

Date: April 22, 2024

## **Subject**

**City of Kalama Specifications for Diving Contractors Cleaning and Inspecting Potable Water Storage Facilities.**

## **Introduction**

To comply with the city of Kalama recommendations for cleaning and inspections of 9 potable water storage facilities totaling 2.51MG, the Kalama Water Department (KWD) of the city of Kalama Department of Public Works utilizes diving services to provide for the interior cleaning and preliminary inspection of City drinking water storage reservoirs.

## **Scope of Work**

KWD requires the successful contractor to provide cleaning and inspection services of potable water storage reservoirs according to this scope of work.

Cleaning procedures will combine vigorous brushing of surfaces cleaned, in addition to removing material from reservoir by vacuum or water suction. The potable water reservoir will be in service during cleaning. The cleaning procedures shall not create any visible turbidity in the water column. In addition to cleaning all sediment or other material from the floor of the reservoir the divers will ensure that all sediment is removed from the floor to wall seams, plumbing fixtures and supports, man entries, or any other areas where the vacuum does not reach during normal floor cleaning.

If brushing is not done in conjunction with vacuuming, lightly adhered sediment and potentially hazardous biofilm may be left behind. The brushing has to be vigorous enough to remove the lightly adhered sediment and biofilm. This can be accomplished by a rapidly rotating brush inside a vacuum head or by vigorous hand brushing in order to agitate the surface enough combined with vacuuming to remove the lightly adhered sediments and biofilm. Regardless of the technique used, the brushing must be done in such a manner that does not create turbidity inside the reservoir.

## **Regulations, Requirements, Standards, and Procedures**

At a minimum the following regulations, requirements, standards, and procedures shall apply to the conduct of commercial diving in KWD facilities:

1. U.S. Department of Labor [OSHA], 29 CFR, Subpart T – Commercial Diving Operations – 1910.401 through 1910.441. Current Edition.
2. U.S. Department of Labor [OSHA], 29 CFR, Permit Required Confined Spaces – 1910.146. Current Edition.
3. Association of Diving Contractors [ADC], Consensus Standards for Commercial Diving Operations, Current Edition.
4. Association of Diving Contractors [ADC], Commercial Diving in Potable Water Facilities, ADC Standard 11-1999, Current Edition.
5. ANSI / AWWA D101-53 (86) – AWWA Standard for Inspecting and Repairing Water Tanks, Standpipes, Reservoirs and Elevated Tanks for Water Storage. Current Edition.
6. ANSI / AWWA C652-92, AWWA Standard for Disinfection of Water Storage Facilities. Current Edition.

Divers must use external or surface supplied air source with hardhat. Hardhat is defined as a helmet that keeps diver's head dry (no SCUBA or full-face mask gear). External air supply must

be sufficient to support divers for the duration of the planned dives and must be accompanied by an adequate diver-carried reserve breathing air source. A second external air supply will be available for back up in the event the primary air source fails, in addition to the diver reserve.

To prevent contamination of the water supply by the diver, full-face masks are specifically prohibited.

Divers will have full time hard wire (wireless devices are prohibited) voice communication with surface personnel.

Divers will use vulcanized rubber dry suit, in good repair, which are dedicated for use in potable water. Neoprene or shell dry suits are not suitable for disinfection.

Dive team will consist of a minimum of three persons. If two divers are submerged at the same time a minimum of a five-person dive team is required. All dive team members must have ANSI/ACDE 01-1993 minimum commercial diver training. This requires a certificate of graduation from an ACDE certified commercial diving school or equivalent military or other training (minimum 600 hrs.).

All equipment and diver (external gear) must be disinfected with 200+ ppm chlorine solution immediately prior to entering potable water.

Dive team must have OSHA approved Standards, Procedures, and Safe Practices Manual present and available for review at each dive location.

Diver will have a helmet-mounted video camera with adequate lighting capable of supplying live video feed to surface. The live video will be set up so that surface personnel can view underwater procedures as they are performed and so that procedures can be recorded on video tape along with live voice narration. This also provides KWD, with a method of monitoring quality control, to ensure job is done and that the diver does not create turbidity.

The video camera must have infinite focal range. Cameras with a limited short focal range are not acceptable. Hand held cameras and hand-held video cameras if used will be used for still or detail images only.

A suitable digital underwater camera with adequate flash / lighting equipment will be used for still photography; no disposable / one-time use cameras will be permitted.

All water discharged from reservoir during cleaning procedures will be de-chlorinated using sodium-meta-bisulfate or an equivalent approved by KWD at no additional charge.

If KWD requires sediment containment, material filter bags will be used. Filter bag material will consist of ten-ounce non-woven geo-synthetic material. Width of the filter bag will be at least seven feet in diameter and length of the filter bag will be at least ninety feet in length.

Contractor is responsible to adhere to all federal and State of Washington safety and environmental laws applicable to this work. The KWD will hold the contractor directly responsible for any violations of these laws and resulting fines.

### **Insurance Requirements**

Contractor must provide proof of commercial general liability insurance of at least \$2 million and workman compensation insurance for all employees and name the city of Kalama as Additionally Insured.

Contractor must provide proof of bonding ability to demonstrate financial stability. This should be in the form of a bond obtained within the last 12 months or a letter from a bonding company indicating that the contractor is financially capable of obtaining a bond.

### **Inspection**

Inspections will be performed according to NACE, ASNT standards. Inspection of the reservoir will be included as part of the cleaning process and cost. The inspection will be done as a continuous process by the diver and include a detailed final inspection. Contractor will submit a comprehensive inspection checklist detailing all areas of inspection. KWD will approve the inspection list or amend the inspection list if necessary. Amendments will be sent to the approved contractor prior to bid acceptance.

### **Video, Photographic and Written Inspection Reports**

Contractor will provide inspection reports that will include high-resolution color thumb drive with real time imprint and time log indicating where each feature or problem area may be found. Videotape will be narrated live by the divers, contractor's on-site support personnel or KWD personnel at the time the video is recorded. Additionally, still color digital photographs will be taken with a suitable underwater camera that will show details of the problem areas. One copy of the video and one copy of the still digital photograph files will be submitted to KWD. One copy of the handwritten inspection worksheets will be provided to KWD. A bound computer-generated printed report will be provided and include still color photos of all problem areas along with a schematic diagram of each reservoir showing location of each photographic image, along with a time stamp showing where the image may be found on the inspection videotape.

### **Repairs**

Repairs will be at the discretion of KWD. Repairs to coatings in a steel reservoir will be made with a NSF 60 approved, two-part epoxy that chemically bonds to the steel substrate. All blisters, holidays and voids will be wire brushed with a pneumatic tool to bare metal according to SSPC-SP-11. Special consideration will be given for underwater environments, and the surrounding intact coating will be feathered and abraded to provide an anchor profile for the epoxy. Epoxy will be prepared and applied according to the manufacturer's specifications, including but not limited to surface preparation, water temperature, mixing ratios, pot life, wet film thickness and dry film thickness.

### **Proposal Submittal**

Contractors will submit bid proposal outlining cleaning and inspection costs based on sediment depth of one inch. Sediment depth is calculated as an average sediment depth across the reservoir floor. Bids will include costs of repairs, material used for repair and repair procedures will be included. Contractors will provide documentation (videos, photos and written documentation) that includes: a description of cleaning process, a detailed description of the vacuum cleaning head and associated equipment, a description of the diver's certification and training and diver's equipment, description of photographic and video equipment and voice communication equipment, description of de-chlorination process, description of sediment filtration bags, inspection checklist and insurance and bonding documentation. Current reference list with contact names and phone numbers is also required.

Submit proposals no later than 5:00pm PST on May 24, 2024, to:

City of Kalama Department of Public Works  
Attention: Kelly Rasmussen, Director of Public Works  
P.O. Box 1007  
Kalama, WA 98625  
Phone: (360) 673-3706  
Fax: (360) 673-3707  
Email: [krasmussen@cityofkalama.com](mailto:krasmussen@cityofkalama.com)  
Or drop off at City Hall:  
195 N 1<sup>st</sup> Street,  
Kalama, WA 98625