

To: Mayor and Council  
From: Katie Sickles  
Date: May 7, 2025  
Agenda Item: Resolution 17– Series 2025



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**REQUEST:**

Council is asked to approve Resolution 17– Series 2025 a Resolution authorizing the encumbrance of Water Works Enterprise Funds to provide detailed submittal drawings/documents of a membrane microfiltration/ultra-filtration system for the Minturn Water Treatment Plan Project:

**ANALYSIS:**

In the 4<sup>th</sup> Quarter of 2024, Minturn Town Council directed staff and consultants to proceed with the design of a membrane system water treatment plant to replace the current direct filtration WTP consisting of three slow sand filters.

The Town of Minturn is soliciting firm price proposals for supplying a membrane Microfiltration / Ultrafiltration (MF/UF) system for the Minturn WTP Project based on the information provided in a Request for Proposal (RFP).

Based on a thorough evaluation of the proposals that are received, the Town of Minturn, (Minturn) and HDR Engineering, Inc (HDR or Engineer) will select a MF/UF System Manufacturer (Supplier) to provide detailed submittal drawings.

The successful bidder could potentially provide equipment for the project, however any funding decision after the submittal of detailed drawings will be considered later.

An infrastructure & Service goal is to “Analyze grant funding & bond options for WTP” is documented in the Town of Minturn Strategic Plan 2025-2027. To determine funding needs, significant water treatment details and the cost of the new Water Treatment Plant including the completion of anticipated 90% plans, the potential supplier’s detailed submissions are necessary.

**ESTIMATED ENCUMBRANCE:**

HDR Engineering, Inc (HDR or Engineer) has estimated the membrane system at about One Million Dollars. Detailed submittal document cost is about 10% so an encumbrance and guarantee of approximately \$100,000 to be paid directly to the awarded supplier for detailed submittal documents/drawings only.

**STRATEGIC PLAN ALIGNMENT:**

**Town of Minturn Strategic Plan 2025-2027**

- Vision: To ensure Minturn’s future as a neighborly mountain community.
- Mission: Manage Minturn’s growth, including water infrastructure and affordable housing for locals while remaining environmentally & fiscally sustainable.
- Values: Integrity, Transparency, Collaboration & Resourcefulness
- Analyze grant funding & bond options for WTP

**RECOMMENDED ACTION OR PROPOSED MOTION:**

The Resolution is to be approved by motion.

**ATTACHMENTS:**

Resolution ## – Series 2025

**TOWN OF MINTURN, COLORADO  
RESOLUTION NO. 17 – SERIES 2025**

**A RESOLUTION AUTHORIZING THE EMCUMBRANCE  
OF WATER WORKS ENTERPRISE FUNDS TO PAY THE  
PROPOSED SUPPLIER DIRECTLY TO PROVIDE  
DETAILED SUBMITTAL DOCUMENTS OF A MEMBRANE  
MICROFILTRATION/ULTRAFILTRATION SYSTEM FOR  
THE MINTURN WATER TREATMENT PLANT PROJECT**

**WHEREAS**, the Town of Minturn is soliciting firm price proposals for supplying a membrane Microfiltration/Ultrafiltration (MF/UF) system for the Minturn WTP Project based on the information provided in a Request for Proposal (EXHIBIT A); and

**WHEREAS**, based on a thorough evaluation of the proposals that are received, the Town of Minturn, and HDR Engineering, Inc will select a MF/UF System Manufacturer (Supplier) to provide detailed submittal drawings for the project.

**NOW THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN  
OF MINTURN, COLORADO AUTHORIZING THE EMCUMBRANCE OF WATER  
WORKS ENTERPRISE FUNDS TO PAY THE PROPOSED SUPPLIER DIRECTLY TO  
PROVIDE DETAILED SUBMITTAL DOCUMENTS OF A MEMBRANE  
MICROFILTRATION / ULTRAFILTRATION SYSTEM FOR THE MINTURN WATER  
TREATMENT PLANT PROJECT.**

**INTRODUCED, READ, APPROVED, ADOPTED AND RESOLVED THIS 7TH DAY  
OF MAY 2025.**

TOWN OF MINTURN

By: \_\_\_\_\_  
Earle Bidez, Mayor

ATTEST:

\_\_\_\_\_  
Jay Brunvand, Town Clerk

## Request for Proposals

Date:	Tuesday, April 08, 2025
Project:	Minturn Water Treatment Plant
To:	Prospective Suppliers
Prepared By:	HDR Engineering, Inc
Subject:	Request for Proposal for Microfiltration/Ultrafiltration Equipment Pre-Selection

The Town of Minturn is soliciting firm price proposals for supplying a membrane Microfiltration/Ultrafiltration (MF/UF) system for the Minturn WTP Project based on the information provided in this Request for Proposal (RFP).

Based on a thorough evaluation of the proposals that are received, the Town of Minturn, (Minturn) and HDR Engineering, Inc (HDR or Engineer) will select a MF/UF System Manufacturer (Supplier) to provide detailed submittal drawings and potentially equipment for the project. It is anticipated that the project will be issued for bid to General Contractors in the first quarter of 2026, and that equipment startup would occur in the first quarter of 2027, followed by performance testing.

Questions and Clarifications concerning the content of this proposal shall be submitted in writing only to:

Jarod Limke  
HDR Engineering, Inc  
1670 Broadway  
Denver, CO 80202  
[jarod.limke@hdrinc.com](mailto:jarod.limke@hdrinc.com)

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## I. PROJECT DESCRIPTION AND BACKGROUND

Minturn presently operates a direct filtration WTP consisting of three slow sand filters. Filter 1 and Filter 2 are earthen pits constructed in 1963. Filter 1 is no longer in service, and Filter 2 feeds a 1.0-micron cartridge filter (Harmsco PPFS-HC-170-1) capable of producing 50 gpm of treated water. Filter 3 is a concrete lined filter constructed in 1991, capable of producing 60 gpm. Water treated through Filter #3 and the cartridge filter comes from a surface water diversion on Cross Creek. The water is blended in the WTP clearwell, where chlorine is applied for disinfection, and then pumped to the Minturn distribution system.

A new WTP is being constructed to replace the existing WTP and will include membranes as the primary treatment element.

Minturn will work in conjunction with HDR to prepare and issue written addenda as appropriate. Suppliers shall only consider the information in this Request for Proposal and written addendum in developing their quote/proposal. Suppliers shall provide a list of exceptions taken to the Request for Proposal or written addenda. All time and expenses incurred in responding to this Request for Proposal shall be at the expense of the Supplier.

### **Project Location:**

- Minturn, Colorado

### **Planned Project Schedule:**

- |  |                |
|--|----------------|
| • Publish Membrane System RFP:                     | May 9, 2025    |
| • Deadline for Questions (1 PM):                   | May 23, 2025   |
| • Proposals Due                                    | June 5, 2025   |
| • Notice of Award to Supplier:                     | June 19, 2025  |
| • Detailed Shop Drawings Due:                      | August 1, 2025 |
| • Anticipated Solicitation for General Contractor: | Q1 of 2026     |
| • Anticipated Membrane Equipment Purchase by GC:   | Q2 of 2026     |

Minturn will issue a contract to a General Contractor (GC) for assembly and startup related services for the MF/UF system. While the contract will establish the GC's days for installation and to achieve construction milestones, and general performance requirements and timelines for completing the work, Minturn will not be directly responsible for the GC's schedule or work sequences. It is anticipated that the Contractor will be given approximately 12 weeks to install the equipment and ancillary piping and systems, from the time of equipment delivery to the start of functional testing.

## II. RAW WATER QUALITY

Raw water will be supplied from a surface diversion on Cross Creek (Map). No pretreatment equipment will be used upstream of the MF/UF system. The raw water quality shown in Table 1 is to be used as the basis of design for Suppliers proposal. At this time, no coagulant or oxidizer is planned to be added to the water upstream up of the membranes.

Table 1. Cross Creek Raw Water Quality

Parameter	# of Samples	Concentration (mg/L)
Arsenic	10	ND
Barium	8	MIN: 0.0059 AVG: 0.0091 MAX: 0.0112 90th: 0.0111
Beryllium	9	ND
Cadmium	10	ND
Chromium	8	ND
Copper	8	MIN: 0.0015 AVG: 0.0030 MAX: 0.0048 90th: 0.0047
Fluoride	8	ND
Lead	8	MIN: 0.0000 AVG: 0.0000 MAX: 0.0002 90th: 0.0001
Nitrate	13	MIN: 0.00 AVG: 0.13 MAX: 0.25 90th: 0.24
Nitrite	8	ND
Selenium	8	MIN: 0.0000 AVG: 0.0001 MAX: 0.0011 90th: 0.0003
Aluminum	12	MIN: 0.012 AVG: 0.068 MAX: 0.253 90th: 0.161
Chloride	13	MIN: 0.00 AVG: 0.43 MAX: 1.53 90th: 0.73
Iron	15	MIN: 0.040 AVG: 0.187 MAX: 0.353 90th: 0.302
Manganese	15	MIN: 0.0071 AVG: 0.0117 MAX: 0.0182 90th: 0.0160
pH	21	MIN: 7.2 AVG: 7.4 MAX: 7.7 90th: 7.5
Silver	8	ND
Sulfate	14	MIN: 5.62 AVG: 13.87 MAX: 23.82 90th: 20.32
Total Dissolved Solids	13	MIN: 27 AVG: 47 MAX: 69 90th: 63
Zinc	10	MIN: 0.001 AVG: 0.002 MAX: 0.005 90th: 0.003
Turbidity (NTU)	26,085	MIN: 0.30 AVG: 0.70 MAX: 17.35 90th: 1.01
Hardness (mg/L as CaCO3)	12	MIN: 13.0 AVG: 23.0 MAX: 36.1 90th: 29.4
Alkalinity (mg/L as CaCO3)	11	MIN: 8.4 AVG: 14.2 MAX: 19.7 90th: 17.2
Total Organic Carbon	14	MIN: 1.3 AVG: 3.5 MAX: 12.0 90th: 7.2
Alpha Particles (pCi/L)	N/A	MIN: AVG: MAX: 90th:
Beta Particles (mrem/yr)	N/A	MIN: AVG: MAX: 90th:
Radium 226 and Radium 228 (pCi/L)	N/A	MIN: AVG: MAX: 90th:
Uranium (ug/L)	N/A	ND
Temperature (deg C)	21	MIN: 0.8 AVG: 8.4 MAX: 17.8 90th: 15.9

### III. WTP CAPACITY (DESIGN FLOW RATE)

Provide proposal for equipment to meet the treatment capacity flow rates identified in Table 2. The system shall provide a nominal capacity of 420 gpm of filtrate through two independent treatment skids/membrane rack assemblies, 210 gpm firm capacity per MF/UF skid or rack. Each skid or rack shall be capable of a low-end filtrate production rate of 100 gpm, and shall be capable of operating independently of one another, including only one skid/rack being in operation at a time, and one skid/rack shall be capable of staying in operation while the other is in backwash or cleaning cycles.

**Table 2. WTP Flow Rate Summary at Design Temperature**

Number of Membrane Skids/racks	2
Filtrate Capacity per Skid:	210 gpm / 0.3 mgd
Forward Flow Capacity per Skid:	230 gpm / 0.33 mgd
Plant Total Filtrate Capacity	420 gpm / 0.6 mgd
Plant Firm (Rated) Capacity	210 gpm / 0.3 mgd

### IV. DESIGN CRITERIA AND PERFORMANCE REQUIREMENTS

The design criteria / performance requirements for the MF/UF system are as follows:

1. Site Elevation: 8,043 feet.
2. Water Source: Surface water, Cross Creek.
3. MF/UF System Type: Pressurized.
4. Membranes:
  - a. Polyvinylidene fluoride (PVDF), hollow-fiber, flow from outside to inside.
5. Feed pressure to membrane feed pumps mounted at floor level: See Hydraulic Profile.
6. Filtrate Backpressure: See Hydraulic Profile
7. Design Water Temperature:
  - a. As shown in Table 1
  - b. Design to meet all requirements at water temperature of 4 deg C.
8. Maximum Instantaneous Flux Rate at 20 deg C:
  - a. 55 gallons per square foot per day (gfd).
  - b. Flux rate shall be temperature corrected so that each skid / membrane rack can produce required filtrate capacity at the design water temperature.
  - c. Proposal shall identify the methodology/equation for temperature correction.
9. MF/UF Skid Recovery:
  - a. Greater than or equal to 93% as calculated over all 24 hour periods.
10. Overall MF/UF System Recovery:
  - a. Greater than or equal to 93% as calculated over all 24 hour periods.
11. CIP Frequency:
  - a. 1 every 30 days (or less frequent)

- b. maximum allowable trans membrane pressure (TMP) between CIP's shall be 90% of maximum rated TMP, as listed on the CDPHE list of Accepted Alternative Membrane Filtration Technologies for the membrane element
- 12. Maintenance Wash (or Chemically Enhanced Backwash) Frequency:
  - a. 1 every 4 days (or less frequent)
  - b. maximum allowable TMP between maintenance washes shall be 85% of maximum allowable TMP as listed on the CDPHE list of Accepted Alternative Membrane Filtration Technologies for the membrane element.
- 13. Direct Integrity Testing
  - a. Once per week per skid (or more frequent) that each skid is in operation
- 14. Filtrate Turbidity:
  - a. Filtrate (per skid): Less than or equal to 0.1 NTU 95% of the time.
  - b. Instantaneous maximum (either skid) of 0.5 NTU.
- 15. Average Filtrate Particle Count:
  - a. 5 particles larger than 2 microns per mL of filtrate water (as measured over a 24-hour period).
- 16. Maximum Filtrate Particle Count:
  - a. 10 particles larger than 2 microns per mL of filtrate water (as measured over a 24-hour period).
- 17. Filtrate SDI:
  - a. Less than or equal to 3.0 95% of the time
  - b. Instantaneous maximum of 3.5
- 18. Backwash Waste and CIP Waste:
  - a. Chemical usage for backwash and CIP should be minimized without sacrificing membrane performance. All wastes shall be neutralized prior to discharge to the waste holding tank.
- 19. Backwash Water Supply:
  - a. Potable water from the distribution system is available at pressure up to 70 psi. The water quality of the potable system, for purpose of response to this RFP, is similar to that in Table 1.

## V. SCOPE OF SUPPLY

Each Suppliers proposal shall be for a complete and functional MF/UF system, including, but not limited to, the major items as described in this section. Please note that the power supply at the site consists of is 480V/ 3-phase; all equipment should be provided such that it can operate on the existing power supply.

Time is of the essence in this project. Providing equipment that is skid mounted and that will reduce installation time, including reduced time for equipment mounting and piping connections by the General Contractor, is encouraged, and will be considered in the selection of the awarded Supplier. All equipment and piping that is included as part of skids/racks will be fully supported and secured by the Supplier.

- 1. Membrane System Membrane Modules:



- a. Factory-assembled skid/membrane rack systems comprised of modular MF/UF units.
  - b. Supplier shall select the number of membrane modules required to meet the design flow.
  - c. Provide enough room on skids/racks to accommodate a minimum 10% increase in the number of modules.
2. Raw water strainers:
  - a. Quantity: 2.
  - b. Type 304 stainless steel wire mesh screens or wedge wire screens
  - c. Automated / self-cleaning.
    - i. Configure so that skid production capacity does not have to be taken off-line or reduced for the strainers to clean.
    - ii. This may be accomplished by either oversizing each unit to handle the full water system production rate or by providing strainer units capable of maintaining forward filtered water production while the unit is self-cleaning
  - d. The raw water strainers will be located on the discharge side of the MF/UF Feed Pumps (pumps by Supplier).
  - e. The Raw Water Strainers may be configured to be common to the skids/racks, or as individual units dedicated to an individual skid/rack.
3. Pumps- General:
  - a. Feed pumps, backwash pumps, transfer pumps, CIP and circulation pumps, etc. shall be provided as required for the full operation of the MF/UF equipment.
  - b. Feed Pumps and Backwash Pumps (if used) shall be controlled by variable frequency drives and shall be constructed of materials suitable for water treatment and the specific application.
  - c. Pumps shall be centrifugal type.
4. Backwash System:
  - a. Backwash water from the distribution system will be supplied through a 4" PVC pipe at distribution system pressure (up to 70 psi).
  - b. Backwash air must be supplied from the manufacturer's package equipment
    - i. Backwash air must be filtered, dry, and free of oil
  - c. Include pumps and separate backwash water supply tanks as required.
  - d. The backwash cycle shall not remove the skids from service for more than 150 seconds.
  - e. The backwash waste will drain freely, via gravity, to a sand filter that will have a maximum water level 2 feet lower than the operating floor on which the membrane equipment resides.
    - i. Refer to Hydraulic Profile.
5. Clean-In-Place / Maintenance Wash Equipment:

- a. The CIP / Maintenance Wash system shall be capable of cleaning the MF/UF membranes in-situ and shall be per Manufacturer's standard.
  - b. The MF/UF membranes should be designed for cleaning with sodium hypochlorite and sodium hydroxide as necessary to assist with pH adjustment, and either citric acid or sulfuric acid (in combination as necessary).
  - c. The cleaning processes will assist with reducing the system's overall TMP. This cycle must be automated, using chemical feed equipment as required for the system.
  - d. The system should be of manufacturer's standard supply and capable of heating the cleaning solutions to 105 degrees F, consisting of:
    - i. Recirculation pumps and CIP Solution Tank (polyethylene). Either provide two installed pumps (duty, standby), or one unit and a shelf spare.
    - ii. Drain/transfer pumps, as required. Either provide two installed pumps (duty, standby), or one unit and a shelf spare.
    - iii. Chemical metering pumps to transfer chemicals as required for CIP cycles.
      1. Metering pumps shall include auto-degassing ends for sodium hypochlorite service, foot valves, injection valves, and all appurtenances necessary for a fully functioning chemical feed system.
    - iv. Dosing system controls, valves, pH/conductivity probe, tank heaters, and other instrumentation and controls.
  - e. The maintenance wash cycle (either of acid, chlorine, caustic, or chlorine/caustic) should not remove a skid from service for more than 90 minutes.
  - f. The CIP wash cycle (either of acid, chlorine, caustic, or chlorine/caustic) should not remove a skid from service for more than 360 minutes.
6. Waste Neutralization Equipment:
- a. The waste neutralization system shall include, but not be limited to, a fully-automated system capable of neutralizing all chemical wastes produced by the MF/UF system, including adjustment of pH to a neutral range of 6.6-8.9 s.u. and free chlorine less than 0.011 mg/L.
  - b. Equipment shall include:
    - i. All transfer/drain pumps. Either provide two installed pumps (duty, standby), or one unit and a shelf spare.
    - ii. A Neutralization Tank (polyethylene), separate from the CIP Solution Tank (polyethylene), with mixer or fluid circulation system.
    - iii. Chemical metering pumps (sodium bisulfite, sodium hydroxide, etc.)
    - iv. On-line instrumentation shall be used to confirm that waste is neutralized prior to discharge.
    - v. The Neutralization Tank will drain freely, via gravity, to a discharge holding tank with a maximum water level 2 feet lower than the operating floor on which the membrane equipment resides.

- vi. Valves and programming shall be provided to control the discharge rate to the drain system.

7. Compressed Air Equipment:

- a. Provide size and quantity of compressors based on air requirements for the Suppliers system.
- b. The compressed air system shall be supplied complete with minimum one air compressor, an air receiver tank, air drier unit, and discharge air pressure filter regulators.
- c. Provide oil-free compressor or 3 coalescing oil filters in lieu of an oil-free compressor

8. On-line Membrane Integrity Test System:

- a. The MF/UF unit shall be provided with an automated membrane integrity testing that meets typical alternative filtration technology guidelines and the latest CDPHE design criteria.

9. Programmable Logic Controllers (PLCs):

- a. A single PLC/HMI in a shared control panel with operator interface terminal and remote I/O at skids,
- b. Mount panel on a free-standing rack or directly to one of the skids/racks.
- c. Enclosure shall be NEMA 4X and include air conditioning unit for operation in an area at 50 deg C.
- d. PLCs shall be Allen Bradley ControlLogix or CompactLogix.
- e. All programing shall be AB Control Logix version 24 or later.
- f. The MF/UF control system shall communicate via Ethernet protocol.
  - i. The MF/UF systems will be integrated into the facility SCADA system by the General Contractor's Control System Integrator, with presentation of key MF/UF system screen at remote screens, and providing limited control function of the MF/UF system including adjustment of system production rates, and remote Start/Stop capability.
  - ii. Supplier shall coordinate with the General Contractor and their Control System Integrator to coordinate limited I/O requirements with other plant treatment systems that will be required for a fully functional system.
- g. MF/UF PLC programs shall be unlocked (no password) so as to allow full access to code and data files for the controls integrator.
- h. Provide a copy of HMI programming code
  - i. Minturn will sign a Non-Disclosure Agreement.
- i. PLC program shall be in non-volatile memory (not battery backed RAM).

10. MCCs and VFDs:

- a. Provide MCC(s) with starters, and VFDs for the MF Feed Pumps, Backwash Pumps, CIP circulation and Neutralization pumps, and drain pumps as required.

- b. The MCC with starters and/or VFDs will be located in an air-conditioned electrical room in the same facility as the membrane equipment.
  - i. See Drawings.
  - ii. All electrical equipment shall be rated for normal operation in an ambient air temperature up to a maximum of 50 deg C.
- c. MCCs and electrical gear shall be designed to power all MF/UF equipment.
- d. Total harmonic distortion from VFDs shall be limited to <3% by providing a hybrid filter on each drive, or by use of 18-pulse VFDs
  - i. Active filters are not allowed.

#### 11. Instrumentation Components:

- a. Provide the following minimum instrumentation and on-line analyzers:
  - i. Feed manifold pressure transmitter (one on each skid/rack).
  - ii. Feed temperature/pH transmitter (one on combined feed water).
  - iii. Feed turbidity transmitter (one on combined feed water).
  - iv. Filtrate flow rate transmitter (one per skid/rack).
  - v. Any additional monitoring equipment required for a fully functional system.

#### 12. Shop Drawings, Screen Shots and O&M Manuals:

- a. Design Information:
  - i. Following selection of Supplier (award of this RFP), the selected Supplier shall supply detailed assembly and installation drawings including arrangement, layout, mounting, and dimensions of MF/UF assemblies and components in AutoCAD or Revit format.
  - ii. Submittals shall include detailed cutsheets for all equipment, engineering data of major system components, pump motor data and pump curves, electrical/controls, P&ID's, wiring diagrams, and tank layout and fitting configurations, I/O lists, and a list of recommended spare parts.
  - iii. P&ID and assembly/installation drawings shall indicate pipe materials, and any details on materials that will be supplied by Minturn or the General Contractor that are important to the successful installation and function of the system. P&ID and assembly/installation drawings shall be sufficient for General Contractors to review and generally estimate effort for assembly of the system.
- b. Screen shots will be submitted 60 days prior to the expected start of Functional Testing.
- c. Draft and final Operation and Maintenance (O&M) manuals shall be provided.

#### 13. Suppliers' technical representative shall be on-site to startup the membrane filtration equipment, review and observe installation performed by the General Contractor, train operators, and be present for the Functional Test and 14-calendar day Initial Performance Testing.

- a. Include time on-site at the Minturn Water Plant located in Minturn, CO for a minimum of 10 eight-hour days.
  - b. Field representative will need to utilize his/her laptop for check-out and start-up procedures.
  - c. Provide 16 hours of operational training for Minturn operators.
  - d. Additional days required for operational problems with equipment supplied by the Supplier, and/or due to failed testing, are the responsibility of the Supplier.
14. Equipment and services expected to be provided by the General Contractor and NOT the Supplier include:
- a. General field assembly and installation of equipment.
  - b. Supervision of installation throughout the assembly/erection process.
  - c. Construction of equipment pads, supports and grouting.
  - d. Unloading of trucks, unpacking, and storage upon delivery.
  - e. Interconnecting piping between the membrane equipment or racks/skids, between the membrane equipment and ancillary equipment (examples including air scour piping, compressed air and cleaning systems), or the interconnecting piping to upstream or downstream treatment equipment or piping connection points.
  - f. Pipe support systems not included on skid/rack mounted systems.
  - g. Pneumatic lines supplying air to pneumatic actuators.
  - h. Supply and installation of control wiring, power cabling including cable trays and conduits, and associated supports.
  - i. Supply and storage of chemicals that will be used as part of system cleaning, maintenance or operation.
  - j. Installation of any control panels not mounted to the racks/skids.
  - k. Lubricants.
  - l. Supply and installation of anchor bolts. (Design of anchor system by Supplier)
15. Supplier to recommend and provide spare parts expected to be replaced on system within first 2 years of operation.

## VI. PERFORMANCE TESTING REQUIREMENTS

- 1. Suppliers' technical representative shall be on-site to startup the membrane filtration equipment, review and observe installation performed by the General Contractor, train operators, and be present for the Functional Test and 14-calendar day Initial Performance Testing.
  - a. Include time on-site at the Minturn Water Plant located in Minturn, CO for a minimum of 10 eight-hour days.
  - b. Field representative will need to utilize his/her laptop for check-out and start-up procedures.
  - c. Provide 16 hours of operational training for Minturn operators.
  - d. Additional days required for operational problems with equipment supplied by the Supplier, and/or due to failed testing, are the responsibility of the Supplier.

2. Following the installation of the equipment, Supplier shall perform calibration of components, a Functional Test, an Initial Performance Test, and a Monitoring Test Period on the MF/UF system. Performance testing requirements are summarized as follows:
3. Functional Test:
  - a. Supplier will review and inspect general assembly and installation of the equipment. Once written certification of proper installation has been issued by the Supplier and the General Contractor, the Supplier shall coordinate with the General Contractor to perform functional testing of the MF/UF system.
  - b. Functional testing will be performed using raw water from the planned source of supply to the plant.
  - c. Functional Testing is primarily the responsibility of the Supplier.
  - d. During the Functional Test, the Supplier shall operate all valves, controls, pumps, strainers, instrumentation, air handling equipment, and other devices to ensure they are functional and ready for performance testing.
  - e. Supplier and the General Contractor shall complete all functional testing to the satisfaction of HDR and Minturn prior to commencing the Initial Performance Test.
  - f. The Functional Test shall demonstrate the effectiveness of the following system components and features:
    - i. Automatic start/stop and flow control of MF/UF trains using SCADA.
    - ii. Manual flow control using SCADA.
    - iii. Automatic cleaning of raw water strainers.
    - iv. Automatic backwashing at various time intervals.
    - v. Automatic shutoff and alarm for various failure modes for each MF/UF train and for entire MF/UF System.
    - vi. Start and stop of air system.
    - vii. Automatic membrane integrity test system.
    - viii. Bubble point testing of the membrane modules, if not factory performed. If factory performed, submit documentation noting the testing and results.
    - ix. Determination of clean water permeability of each train and temperature correction of the clean water permeability for each train.
    - x. Monitoring and recovery of operating data.
    - xi. All control functions.
    - xii. Operation of chemical cleaning system.
    - xiii. Operation of all monitoring instruments.
  - g. Supplier will provide a testing protocol for the Functional Test a minimum of 7 days prior to the start of the test. A space will be included next to each item on the protocol for the initials of the Supplier onsite representative, indicating each item has been satisfactorily completed. A final, initialed copy of the protocol shall be submitted a minimum of 7 days prior to the Initial Performance Test.
4. Initial Performance Test:

- a. Following completion of the Functional Test and calibration of all instruments, the Supplier and General Contractor shall conduct the Initial Performance Test (IPT). The Supplier shall provide on-site time as needed, and at their discretion, to successfully complete the IPT, the IPT is primarily the responsibility of the Supplier. IPT testing will be performed using raw water.
- b. Successful completion of the IPT shall constitute Substantial Completion of the MF/UF system.
- c. Supplier shall provide the IPT Report within 10 days of completion of the test period.
- d. To perform the test, the Supplier shall operate the system continuously over a 14-day test period, and collect and summarize data to demonstrate that the system meets the performance test requirements for the parameters listed below. In all cases, compliance with the requirements of the specification shall be determined for each calendar day, and to successfully pass the test, the MF/UF system shall comply with requirements for each of the 14 days of the IPT:
  - i. Production Capacity: System meets production capacity requirements when operated at or below the average flux rate.
  - ii. Recovery: System meets requirements for membrane system recovery.
  - iii. Pressure Limitations: System operates within the TMP limit that is specified, and system provides adequate pressure to discharge to the Break Tank.
  - iv. Average Flux Rate: Flux rate shall not exceed the specified limits.
  - v. Membrane Integrity Test System: Operate integrity test at a frequency of once every 24 hours to determine integrity of the membranes and proper functionality of the test system.
  - vi. Membrane Filtrate Water Quality: Membrane filtrate water meets requirements as specified. Particle count performance will be checked 2-3 times with water samples being sent to a commercial laboratory for confirmation of performance requirements; test samples will be collected by and paid for by Minturn. Minturn will perform periodic SDI testing for confirmation of performance requirements. Supplier will be allowed to witness any testing performed.
  - vii. Maintenance Clean: Perform the maintenance clean operation at least twice on each MF/UF train during the 14-day test period.
  - viii. Clean-in-Place: Perform the clean-in-place operation at least once on each MF/UF train during the 14-day test period.
  - ix. Clean System Water Permeability: Following each cleaning operation, the Supplier shall determine the clean water permeability, temperature-corrected to 20 deg C. The temperature-corrected clean water permeability of each MF/UF train shall comply with the required specified value.
  - x. Cleaning System Neutralization: Following maintenance and CIP chemical cleaning of each MF/UF train, the system shall automatically dechlorinate and/or neutralize the cleaning solutions as required by the specified value.
- e. Successful completion of the IPT shall be defined as 14 continuous days of operation without a major failure in the system equipment supplied by the



Supplier and demonstration that the MF/UF system meets all performance requirements established herein. A major failure in the system is one that interrupts system operation for more than 4 hours.

- f. If the MF/UF system fails to successfully complete the IPT, due to the equipment supplied by the Supplier, the Supplier shall have the option of repeating the test over an additional 14-day period, up to two times. If due to the equipment supplied by the Supplier, the system fails to successfully complete the IPT during the second or third test period, the Supplier shall prepare a written plan for modifying the system to meet all test requirements. The Supplier shall submit the written plan within 7 days after the third unsuccessful test period ends.
- g. If in the event the MF/UF system has not been able to meet the performance requirements specified herein after the third test period, then the Supplier can choose as its sole obligation to pay either 1) Liquidated Damages in the amount of 25% of the Contract Value, or 2) Expenses to continue to remedy the system with modifications.
- h. During the IPT, HDR and Minturn shall have the option of collecting samples for independent analyses to confirm measurements and analyses conducted by the Supplier. HDR and Minturn shall have the option of witnessing all testing performed by Supplier. The Supplier shall notify HDR and Minturn a minimum of two weeks in advance of testing.

5. Monitored Test Period:

- a. Compliance with the requirements for recovery, production capacity, chemical cleaning interval and membrane filtrate water quality shall be determined during the Monitored Test Period (MTP).
- b. The MTP shall begin and end at Minturn's discretion based on date of Substantial Completion of the project and within 60 days of the date of Substantial Completion of the equipment installation.
- c. Duration shall be 90 days and shall include at least 7 days operating at the maximum system capacity.
- d. Minturn will confirm filtrate throughput capacity at the design temperature within one year of Substantial Completion of equipment installation (if the design temperatures are not available during the 90 day MTP); throughput capacity verification will be limited to one day.
- e. The MTP will be conducted at average and maximum allowable flux rates specified in this RFP.
- f. Minturn will operate the plant during the MTP; however, the Supplier will be allowed to provide onsite assistance.
- g. The Supplier is responsible for monitoring the operating conditions and performance during the MTP.
- h. The Supplier shall summarize the data at the end of the MTP and report the results in writing to HDR and Minturn. The report shall include a narrative description, tables and graphs of flux, temperature corrected permeability, TMP versus time, energy use, recovery, CIP frequency, and other parameters to



document the performance of the system. The Supplier shall submit the report within 30 days following the end of the MTP.

- i. Minturn will provide a high speed data connection to the system to allow remote monitoring of the system.
- j. The following parameters shall be evaluated to determine compliance with the Supplier's stated performance. Performance Liquidated Damages that shall be owed to Minturn by the Supplier for system failure due to equipment supplied by Supplier, are as described below:
  - i. Membrane Filtrate Water Quality: If the system fails to comply with the requirements for membrane filtrate water quality, the Supplier shall provide to Minturn and HDR a written plan of modifications to the MF/UF system (such as, but not limited to, repairing damaged fibers, replacing seals, complete replacement of the membrane system) to achieve compliance with the requirements. Upon implementation of the plan of modifications, the MTP shall recommence in its entirety.
  - ii. Recovery: Membrane system recovery and MF/UF train recovery shall be reported to the nearest tenth of a percentage point. For each one-half of a percentage point that the membrane system or train recovery for the duration of the MTP is below the specified recovery requirement, the Supplier shall pay Minturn \$3,000. This amount is based on feed water pumping costs (capital and annualized energy costs), chemical usage and the cost of water.
  - iii. CIP and Maintenance Wash Interval: If the average interval between chemical cleanings during the MTP is less than specified based on maximum allowable TMP, the Supplier shall pay Minturn \$1,500 for each additional chemical cleaning per year that will be needed. This penalty accounts for the approximate present worth of the additional chemicals and labor over a 20-year period.
  - iv. Production Capacity: Production capacity shall be reported in units of gpm. For each 10 gpm that the production capacity is less than the required minimum, the Supplier shall pay Minturn \$50,000. This amount is based on operational limitations of the system and resulting impacts to the facility.
  - v. All Performance Liquidated Damages shall be cumulative.
  - vi. All Performance Liquidated Damages assessed against the Supplier, in aggregate, shall not exceed twenty-five (25) percent of the Supplier's contract price.

## VII. GUARANTEES AND WARRANTIES

1. Supplier shall guarantee their offered pricing as of the date of their response for a period of 60 days. Pricing beyond 60 days shall be escalated using only the Consumer Price Index for a period of 14 months from the date of the response to this RFP.
2. The Supplier shall provide a guarantee for the maximum number of fiber breaks that will occur within the first three (3) years of operation and over the entire ten (10) year warranty

period. The number of fiber breaks shall be expressed as a percentage of total number of fibers.

3. The Supplier shall provide a guarantee for the maximum permeability loss that will occur within the first three (3) years of operation and over the entire ten (10) year warranty period. The maximum permeability loss shall be expressed as a percentage of loss from initial baseline permeability.
4. The Supplier shall provide with their proposal a guaranteed membrane replacement price as a cost per module. Costs shall include materials, packaging and handling. Shipping costs are not to be included, but shall be at fair prevailing rates. The Supplier shall guarantee that membranes may be purchased by Minturn at a price as modified based on the Consumer Price Index any time up to 20 years following the Substantial Completion of the equipment installation. The membrane replacement price shall be equal to the price at the day of the Proposal and tied to the Consumer Price Index (CPI) as published by the US Department of Labor, Bureau of Labor Statistics on the day of the Bid. The price of future membrane purchases shall be the price submitted with the Proposal multiplied by the ratio of the CPI on the day the replacement order is placed divided by the CPI on the day of the Bid, plus 1%.
5. Supplier shall furnish a two-year, non-prorated, materials and workmanship warranty for all components comprising the MF/UF system. Warranty will begin at the date of Substantial Completion.
6. Supplier shall provide a 10-year warranty on membrane performance, comprised of a three-year non-prorated membrane performance warranty followed by a seven-year prorated membrane performance warranty. The membrane warranty will not be secured by the Performance or Warranty Bond. If, during the first three years after Substantial Completion, performance of the membrane elements has irreversibly deteriorated such that membrane train performance does not meet the performance requirements specified herein, the membranes shall be replaced at no cost to Minturn. If the performance requirements are not met in years three through ten, the membrane element shall be replaced at the unit price stated by the Supplier less a credit of 1/120 of the unit price for each unused month of the warranty period. Failure to meet the performance criteria is defined as:
  - a. Inability of membrane to pass integrity test and inability of membrane to be repaired to pass a second integrity test; or
  - b. Inability to meet production capacity requirements under feed water, flux, and recovery conditions provided by Supplier; or
  - c. Number of total fiber breaks in a membrane module exceeds the guaranteed maximum percentages after three years and ten years as provided by Supplier in their proposal; or
  - d. Maximum permeability loss exceeds the guaranteed maximum percentage loss after three years and ten years as provided by the Supplier in their proposal.

7. If the MF/UF system does not meet the requirements of the Initial Performance Test, the Supplier shall be responsible for installation of additional membranes, including modifications to racks/skids and necessary modifications or additions to ancillary equipment, which will allow the system to meet the specified performance conditions. This warranty shall be secured by the Performance or Maintenance and Warranty Bonds.
  
8. Supplier warrants that if any component manufactured by the Manufacturer and furnished as part of the equipment and materials supplied pursuant to the agreement is to be discontinued within the 20 year period following Substantial Completion, the Supplier shall provide Minturn a minimum six months prior written notice to such discontinuance and make the subject component available for purchase by Minturn at Manufacturer's prevailing list price at time of notification, or at a price agreed between the parties. The Supplier shall guarantee that if the Supplier's company or product line is sold, the Supplier shall make provision such that all guarantees, warranties, and bonds shall remain in effect and that replacement parts and operational support continue to be available to the Minturn for the time period specified above.

## VIII. PROPOSAL FORMAT

Submit responses and documentation in the order specified. Clearly separate and identify the sections; format of proposal shall be a bookmarked PDF.

### **Section 1 – Contract Manager**

Provide name and contact information for a Contract Manager who will serve as the primary Supplier contact and, if necessary, an additional Supplier representative with signatory authority to bind Supplier to terms of this RFP. Provide name and address of manufacturer and manufacturer's primary contact (if different from Supplier).

### **Section 2 - Forms**

The proposal must include all the required forms included in this RFP.

- Proposal Form
  - Acknowledgement of addenda
  - Proposal Price Table
  - Proposed Alternates Table (as applicable)
  - Contract Schedule Table
- Exceptions checklist
- Signature Form
- Proposal Design Criteria Table

### **Section 3 - Technical Literature and Information**

Provide the following information:

1. General Design Criteria – Membrane Production
  - a. Design Calculations for pumps, chemical feed pumps, blowers, automatic strainers, air receivers, air compressors, and membrane filtration system sizing.
  - b. The surface area of each module, the number of modules provided, and the flux rate at rated production for each rack/skid. Provide information on membrane pore size, wall thickness, history of fiber breaks or relevant testing, and history of fiber in the market.
  - c. Information related to methods for identifying and repairing fibers that cause failures of integrity testing.
  - d. Range of acceptable influent water quality as identified by the Supplier
2. General Design Criteria – Membrane Maintenance
  - a. Complete list of chemicals and their concentrations to be used for backwashing, maintenance cleans, CIP's, and/or neutralization. Provide information on the number of acid and base cleans, and the amount of chemical used per CIP/Maintenance clean. Provide similar information for neutralization for each CIP/Maintenance wash.

Assume that each tank of CIP chemical may be used to clean each skid/membrane rack subsequently prior to neutralization and discharge.

- b. Anticipated backwash quantities based on maximum system production. Provide information on the backwash flow rate for each module for each phase of the backwash cycle, air flow rate for each phase of the backwash cycles, and the time period for each phase of the backwash cycle. Provide total lost production time to complete a backwash.
    - c. Verify whether an air/water separation tank is required in proximity of the membrane skids/racks or if a stand-pipe vented to atmosphere is acceptable.
    - d. The duration for which a skid/rack goes off-line (out of production) to complete a Backwash, an Integrity Test, a Maintenance Wash, and a CIP.
3. Control and Instrumentation Information
  - a. Preliminary Process and Instrumentation Drawings clearly identifying the termination points for piping connections, hydraulic, pneumatic, chemical, and electrical connections on the P&ID drawings where interfacing of the Supplier supplied equipment and Contractor supplied equipment exists.
  - b. Process and controls descriptions.
  - c. Control inter-connection diagram depicting wiring requirements between membrane system supplied field devices and membrane system control panels.
  - d. Network configuration between membrane system control panels.
4. Electrical Information
  - a. Electrical drawings and schematics.
  - b. Load list of equipment with not to exceed power requirements.
5. Preliminary Bill of Materials including
  - a. Manufacturer/Model
  - b. Quantities
  - c. Materials of Construction
  - d. Reference Standards (AWWA, ASTM where applicable)
6. General arrangement drawings of MF/UF equipment, and layout of equipment in the process equipment based on the provided Drawings in plan and elevation, to depict the space required for Total Production Capacity, including ancillary equipment.
7. Approximate wet weight for major equipment.

#### **Section 4 - Warranty and Service**

Provide the following information related to Suppliers Warranty offerings

1. Include written confirmation that the Supplier will adhere to all warranty provisions required as outlined in the RFP.

2. Warranty period and detailed summary of coverage, including warranties provided by the MF/UF Manufacturer and the membrane element manufacturer.
3. Identify location of support and maintenance staff to respond to equipment problems, including both mechanical problems, and PLC, control and programming concerns.
4. Provide a cost for each additional day of on-site field service by the MF/UF Manufacturer.

#### **Section 5 – Ongoing Operation and Maintenance Cost**

1. Frequency and cost of Membrane Module replacement.
2. Estimate of annual power, chemical and any other consumable cost associated with the equipment operation.

### **IX. PROPOSAL EVALUATION CRITERIA**

Scoring categories will be assigned a value from 1-5 and weighted as shown. A score of 1 represents least advantageous and a score of 5 represents highly advantageous. The highest total scoring proposer will be awarded.

<b>Category</b>	<b>Weight</b>
Suppliers demonstrated experience with similar projects in Colorado	30%
Supplier equipment ability to fit within the proposed process area and meet the performance requirements	25%
Suppliers completeness of proposal and proposal forms	10%
Reasonableness of price proposal based on a comparison of prices among competing offerors and other available information	35%

### **X. PAYMENT AND SCHEDULE TERMS**

Minturn shall pay the selected Supplier 100% of the submittals for the preparation of detailed Shop Drawings. The invoice may be sent as soon as approved Shop Drawings are issued to Minturn and HDR.

The awarded General Contractor will be assigned the remainder of the contract and will pay the Supplier following a mutually agreeable payment schedule. The awarded General Contractor will develop and execute an agreement including costs (except for submittals), scope of supply, and other services with the Supplier. All proposal items that are awarded as part of this contract, except submittals, will be assigned to the Contractor and written into the construction documents.

## XI. PROPOSAL FORMS

- Proposal Form
- Acknowledgement of addenda
- Proposal Price Table
- Exceptions checklist
- Signature Form



## PROPOSAL FORM

Minturn WTP  
New Water Treatment Plant  
Membrane Filtration System

Proposals to:

Town of Minturn  
ATTN: Katie Sickles  
PO Box 309  
302 Pine St  
Minturn, CO 81645

Proposal from:

*Insert Supplier Name, Address, Phone, and email address*

## PROPOSER'S INTENT

The undersigned Proposer proposes and agrees, if this Proposal is accepted, to enter into a Professional Services Agreement with the Owner in the form included in the Reference Documents to furnish design submittals as specified or indicated in the Proposal Documents for the Proposal price and within the time indicated in this Proposal and in accordance with the Proposal Documents.

The undersigned Proposer proposes and agrees, if this Proposal is accepted, to enter into an agreement with the Owner's selected Contractor to furnish all Equipment and Materials and Field Services as specified or indicated in the Proposal Documents for the Proposal price and within the time indicated in this Proposal and in accordance with the Proposal Documents.

If the undersigned Proposer has any objections to the Professional Services Agreement these objections must be written and submitted using the Clarifications & Exemptions Form as attached to this Proposal. Objections will be considered during the award process.



## TERMS AND CONDITIONS

Proposer accepts all the terms and conditions of the Instructions to Proposers.

If Proposer takes exception to any of the information included in this RFP, such exception shall be clearly stated in the attached Clarifications and Exceptions Form.

## PROPOSER'S REPRESENTATIONS

By submitting this Proposal, Proposer represents, as more fully set forth in the Purchase Order Agreement, that:

Proposer has examined copies of all the Contract Documents and of the following Addenda, receipt of which is hereby acknowledged.

Date	Number
_____	_____
_____	_____
_____	_____

Proposer has familiarized itself with all local conditions and federal, state, and local Laws and Regulations that in any manner may affect cost, the production and delivery of the Equipment and Materials, and furnishing of Field Services and other services in connection therewith.

This Proposal is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; Proposer has not directly or indirectly induced or solicited any other Proposer to submit a false Proposal; Proposer has not solicited or induced any person, firm, or a corporation to refrain from bidding; and Proposer has not sought by collusion to obtain for itself any advantage over any other Proposer or over Owner.

## PROPOSAL PRICE

Proposer will complete the Work for the following price:

Item	Description	Unit of Measure	Qty	Unit Price	Extended Price
1	All submittals required for approval prior to fabrication	LOT	1		
2	Membrane Filtration System	LOT	1		
3	Recommended Spare Parts	LOT	1		
4	Performance Testing	LOT	1		
5	Performance and Payment Bond	LOT	1		
<b>TOTAL</b>					
6	Daily Pricing for Additional Field Services including Training	\$/day			
7	Long-term operational support services	\$/year			

## EXCEPTIONS FORM

Minturn WTP  
New Water Treatment Plant  
Membrane Filtration System

*Insert Supplier Name, Phone, and email address*

Item No.	RFP Reference (Section number, page number, paragraph number)	Proposer Clarification / Exception
1		
2		
3		
4		
5		
6		
7		
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20		



## **SIGNATURE FORM**

To receive consideration for award, this signature sheet must be included with the proposal form.

I hereby certify that I am authorized to sign as a Representative for the Supplier:

**Name of Supplier:**

**Address:**

**Fed ID No.:**

**Name:**

**Title:**

**Telephone:**

**Email:**

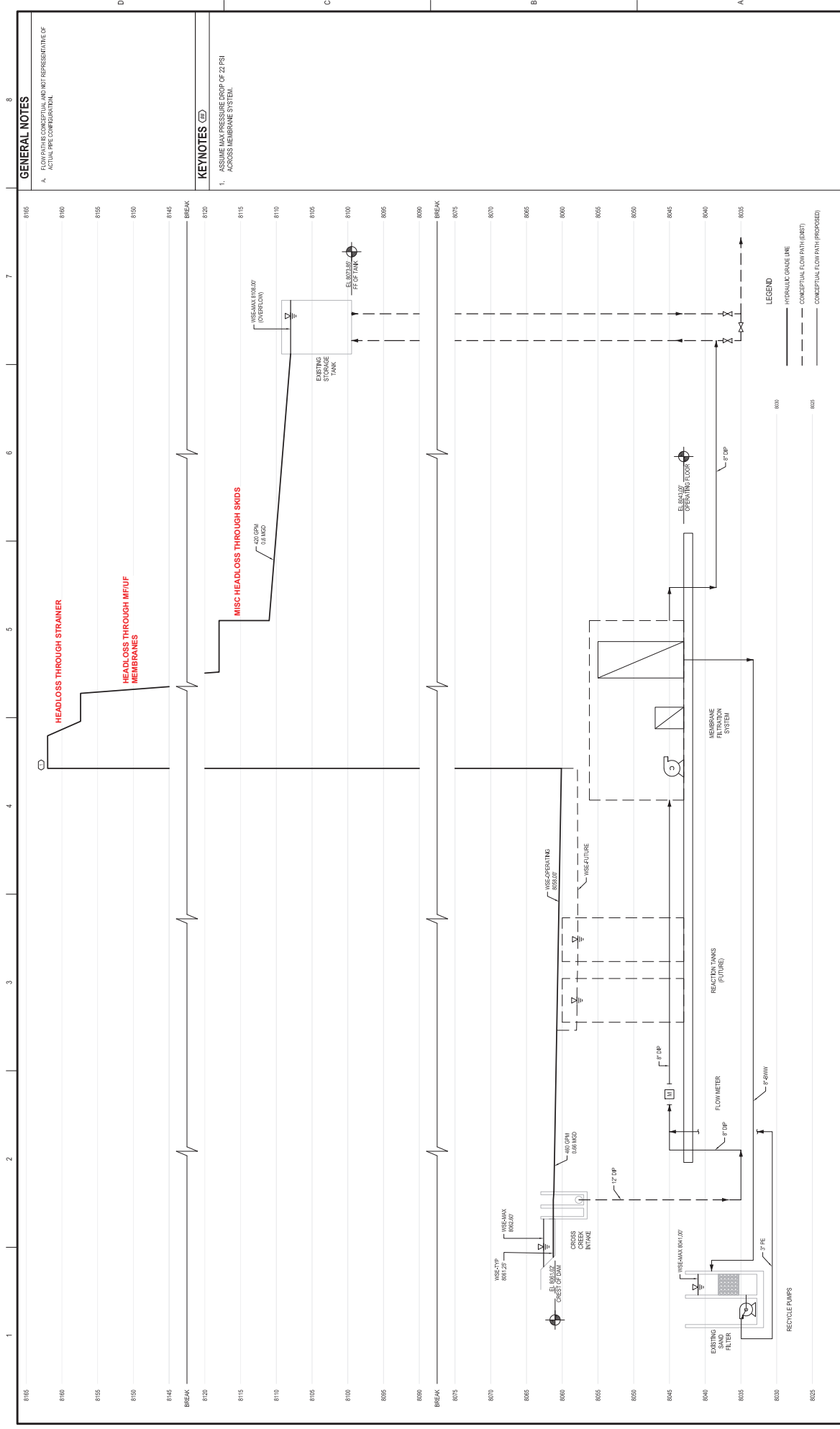
**Date:**

My signature certifies that the proposal as submitted complies with all Terms and conditions as set forth in RFP.

---

### **Supplier Representative Signature**

My signature also certifies that this firm has no business or personal relationships with any other companies or persons that could be considered a conflict of interest or potential conflict of interest to Owner, pertaining to any and all work or services to be performed as a result of this request and any resulting contract with Owner.



PRELIMINARY  
NOT FOR  
CONSTRUCTION OR  
RECORDING

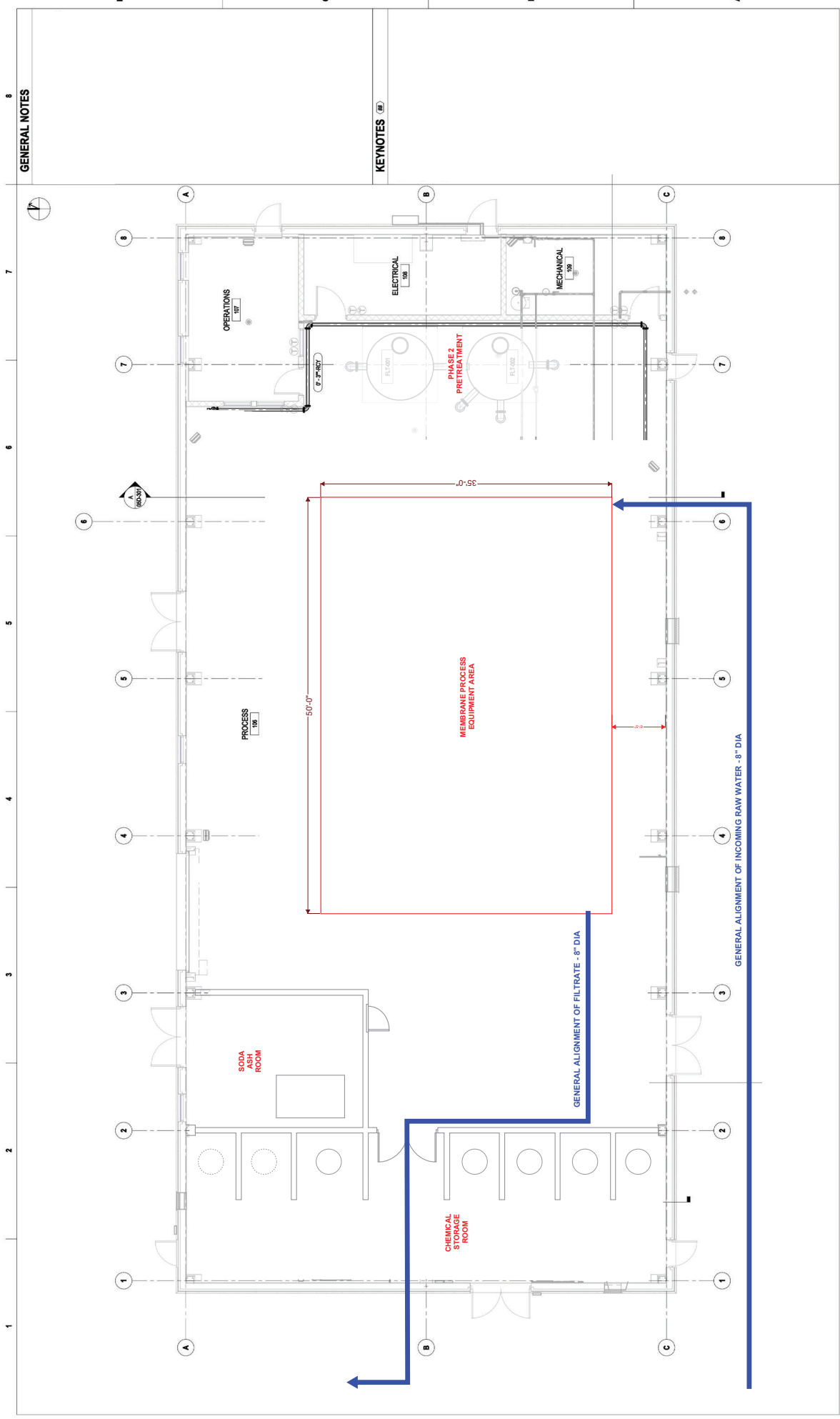


**TOWN OF MINTURN  
WATER TREATMENT  
PLANT**

## GENERAL HYDRAULIC PROFILE

FILENAME	000-602.DWG
SCALE	NOT TO SCALE

SHEET  
00D-602



GENERAL NOTES

KEYNOTES (1B)

MEMBRANE TREATMENT  
MAIN LEVEL PROCESS PLAN

TOWN OF MINTURN  
WATER TREATMENT  
PLANT



PRELIMINARY  
NOT FOR  
CONSTRUCTION OR  
RECORDING

PROJECT MANAGER	JANIS C. LIME
PROJECT ENGINEER	M. LARSON
STRUCTURAL	C. MUDERICK
ARCHITECTURAL	R. MARNEY
PROCESS	S. SCHUMACHER
MECHANICAL	K. CHAUDHARI
114 C	C. O'NEILL
DRAWN BY	E. PAZ
PROJECT NUMBER	1048901

ISSUE	DATE	DESCRIPTION
06/02/24		30% ISSUED FOR REVIEW



SHEET  
05D-102

SCALE  
3/8" = 1'-0"

