

CONSULTING SERVICES  
FOR  
PREPARATION OF SCOPE OF WORK  
FOR  
NONDESTRUCTIVE CONDITION ASSESSMENT ALTERNATIVES  
FOR  
THE MILLS GRAVITY LINE

DECEMBER 2014

**The Proposals Deadline is:  
January 15, 2015, 4:00PM**

Western Municipal Water District (Western) is seeking a Consultant to perform Nondestructive Condition Assessment (NDA) for the Mills Gravity Pipeline (MGL) to determine existing and future conditions, develop rehabilitation plan to reduce failure risks (if determined needed) to maximize the life of the MGL. The specific objectives of the Condition Assessment are:

- Collect and analyses data/information to asses existing and future conditions of the MGL;
- Identify Nondestructive Condition Assessment technologies for the MGL;
- Detect deteriorated locations;
- Evaluate risks of component failures (leak, pipe rupture, corrosion, and others...);
- Develop an asset management plan;
- Design a contingency plan for failure repair; and
- Provide recommendations for appropriate and timely repair/rehabilitation measures;

The Consultant should perform the general tasks as described in the Scope of Work. Western intends to select the most qualified Consultant for the project. Proposal will be evaluated by Western's Screening and Selection Committee on the basis of the following criteria:

1. Project team's technical skills qualifications
2. Previous experiences in preparing condition assessment for large transmission water pipeline
3. Methodology for performing nondestructive condition assessment for the MGL
4. Estimated fees for the proposed Scope of Work

**You are hereby invited to submit proposal for this project.**

#### Submittal Deadline

Five (5) hard copies and one (1) electronic copy of the proposal must be submitted no later than 4:00 p.m. on Thursday, January 15, 2015. Hard copies of the proposal should be mailed to:

Fakhri Manghi, Ph.D., PE  
Senior Engineer  
Western Municipal Water District  
14205 Meridian Parkway  
Riverside, CA 92591

There will be a pre-proposal meeting at WMWD Main Conference Room 211 from 9:00 – 10:00 AM on January 5, 2015.

#### **Introduction**

The Mills Gravity Line (MGL) was constructed in 1986 through 1990 to convey State Water Project water to Western's whole sale agencies as well as to its Riverside Retail Distribution System. The MGL includes approximately 73,522 feet of Concrete Coated Pipe (CCP) manufactured in accordance with AWWA Standard C303 including 30,879 feet of 60-inch starting from the Mills Treatment Plant to the Mockingbird Pump Station; 23,873 feet of 54-inch from Reach B to Reach C; and 18,770 feet of 48-inch from Reach D to Reach F at its terminus point at the intersection of Temescal Canyon Road and La Gloria Street.

#### **SCOPE OF WORK**

The scope of work is divided into two phases. Phase I includes an evaluation of existing conditions of the MGL, development of an asset management plan, and design of a contingency plane for response to a failure. Phase II, if needed, will include design and construction services to address any deficiencies that require immediate attention.

### **Phase I: Evaluation of Existing and Future Conditions**

Phase I will focus on using nondestructive direct/indirect methods to compile physical, environmental, and operation data for the MGL, and translate the inspection data together with engineering knowledge into pipe assessment for existing and future conditions.

#### **Task 1: Collect and Review MGL Characteristics Data**

The purpose of this task is to collect and review all available information relating to the MGL to identify and prioritize assets or locations for condition inspection.

##### **Task 1.1: Compile Record data and information**

The data and information may include as-built record drawings, specifications, construction and test reports, records of maintenance and repairs data including records of failures, cathodic protection data, soil reports, operation data, air release valve operation, reports or any pertinent information related to the project.

### **Task 1.2: Field Observation and Site Review**

Consultant shall conduct a field visit to verify and identify location of valves, air release valves, pass-holes, test stations and other feature, identify access and constraints, Right-of-Way ownership, cathodic protection points, traffic conditions, and any other information pertaining to the project. Identify existing taps along the majority of the MGL for the insertion of remote sensing equipment and/or personnel, if determined to be needed for inspection.

Consultant shall analyses collected data and information to identify and prioritize assets or locations on the MGL for condition inspection. Consultant shall provide initial (partial) assessment of the current structural condition of the MGL. Consultant shall identify gaps in information required for proper condition assessment.

**Deliverables:** Consultant shall prepare a Task Memorandum summarizing data analyses and initial assessment of the structural status of the MGL.

### **Task 2: Risk Assessment and Inspection Planning**

The purpose of this task is to analyses risk of failure of pipes along the MGL route. The risk of failure involves two basic components: likelihood of failure and consequence of failure. The specific purpose of this task is to identify priorities for determining the likelihood of failure for pipes along the MGL route based on data analyses conducted in Task 1. Consultant shall identify status of the likelihood of failure of pipes along the MGL for now, short-term, and long-term.

**Deliverables:** Consultant shall prepare a Task Memorandum summarizing risk assessment of areas of the MGL to inspect and information required from the inspection works. Consultant shall prepare table explains failure type, cause of failure, indicators (sign) of failure, and any other information to the inspection plan.

### **Task 3: Review Nondestructive Condition Assessment Alternatives**

Consultant shall prepare detailed descriptions for all Nondestructive Condition Assessment technologies including visual, remote sensing, and physical, non-destructive inspection. Consideration should be given to cost-effective application of acoustic, corrosion potential, electromagnetic, radiographic, ultrasonic, and other measurement technologies. The information for each alternatives should include the scope of the method, status of the method (commercially/experimental/ or in development), advantages, limitations, degree of performance and accuracy, breadth of use, and any other pertinent information.

**Deliverables:** Consultant shall prepare a Task Memorandum summarizing nondestructive assessment alternatives. Consultant and Western will review the nondestructive condition assessment alternative and select the appropriate inspection approach for the project.

### **Task 4: Prepare Assessment for Existing Conditions of the MGL**

Consultant shall proceed with the those assessment techniques selected by Western in Task 3 to assess parameters such as, but not limited to concrete deterioration, reinforcement deterioration, steel cylinder deterioration, pipeline misalignment, joint

displacement, appurtenance deterioration, and any other indicators of failure that affect the structural integrity of the MGL as a complete system.

The inspection results together with the data reviewed (Task 1) and engineering experiences will provide the basis for a complete condition assessment for the MGL. This condition assessment will define the existing condition of the MGL and provide an understanding on its capability to achieve essential levels of functionality.

**Deliverables:** Consultant shall prepare a Task Memorandum summarizing the MGL pipeline condition assessments based on the results analyses of the inspection program. Consultant shall prepare detailed rehabilitation plan for the MGL, if determined needed.

### **Task 5: Develop an Asset Management Plan for the MGL**

Consultant shall develop an Asset Management Plan including recommendations of: cathodic protection practices; inspection procedures and schedules; and operation and maintenance practices. The AMP should include a discussion regarding rehabilitation alternatives along with a schedule. Finally, the AMP should include a recommended replacement schedule for the pipe and appurtenances.

### **Task 6: Report preparation**

Consultant will prepare and submit 5 draft and 5 final reports for the MGL project, in addition to CD's. The report shall include:

- Compilation of all data collected for the study including field visit reviews;
- Detailed description for nondestructive condition assessment methods;
- Results analyses of the inspection program for determining existing conditions of the MGL; and
- Detailed description of the AMP

### **Task 8: Project Management**

Consultant will attend up to eight one-hour conference calls with Western to provide progress updates on the project. In addition to the conference calls, it is anticipated that Consultant will attend up eight two-hour meetings at Western during the project time. Consultant will provide meeting minutes to Western to review and final minutes will incorporate any comments.

## **Phase II: Construction Administration Services (If determined needed)**

This phase includes construction administration services for the MGL rehabilitation. The scope of services for this phase will be finalized near the completion of Phase I – Evaluation of Existing and Future Conditions. The major elements of work anticipated during this phase include:

### **Task 1: Design and Construction Documents**

This task includes design of the MGL rehabilitation including associated appurtenances, construction and repairing various sections of the MGL, and coordination with Operation staff to keep water flowing around the District.

**Task 2: CEQA, Coordination, and Permitting**

This task will be for assistance in getting the project approved for construction including: compliance with the California Environmental Quality Act; coordination with affected agencies such as the City of Riverside, County of Riverside, County Flood Control District, etc...; and permitting from CA Department of Fish and Wildlife, CA Water Quality Control Board, or Army Corps of Engineers.

**Task 3: Bid Services**

Coordination with Western for preparing bidding documents, bid advertisement, pre-bid meeting, review and issuance of addendums, if any, attending bid opening, bid evaluation, and recommendations.

**Task 4: Construction Administration**

This task will comprise all activities related to construction administration including preconstruction conference, submittal reviews, RFIs, construction meetings, inspection, Change Orders, Filed Directives, record drawing preparation, coordination with Operation staff for water demand, and any additional activities required to complete the project.

Note: The drawings of the Mills Gravity Line will be provided on request, but consultant shall sign a non-disclosure agreement.