



**Scope of Work for Lake Elmo Dewatering Project, Lake Elmo State Park, Yellowstone County, Montana
FWP Project #21-21**

Scope of Contract

- A. Due to the discovery of invasive *Corbicula fluminea* (Asian clam) in Lake Elmo during the summer of 2019, a collaborative effort is underway to eradicate the population of clams. Montana Fish Wildlife & Parks (FWP) is proposing to fully drain Lake Elmo in fall of 2021 with refill in spring of 2022. FWP in conjunction with Billings Bench Water Association will draw down the reservoir to the lower limits of the irrigation head gate. The lake depth is 16 feet and 13 feet of it can be drained through the head gate and additional trenching.
- B. FWP will dig a trench from the outlet structure out to the main lake. The trench will be approximately 10 feet at its deepest and suitable side slopes to be stable and reduce erosion. The trench will allow the lake to passively drain through the outlet structure to within 3 to 4 feet of the deepest location within the reservoir.
- C. The 3-4 feet of remaining water will require pumping to completely drain. It is expected that the contractor will provide pumping service and equipment to dewater the remaining dead pool portion of the lake. It is estimated that 33.1 acre-foot of water (10,786,000 gallons) will remain in the dead pool following the passive drawdown performed by FWP.
- D. FWP will create temporary ditches to facilitate drainage of any secondary pools into the primary dead pool as needed.

Project Area

The project area lies within the city limits of Billings. The project area is approximately 64 acres in size. The FWP lands included in this request are located in the following area:

Latitude 45.8403 Longitude -108.4768

Physical Address: Lake Elmo State Park, 2300 Lake Elmo Drive, Billings, MT 59105

Description of Work

The proposed base bid scope of work includes mobilization/demobilization and execution of the lake dewatering and 2 additive alternates including dewatering after the initial drawdown and dewatering after November 1.

1. Base Bid Item #1: Mobilization/Demobilization/Staging of Equipment

Staging of equipment can begin October 11th with a pumping start date of Oct 15th. The work shall include, but not be limited to, obtaining any permits required for construction, bid bond, payment and performance bond, insurance, administration, submittals, plan and shop drawing preparation, establishing staging area, moving onto the site all equipment and materials, transportation to and from the site, temporary facilities (if any), operating supplies, providing site security, utility verification, holding progress meetings, construction staking, as-built and verification surveying,

cleaning staging area, record documents, construction photographs, and coordination necessary for the Contractor to provide and maintain a construction force at the project site complete and ready to perform all work in accordance with Contract Documents.

Special Site Consideration

The contractor shall be capable of staging equipment within the recently drained portions of the lake bed. Conditions could be muddy with high levels of loose silt and contractor must be capable of positioning pump(s) in necessary pumping location.

2. Base Bid Item #2: Lake Dewatering Execution

The Contractor shall be responsible for selection, design, and implementation of a Dewatering System to permit little to no standing water to allow drying of lake bed.

- A. Except as otherwise specified or indicated, selection of equipment, materials, and methods shall be Contractor's responsibility. The dewatering of any work areas, as well as the disposal of all water handled shall be in strict accordance with all local and state government rules and regulations and Contract Documents.
- B. The Contractor will completely dewater Lake Elmo to the maximum extent possible for clam eradication efforts. The Contractor shall coordinate with FWP to establish final drawdown elevation and scheduling in the event that infiltrating groundwater prevents complete dewatering.
- C. The Contractor shall provide sump pump(s) to remove surface water.
- D. Rate of flow required through one or multiple pumping units is a minimum of 3,000 GPM (60 hours to achieve 33.1 acre-feet of water) not to exceed 4,500 GPM.
- E. Contractor will discharge water into existing irrigation outlet and respective lateral canal.
- F. Approximately 550' of hose/pipeline is needed to span from the deepest location in Lake Elmo to the water disposal area at the headgate outlet structure.
- G. Water will be filtered down to 1500 micron (1.5mm) or smaller through the use of filter bags/baskets or other FWP-approved method.
- H. Upon a storm event during the contract period, which introduces storm water to the lake basin area, provide sump pump(s) to re-collect and remove surface water from the work area
- I. Conduct daily observation of dewatering system. Make required repairs and perform scheduled maintenance including fueling.
- J. The Contractor shall notify FWP if dewatering system cannot control water within project and:
 - a. Supplement or modify dewatering system and provide other remedial measures to control water within project area.
 - b. Demonstrate dewatering system operation complies with performance requirements before resuming dewatering operations.
- K. Modify dewatering and surface water control systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.

Water Disposal

- A. Discharge water into the concrete Lake Elmo irrigation structure. Discharge to different location is allowed only per approval from FWP and Billings Bench Watershed Association.
- B. Provide erosion protection features at point of discharge as needed.
- C. Provide sediment capture within system. Filter bags/baskets or other filtration system, as approved by FWP, must be capable of filtering down to 1500 microns (1.5mm) or smaller.

Field Quality Control

- A. Observe slopes of project area. If sloughing occurs, stop dewatering until the soil is drained and holding the slopes. If the side slopes of the lake bed are not stable, stop work and notify FWP immediately.
- B. Ensure canal below outlet structure adequately handles discharge flows and no downstream flooding occurs.

Work Hours

- A. Work shall be performed during periods in which adequate light levels are available to provide a safe working environment. Night work shall not be allowed for performance of the work without written prior approval from FWP.

Permitting

FWP will obtain the following documents/permits:

- A. USACE 404
- B. USACE 401
- C. 318 Temporary Turbidity Standards
- D. U.S. Fish and Wildlife Service Threatened or Endangered Species Review
- E. Montana Cultural or Historical Resources Review

Site Security

- A. Security will not be provided by FWP. The Contractor shall, at all times, take reasonable precautions in conducting all operations under this contract in a manner to avoid the risk of loss, theft or damage to the equipment and supplies. FWP will not be responsible for the loss, theft, or damage of the Contractor's equipment.

Access and Access Control

- A. Lake Elmo State Park is open to the public. The Lake bed will be closed to public. Equipment and trailers must be locked when not in use.
- B. The Contractor shall be responsible for providing barricades, signs, flags, caution tape, and other means, as necessary, to prevent unauthorized access to the site and protect the work, materials and equipment stored onsite.

Additive Alternate #1: Lake Elmo and remaining groundwater dewatering execution (Oct 23 – Oct 31)

The Contractor shall be responsible for selection, design, and implementation of a Dewatering System to permit little to no standing water to allow drying of lake bed.

- A. Except as otherwise specified or indicated, selection of equipment, materials, and methods shall be Contractor's responsibility. The dewatering of any work areas, as well as the disposal of all water handled shall be in strict accordance with all local and state government rules and regulations and Contract Documents.
- B. The Contractor will completely dewater Lake Elmo to the maximum extent possible for clam eradication efforts. The Contractor shall coordinate with FWP to establish final drawdown elevation and scheduling in the event that infiltrating groundwater prevents complete dewatering.
- C. The Contractor shall provide sump pump(s) to remove surface water.
- D. Rate of flow required through one or multiple pumping units not to exceed 4,500 GPM.
- E. Contractor will discharge water into existing irrigation outlet and respective lateral canal.
- F. Approximately 550' of hose/pipeline is needed to span from the deepest location in Lake Elmo to the water disposal area at the headgate outlet structure.
- G. Water will be filtered down to 1500 micron (1.5mm) or smaller through the use of filter bags/baskets or other FWP-approved method.

- H. Upon a storm event during the contract period, which introduces storm water to the lake basin area, provide sump pump(s) to re-collect and remove surface water from the work area
- I. Conduct daily observation of dewatering system. Make required repairs and perform scheduled maintenance including fueling.
- J. The Contractor shall notify FWP if dewatering system cannot control water within project and:
 - a. Supplement or modify dewatering system and provide other remedial measures to control water within project area.
 - b. Demonstrate dewatering system operation complies with performance requirements before resuming dewatering operations.
- K. Modify dewatering and surface water control systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.

Water Disposal

- A. Discharge water into the concrete Lake Elmo irrigation structure. Discharge to different location is allowed only per approval from FWP and Billings Bench Watershed Association.
- B. Provide erosion protection features at point of discharge as needed.
- C. Provide sediment capture within system. Filter bags/baskets or other filtration system, as approved by FWP, must be capable of filtering down to 1500 microns (1.5mm) or smaller.

Field Quality Control

- A. Observe slopes of project area. If sloughing occurs, stop dewatering until the soil is drained and holding the slopes. If the side slopes of the lake bed are not stable, stop work and notify FWP immediately.
- B. Ensure canal below outlet structure adequately handles discharge flows and no downstream flooding occurs.

Work Hours

- A. Work shall be performed during periods in which adequate light levels are available to provide a safe working environment. Night work shall not be allowed for performance of the work without written prior approval from FWP.

Site Security

- A. Security will not be provided by FWP. The Contractor shall, at all times, take reasonable precautions in conducting all operations under this contract in a manner to avoid the risk of loss, theft or damage to the equipment and supplies. FWP will not be responsible for the loss, theft, or damage of the Contractor's equipment.

Access and Access Control

- A. Lake Elmo State Park is open to the public. The Lake bed will be closed to public. Equipment and trailers must be locked when not in use.
- B. The Contractor shall be responsible for providing barricades, signs, flags, caution tape, and other means, as necessary, to prevent unauthorized access to the site and protect the work, materials and equipment stored onsite.

Additive Alternate #2: Residual Groundwater Dewatering Execution (Nov 1 – Nov 30)

This optional work is in place in the event that significant groundwater infiltration occurs following the initial dewatering.

- A. The Contractor shall be responsible for selection, design, and implementation of a Dewatering System to permit little to no standing water to allow drying of lake bed.

- B. Except as otherwise specified or indicated, selection of equipment, materials, and methods shall be Contractor's responsibility. The dewatering of any work areas, as well as the disposal of all water handled shall be in strict accordance with all local and state government rules and regulations and Contract Documents.
- C. The Contractor shall provide sump pump(s) to remove infiltrating groundwater.
- D. Contractor will discharge water into outlet main irrigation canal located to the west and northwest of Lake Elmo.
- E. Approximately 1,900' of hose/pipeline is needed to span from the deepest location in Lake Elmo to the water disposal area within the main irrigation canal west and northwest of Lake Elmo.
- F. Water will be filtered down to 1500 micron (1.5mm) or smaller through the use of filter bags/baskets or other FWP-approved method.
- G. Upon a storm event during the contract period, which introduces storm water to the lake basin area, provide sump pump(s) to re-collect and remove surface water from the work area
- H. Conduct daily observation of dewatering system. Make required repairs and perform scheduled maintenance including fueling.
- I. The Contractor shall notify FWP if dewatering system cannot control water within project and:
 - a. Supplement or modify dewatering system and provide other remedial measures to control water within project area.
 - b. Demonstrate dewatering system operation complies with performance requirements before resuming dewatering operations.
- J. Modify dewatering and surface water control systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.

Water Disposal

- A. Discharge water into the main irrigation canal west and northwest of Lake Elmo. Discharge to different location is allowed only per approval from FWP and Billings Bench Watershed Association.
- B. Provide erosion protection features at point of discharge as needed as to not erode irrigation canal bed.
- C. Provide sediment capture within system. Filter bags/baskets or other filtration system, as approved by FWP, must be capable of filtering down to 1500 microns (1.5mm) or smaller.

Field Quality Control

- A. Observe slopes of project area. If sloughing occurs, stop dewatering until the soil is drained and holding the slopes. If the side slopes of the lake bed are not stable, stop work and notify FWP immediately.

Work Hours

- A. Work shall be performed during periods in which adequate light levels are available to provide a safe working environment. Night work shall not be allowed for performance of the work without written prior approval from FWP.

Site Security

- B. Security will not be provided by FWP. The Contractor shall, at all times, take reasonable precautions in conducting all operations under this contract in a manner to avoid the risk of loss, theft or damage to the equipment and supplies. FWP will not be responsible for the loss, theft, or damage of the Contractor's equipment.

Access and Access Control

- C. Lake Elmo State Park is open to the public. The lake bed will be closed to public. Equipment and trailers must be locked when not in use.
- D. The Contractor shall be responsible for providing barricades, signs, flags, caution tape, and other means, as necessary, to prevent unauthorized access to the site and protect the work, materials and equipment stored onsite.

Submittals

- A. Contractor Designed Dewatering System:
 - a. Indicate dewatering system layout, dewatering pump locations, pipe sizes and capacities, surface water control devices, valves, and water disposal method and location.
 - b. Indicate primary power system location and capacity.
 - c. Include detailed description of dewatering and monitoring system installation procedures and maintenance of equipment.
 - d. Include description of emergency procedures to follow when problems arise.
- B. Dewatering equipment specifications:
 - a. Dewatering Pumps:
 - i. Add manufacturers and equipment model numbers and indicate sizes and capacities.
 - ii. Supply sufficient pumping capacity to dewater the excavation area and meet performance requirements.
 - iii. Furnish pumps with screened suction hose and discharge hoses as required to suit application.
 - b. Piping
 - i. Watertight piping.
 - ii. Pipe may be trenched with FWP approval.
 - iii. Protect pipe against breakage from freezing water.
 - c. Filtration system
 - i. Add manufacturers and equipment model numbers and indicate sizes and capacities.

Price and Payment Procedures

Base Bid Item 1: Mobilization/Demobilization

- 1. Basis of Measurement: On a lump sum basis.
- 2. Basis of Payment: This item consists of all materials, labor, and equipment to complete work activities for Mobilization/Demobilization. The work shall include, but not be limited to, obtaining any permits required for construction, bid bond, payment and performance bond, insurance, administration, submittals, plan and shop drawing preparation, establishing staging area, moving onto the site all equipment and materials, transportation to and from the site, temporary facilities (if any), operating supplies, providing site security, utility verification, holding progress meetings, construction staking, as-built and verification surveying, cleaning staging area, record documents, construction photographs, and coordination necessary for the Contractor to provide and maintain a construction force at the project site complete and ready to perform all work in accordance with Contract Documents.

Base Bid Item 2: Dewatering remaining Lake Elmo water following passive drawdown (Oct 15 - Oct 22, 2021).

1. Basis of Measurement: On a lump sum basis.
2. Basis of Payment: This item consists of all materials, labor, and equipment to complete work activities of Lake Elmo Dewatering. The work shall include, but not be limited to, implementation of Contractor's Dewatering Plan meeting scope requirements including surface water dewatering sump pumps, pipelines, operation and maintenance of dewatering system, and removal and restoration in accordance with Contract Documents.

Additive Alternate #1 Bid Item 1: Dewatering remaining Lake Elmo water or residual groundwater (Oct 23 – Oct 31, 2021).

1. Basis of Measurement: Per day basis.
3. Basis of Payment: This item consists of all materials, labor, and equipment to complete work activities of Lake Elmo Dewatering. The work shall include, but not be limited to, implementation of Contractor's Dewatering Plan meeting scope requirements including surface water and residual groundwater dewatering sump pumps, pipelines, operation and maintenance of dewatering system, and removal and restoration in accordance with Contract Documents.

Additive Alternate #2 Bid Item 2: Dewatering of remaining Lake Elmo water or residual groundwater (Nov 1 – Nov 30, 2021).

1. Basis of Measurement: Per day basis.
2. Basis of Payment: This item consists of all materials, labor, and equipment to complete work activities of Lake Elmo Dewatering. The work shall include, but not be limited to, implementation of Contractor's Dewatering Plan meeting scope requirements including surface water and residual groundwater dewatering sump pumps, pipelines, operation and maintenance of dewatering system, and removal and restoration in accordance with Contract Documents.

Schedule

9/1/2021 – 10/15/2021 (outside scope of this contract):

Billings Bench Water Association will close the intake canal gate for Lake Elmo. The outlet head gate will remain open draining Lake Elmo until the bottom of the headgate is reached accomplishing an approximate 13-foot drawdown with the assistance of trenching by MTFWP. The active irrigation season ends on Oct 15, 2021. In the event passive draining is complete and water is still needed, the inlet gate for Lake Elmo will need to be opened and inflow/outflow balanced for the remainder of the irrigation season.

10/15/2021-10/22/2021:

After the irrigation season ends, pumping would commence during daylight hours unless draining is behind schedule or unknown situations arise such as additional ground-water infiltration slowing complete draining that would warrant additional pumping needs.

FWP anticipates a project duration of 7 days to be completed by Oct 22, 2021.

10/22/2021 – 11/30/2021 (Additive Alternate Contract Items #1 and #2)

If needed, supplemental pumping from the lake could occur after the initial dewatering due to storm water or groundwater infiltration. Water can no longer be pumped into the outlet structure and respective lateral canal after Oct 31, 2021. Discharge into the main irrigation canal would occur after that date until the end of the contract window. This 6-week window will be used as needed to maintain a drained lake bottom.

Required Insurances and Registrations

Prior to issuing a Notice to Proceed, FWP will require the following insurances and Registrations:

- Current Certificate of Montana Contractor Registration or Independent Montana Contractor Registration.
- Workers' Compensation Insurance, certificate of insurance must be submitted even if you are insured with the Division of Workers' Compensation, unless the contractor can provide proof of exemption from Workers' Compensation.
- Commercial General Liability Insurance, policy with per occurrence limits of \$1,000,000 and aggregate limits of \$2,000,000. With the State of Montana Fish, Wildlife & Parks listed as an additional insured.
- Automobile Liability Insurance, policy with per occurrence limits of \$1,000,000 and aggregate limits of \$2,000,000.

OPTION TO COMMERCIAL GENERAL LIABILITY INSURANCE

- Owner's/Contractor's Protective, policy to be in the name of the STATE OF MONTANA, with per occurrence limits of \$1,000,000 and aggregate limits of \$2,000,000 or Owner may be listed as an additional insured under Contractor's General Liability for this project.

FWP Representative

The Contractor will coordinate the project with:

Bardell Mangum, PLA
Landscape Architect
Montana Fish, Wildlife and Parks
PO Box 200701
1522 Ninth Ave.
Helena, MT 59620-0701
(406) 841-4012 bmangum@mt.gov

Lake Elmo 12.5ft Drawdown

MONTANA FWP

Potential water remaining following a 12.5 ft. drawdown using existing head gate structure.



Water Depth (ft) Remaining	Color
3.31 - 3.71	Dark Blue
2.91 - 3.31	Medium-Dark Blue
2.52 - 2.91	Medium Blue
2.12 - 2.52	Light Blue

1.72 - 2.12
1.32 - 1.72
0.93 - 1.32
0.53 - 0.93
0.13 - 0.53

Surface Acres - 24.7
Volume - 33.1 Acre-foot

Map Produced by: AIS Bureau
Author: CRM
Drawdown2021.aprx 1/7/2021



Credits: Bathymetry data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.

