

AGENDA

Denver Board of Water Commissioners

Denver Water Administration Building
1600 West 12th Avenue
Denver, CO
Board Room, Third Floor

Wednesday, January 10, 2018 9:00 a.m.

I. INTRODUCTORY BUSINESS

A. Call to Order and Determination of Quorum

B. Public Comment and Communications

At this point in the agenda, the Board may allow members of the public to address the Board on any item of interest within the jurisdiction of the Board, and not on the agenda for action. Speakers wishing to address a specific Action Item will be invited to address the Board when the item is being considered. Three minutes are allowed for each person unless the President determines otherwise.

1. Distributor Communications
2. Citizen Advisory Committee Communications

C. Ceremonies, Awards and Introductions

II. ACTION ITEMS

A. Consent Items

Items listed below are considered routine and may be enacted by one motion and vote. If any Board member desires discussion beyond explanatory questions, or corrections to the Minutes, the President may order that item to be considered in a separate motion and vote.

1. Minutes from December 6, 2017 - Open and Executive
2. Minutes from December 13, 2017 - Open and Executive
3. Foothills Treatment Plant USS 1, 2, 3, 5 and VFD Replacements Contract 16962A
4. Lupton Lakes – South Cell Groundwater Cutoff Wall Contract 16785A
5. Ratification of Construction Contract Change Orders and Amendments and Professional Services Agreement Amendments

DENVER BOARD OF WATER COMMISSIONERS

Meeting Date: January 10, 2018

Board Item: II-A-3

Foothills Treatment Plant USS 1, 2, 3, 5 and VFD Replacements Contract 16962A

Action by Consent

Individual Action

Summary:

The Foothills Treatment Plant is located at 6730 Rampart Range Road, Littleton, CO 80125. The Treatment Plant has been substantially modified over the years. This project will replace four double-ended electrical unit substations, commissioned in 1980 and four variable frequency drives (VFD) that were identified by Denver Water's Operations & Maintenance (O&M) and Engineering Divisions as needing replacement for reliability and personnel safety. The new equipment will provide operational reliability, flexibility, and improved safety for Denver Water personnel.

The four unit substations and associated switchgear distribute power throughout the plant. They will be replaced with modern equipment, capable of being operated remotely. Protective devices incorporated into the equipment will reduce the local panel energy, thereby improving safety for personnel operating and maintaining the equipment. The four VFDs running the service water pumps are critical to plant operations and will be replaced with more reliable and serviceable units.

Budget Information:

The work begins in 2018 and will be completed in 2019. The 2018 Capital Improvement Plan does not include sufficient funds for the project since the 2018 budget was established prior to the opinion of probable costs being finalized. A project budget adjustment in the amount of \$945,595 was previously approved by the System and Program Managers.

Selection of Business Partner:

Completing this project during the scheduled 2018/2019 Foothills TP outage is critical to Denver Water's system and the North System Renewal plans and schedule. Due to the critical nature, difficulty, and tight schedule of the project only Denver Water's current top two Electrical Contractors were invited to provide proposals. On December 7, 2017 proposals were received from both Contractors. Proposals were graded on cost, project plan, schedule, and team qualifications. Scoring was done by individuals from Engineering, O&M, and an external expert. Guarantee Electric Contracting achieved the highest score, with an associated price of \$5,985,595.

S/MWBE Information:

The Minority and Women Business Enterprise (MWBE) goal established for this construction project is 3% participation. Guarantee Electric Contracting proposed 3.34% participation.

Recommendation:

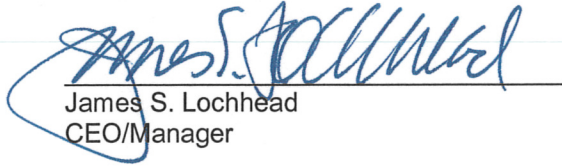
It is recommended that the Board approve Contract 16962A with Guarantee Electrical Contracting for the Foothills Treatment Plant USS 1, 2, 3, 5 and VFD Replacements project. The contract period January 10, 2018 to July 12, 2019 for a total contract amount not to exceed \$5,985,595.

Approvals:

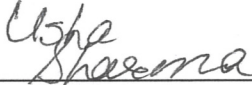


Robert J. Mahoney
Chief Engineering Officer

Respectfully submitted,



James S. Lochhead
CEO/Manager

FOR 
Angela Bricmont
Chief Finance Officer

DENVER BOARD OF WATER COMMISSIONERS

Meeting Date: January 10, 2017

Board Item: II-A-4

Lupton Lakes – South Cell Groundwater Cutoff Wall Contract 16785A

Action by Consent

Individual Action

Summary:

Denver Water owns two open-pit sand and gravel mines (gravel pits) at the Lupton Lakes Downstream Reservoir Complex referred to as the North Cell and the South Cell. Denver Water intends to convert the gravel pits into surface water reservoirs. Mining activity in the South Cell is currently active with an estimated completion date of 2025.

The Project includes designing and constructing a groundwater cutoff wall around the South Cell to limit groundwater migration into and from the reservoir. Conversion of the gravel pit into a surface water reservoir requires a maximum leakage rate into the reservoir less than the rate stipulated in the State Engineer Guidelines for Lining Criteria for Gravel Pits – August 1999. These State Engineer guidelines are the primary design consideration and performance criteria for the project. Denver Water chose Design-Build project delivery to accelerate the project schedule and reduce design fees, which should be beneficial by decreasing construction challenges and mitigating surrounding groundwater well depletions caused by mining operations.

Budget Information:

The work begins in 2017 and should be completed in 2019. The 2018 Capital Improvement Plan for Lupton Lakes – South Cell Groundwater Cutoff Wall Business Unit includes sufficient funds for the estimated 2018 expenditures. The remaining funds will be budgeted for the 2019 Capital Improvement Budget.

Selection of Business Partner:

On July 6, 2017, a Request for Statements of Qualifications was publically advertised on Denver Water's website and Denver Water's staff reached out to teams that had previously proposed on similar work. Five Design-Build Teams submitted a statement of qualifications package and all five teams were considered qualified by a team of Denver Water evaluators. A Request for Proposal was publicly advertised on QuestCDN on August 25, 2017, and two responsive Proposals were received on October 5, 2017. The Proposals were reviewed by Denver Water evaluators and scored based upon the Quality Based Selection criteria in the Proposal. Great Lakes Environmental & Infrastructure, LLC of Denton Texas achieved the highest score, with an associated price of \$4,941,650.


S/MWBE Information:

The Minority and Women Business Enterprise (MWBE) goal established for this construction project is 5% participation. Great Lakes E&I proposed a 5.94% participation.

Recommendation:

It is recommended that the Board approve Contract 16785A with Great Lakes Environmental & Infrastructure, LLC for the Lupton Lakes – South Cell Groundwater Cutoff Wall Project for the contract period November 8, 2017 through April 30, 2019 for a total contract amount not to exceed \$4,941,650.

Approvals:

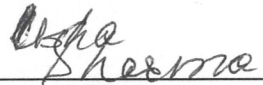


Robert J. Mahoney
Chief Engineering Officer

Respectfully submitted,



James S. Lochhead
CEO/Manager

FOR 

Angela Bricmont
Chief Finance Officer

DENVER BOARD OF WATER COMMISSIONERS

Meeting Date: January 10, 2017

Board Item: II-A-5

Ratification of Construction Contract Change Orders and Amendments and Professional Services Agreement Amendments

Action by Consent

Action

Summary:

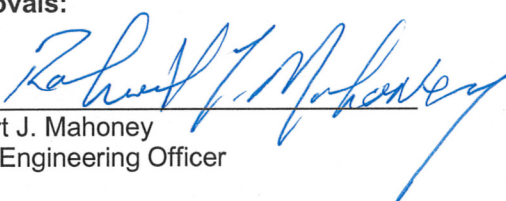
The attached are Construction Contracts Change Orders and Amendments and Professional Services Agreement Amendments for Board ratification for October 2017 through December 2017.

Recommendation:

It is recommended that the Board ratify these Construction Contract Change Orders and Amendments and Professional Services Agreement Amendments.

Approvals:

Respectfully submitted,


Robert J. Mahoney
Chief Engineering Officer


James S. Lochhead
CEO/Manager

This list of Change Orders and Amendments is required per the September 13, 2017 resolution which raised the CEO's signing authority to \$750,000. These requirements may be modified by a future Board resolution.

DENVER BOARD OF WATER COMMISSIONERS

Meeting Date: January 10, 2018

Board Item: V-A-1

Project Completion Briefing Memorandum for Antero Dam Rehabilitation

Background

Antero Dam is an earthen embankment dam located 65 miles southwest of Denver, Colorado on the South Platte River in Park County, Colorado; it is 45-feet high and 4,200-feet long. Completed in 1909, Denver Water purchased the dam in 1923. At the time of purchase, excessive seepage was noted. Over the last 90 years the dam has continued to seep. The reservoir elevation is currently restricted to a gauge/hydraulic height of 18-feet (~20,000 acre-feet) by the State Engineer's Office (SEO). Denver Water has been operating the reservoir at gauge height 16-feet after a dam safety related spillway analysis was completed in 2011. Due to the site's elevation of 8,960 feet, the typical construction season ranges from May to November.

Program Success Highlights

- **Construction Accomplished Within the Original 5 Year Timeline**
- **Total Project Cost Completed Under the Original \$20 Million Budget**

Important measures of success can be attributed to the Antero rehabilitation effort and include the following:

- The disturbance of adjacent wetlands, and the associated environmental studies and permitting, was avoided by confining all work above the normal high water level of both the downstream river channel and the reservoir.
- The rehabilitation cost of \$20 million was realized versus an estimated \$80 million for a complete reconstruction of the reservoir.
- Rehabilitation was completed in 5 years versus the 8 to 10 years that a full reconstruction process would require.
- The available storage capacity of the reservoir was increased to allow the reservoir pool to be raised to a gauge height of 18 with spillway protection at a gauge height of 26.5. Environmental considerations and required future recreation improvements don't allow an immediate increase of reservoir capacity above this current limit but the future storage capacity provided for equates to \$800 per acre-foot, a very economic improvement. (As a point of reference, Colorado-Big Thompson (CBT) prices had a 2015 price point of about \$37,000 per acre-foot).

MWBE Participation



Phase	MWBE Contractor	Scope	Total Paid
I	Elk Creek Sand & Gravel	Furnish materials for filter trench	\$161,171
II	Environmental Logistics	Furnish and install temporary and permanent erosion control materials	\$334,679
III	Powell Reclamation	Furnish and install temporary and permanent erosion control materials	\$101,352
IV	American Industrial Construction Supply	Furnish and install electrical equipment	\$115,200
	Hydro-Turf	Furnish and install temporary and permanent erosion control materials	\$230,622
		Total	\$943,024

Phases of Design And Construction

Phase I

Timeline: 2013 to 2014

Contracts: \$1.96 million

Major components of design and construction included the following:

Construction of a seepage filter zone through the toe berm, the alluvial layer, and into the underlying bedrock. The filter trench backfill material consists of concrete sand obtained from an offsite source. The filter trench is 2-foot wide and located within a 50-foot wide berm at the toe of the dam. The length of the trench is 3,500-feet long with an average depth of 20-feet and a maximum depth of 25-feet; it is keyed into the underlying bedrock. A bio-polymer slurry was utilized to keep the trench open during construction which allowed placement of the filter sand well below the groundwater surface. The seepage filter created a barrier that prevents the loss of fine grained embankment material that could be transported in seepage through the dam embankment. Completed June 2014.

Phase II

Timeline: 2014 to 2015

Contracts: \$4.69 million

Major components of design and construction included the following:

Erosion and sediment control; dewatering; toe drain pipe excavation and installation with filter sand and filter gravel; installation of new manholes and extending existing manholes; placement of a filter sand blanket drain; excavating dam embankment and placing fill on the downstream slope; realignment of an existing access road and new dike; modifying existing instrumentation; excavation, foundation preparation, and placing fill for a dike; borrow development; wetland and reservoir protection; relocation of communication antenna; and permanent erosion control. This phase completed the downstream filter drainage system, provided additional stability to the downstream face, and prepared the top of the dam for the subsequent soil-bentonite cutoff wall installation. Completed July 2015.



Phase III

Timeline: 2015 to 2016

Contracts: \$5.48 million



Major components of design and construction included the following:

Construct of a soil-bentonite barrier wall 5-feet into the bedrock through the dam embankment along 4,000 linear feet of the dam crest. The reservoir was drained for the construction of the soil-bentonite barrier wall in order to prevent damage from excess water pressure in the dam during wall construction. Major components of this phase included the following: construction of a soil-bentonite barrier wall into the foundation through the dam embankment; excavation and placement of embankment material; removal, stockpiling, and placement of riprap and riprap bedding; modifying existing instrumentation; erosion and sediment control; borrow development; and wetland and reservoir protection. This phase raised to top of the dam to the final crest elevation and completed upstream full height armoring of the dam face. The cutoff wall dramatically reduced the amount of seepage through the dam foundation and significantly improved the stability of the dam embankment for long term safe operation at higher water levels in the reservoir. Completed May 2016.

Phase IV

Timeline: 2016 to 2017

Contracts: \$7.53 million



Major components of design and construction included the following:

Construction of a new riprap-lined spillway structure in the existing unlined spillway channel, raising the outlet works intake structure to accommodate increased reservoir storage, and installing 3-phase power supply to the outlet works to increase gate speed and reduce voltage drop. The new spillway eliminated the potential hazard of the original earthen spillway eroding under high flows and allowing an uncontrolled release of the reservoir. The taller outlet structure allows existing gate equipment to be controlled at the higher reservoir pool level.

Completed November 2017.

Total Contracts – All Phases

\$19.66 million (as of November 2017 figures)

Improvements

Safety – The safety of the dam is significantly improved due to greatly reduced seepage, additional filters on the downstream embankment, improved upstream slope protection, and increased and hardened capacity at the overflow spillway. Additionally, there are improved operational controls at the outlet tower and modernized backup power capabilities. Improved security features allow better perimeter control and remote monitoring of the facilities.

Recreation – A new boat ramp was constructed that allows boats to be launched with the higher reservoir water level. As the reservoir reaches the higher water levels now within the storage limits, the area of the reservoir will increase by over 1,200 acres. This increase will make the facility more attractive to anglers.

American Public Works Association Colorado Award Winner on October 23, 2017 for Antero Phase III for Achievement in the Environmental Field



Kevin Mininger, RJH Consultants, Inc., Ed Friend, RJH Consultants, Inc., Doug Raitt, Denver Water, Gregg Leggott, SEMA Construction, Inc., Greg Hall, Town of Vail, APWA Colorado Chapter President.

Respectfully submitted,

Douglas M. Raitt
Engineering Manager

Robert J. Mahoney
Chief Engineering Officer