion												
4	Develop Complete EOMM Content													
	4.1 Populate Subsequent EOMM Chapters				•	•	•	•	•	•	•	•	•	
	Task 4 Durat	ion												
5	Review and Finalize EOMM													
	5.1 Review O&M Content and Finalize EOMM					-				-				-
	Task 5 Durat	ion												
6	Install and Configure EOMM													
	6.1 System Configuration												•	
	6.2 System Deployment												•	
l	Task 6 Durat	ion												
7	Train Staff Using EOMM													
i	7.1 System User Training													-
	7.2 Content Management Training													-
	7.3 System Administration Training													-
	Task 7 Durat	ion												
Legen	d													
-	Meeting/Review													
•	Deliverable											1		1

#### ATTACHMENT B



#### **Truckee Meadows Water Reclamation Facility Electronic Operations and Maintenance Manual** Carollo Engineers Budget

Task	Description	SP \$263	LPP \$255	PP \$228	P \$194	AP \$157	CAD \$143	DP \$110	Carollo Total Hours	Carollo Labor Cost
1	Project Initiation, Management, and Coordination  1.1 Conduct Project Initiation Meeting  1.2 Conduct Project Management & Coordination Meetings	4 8	8 18	8	4	8			32 26	\$ 6,948 \$ 6,694
	Task 1 SUBTOTAL	12	26	8	4	8	0	0	58	\$ 13,700
2	Data Collection and Information Gathering 2.1 Collect and Review O&M Information		16	32		32			80	\$ 16,400
3	Task 2 SUBTOTAL	0	16	32	0	32	0	0	80	\$ 16,400
3	Prepare Prototype EOMM Chapter 3.1 Populate Prototype Chapter 3.2 Conduct Prototype EOMM Review Workshop	2 2	16 8	16 8	24 4	64 16	4	8 4	134 42	\$ 24,410 \$ 8,118
	Task 3 SUBTOTAL	4	24	24	28	80	4	12	176	\$ 32,600
4	Develop Complete EOMM Content 4.1 Populate Subsequent EOMM Chapters	8	40	80	240	560	40	60	1028	\$ 177,344
	Task 4 SUBTOTAL	8	40	80	240	560	40	60	1,028	\$ 177,400
5	Review and Finalize EOMM 5.1 Review O&M Content and Finalize EOMM  Task 5 SUBTOTAL	4 <b>4</b>	16 <b>16</b>	24 <b>24</b>	16 <b>16</b>	40 <b>40</b>	8	12 <b>12</b>	120 <b>120</b>	\$ 22,452 <b>\$ 22,500</b>
6	Install and Configure EOMM 6.1 System Configuration 6.2 System Deployment		24 16			12 16			36 32	\$ 8,004 \$ 6,592
	Task 6 SUBTOTAL	0	40	0	0	28	0	0	68	\$ 14,600
7	Train Staff Using EOMM 7.1 System User Training 7.2 Content Management Training 7.3 System Administration Training		8 12 8	8 4		16 24 16			32 40 24	\$ 6,376 \$ 7,740 \$ 4,552
	Task 7 SUBTOTAL	0	28	12	0	56	0	0	96	\$ 18,700
	TOTAL	28	190	180	288	804	52	84	1,626	\$ 295,900

Project Role Acronyms
SP Senior Professional
LPP Lead Project Professional
PP Project Professional
P Professional
AP Associate Professional
CAD Computer Aided Design Technician
DP Document Processing