



February 4, 2021

Bill Guman  
Saddlehorn Ranch Metropolitan District  
731 N Weber St.  
Colorado Springs, CO 80903

RE: Approval of Drinking Water Final Plans and Specifications for Construction  
Saddlehorn Ranch Water System, Saddlehorn Ranch Metropolitan District  
Public Water System Identification (PWSID) No. CO0121703, El Paso County  
ES Project No. ES.20.DWDR.05857

Dear Mr. Guman:

The Colorado Department of Public Health & Environment (Department), Water Quality Control Division, Engineering Section has received and reviewed the Final Plans and Specifications for the Saddlehorn Ranch Water System in accordance with Section 11.4(1)(b) of the *Colorado Primary Drinking Water Regulations* (Regulation 11). The design meets or exceeds the requirements of the *State of Colorado Design Criteria For Potable Water Systems* (Design Criteria) and is hereby approved.

This approval is limited to the following:

- Well A1 (SDWIS ID: 001): Groundwater source
  - Well Permit Number 66937. Drilled well. Screen: 938-1,380 feet, total depth: 1,390 feet, static water level approximately 660 feet.
  - Well improvements: casing raised to provide a minimum of 12 inches between grade and wellhead; 12 or 16 mesh noncorrodible vent screen.
  - Flow: 150 gallons per minute (gpm).
  - Associated piping and appurtenances.
- Well LFH1 (SDWIS ID: 002): Groundwater source
  - Well Permit Number 66938. Drilled well. Screen: 1,736-1,977 feet, total depth: 2,035 feet, static water level approximately 1,280 feet.
  - Well improvements: casing raised to provide a minimum of 12 inches between grade and wellhead; 12 or 16 mesh noncorrodible vent screen.
  - Flow: 250 gpm.
  - Associated piping and appurtenances.
- Treatment Plant (SDWIS ID: 003)
  - Treatment for Well A1 and Well LFH1 (001 & 002), Maximum flowrate of 250 gpm.
  - Sodium hypochlorite treatment (421):
    - Sodium hypochlorite feed pump (design basis: one duty, one standby, Blue-White Industries, Flexflo), 120 gallon dual wall solution feed tank (design basis: Peabody Engineering Gemini Cylindrical Tank).
    - Sodium hypochlorite injection point prior to tanks.
    - Wells and chlorine pump electrically connected to control dosing.
  - Chlorine contact time pipe (825): 1,292 gallons (220 lf of 12-inch C900 DR 18 pipe) with a baffle factor of 0.6.
  - Pressure-Sand Filtration (344):
    - Reaction vessel, 36-inch diameter by 60-inch straight sideshell, ends fitted with semi-elliptical heads, working pressure of 60 psig and test pressure of 78 psig (design basis: Filtronics Model RV-300).
    - Two filter vessels to treat primarily iron and manganese, for taste, odor, and aesthetics, 54-inch diameter by 54-inch tall each, working pressure of 60 psig and test pressure of 78 psig (design basis: Filtronics Model FVD-07, Electromedia I, Dual Automatic Filter Station, NSF 61 certified).



- Backwash provided by distribution system pumps, sized to provide adequate backwash volume and system demands.
- Backwash water measured via magnetic flow meters. One meter installed on backwash inlet line (design basis: 6-inch). One meter installed on effluent line (design basis: 4-inch).
- Backwash directed to a buried exterior storage tank, recycled into system at a rate of <10% of the influent flow from wells.
  - Tank design and details to be submitted to the Department for review once the tank manufacturer is selected and the design is completed. See condition below.
  - Recycle pump, details to be submitted with tank design (design basis: Grundfos submersible pump).
  - Associated piping and appurtenances.
- Filtration appurtenances: differential pressure gauges at inlet and outlet, combined raw water flow meter prior to filters, flowmeter on each filter. Backwash line has a check valve for cross-connection control and sample port.
- Treatment appurtenances. Raw water sampling tap (one per well), finished water meter (design basis: 6" Ultra Mag UM06), handheld free chlorine residual analyzer, Hach wall-mounted reagentless continuous free chlorine analyzer, and finished water tap (residual chlorine monitoring location) after distribution system pumps.
- Distribution system pumps located within treatment plant following distribution storage tank. Dual pump station (design basis: Goulds, 10HP CRE 45-1 multistage centrifugal pump, operating in lead/standby mode), with variable frequency drives (VFDs).
- High capacity fire flow pump located within treatment plant following distribution storage tank (design basis: 1,500 GPM for 120 minutes).
- Associated piping and appurtenances.
- Acknowledgement of a distribution storage tank (SDWIS ID: 004):
  - Tank design and details to be submitted to the Department for review once the tank manufacturer is selected and the design is completed. See condition below.
  - 286,500 gallon, above grade, epoxy-coated steel tank.
  - Circular: 42.5-foot diameter and 28-foot height.
  - Tank Appurtenances (to be confirmed in final tank design and details):
    - Inlet/Outlet: 12-inch inlet riser pipe with silt stop 6-inches minimum above floor.
    - Drain line: 8-inch from tank to daylight with a headwall and plunge pool protected with rip-rap, southeast of tank. Drain line terminates with a duckbill valve, minimum of 1-foot above backwater.
    - Overflow: 12-inch high by 12-inch deep by 2-foot wide box weir inside tank connecting to an 8-inch overflow line on tank exterior. Overflow line terminates with a duckbill valve (design basis: 8-inch Series 35 Tideflex), 24-inch minimum above grade to a splash pad with rip-rap and discharges to 5-foot wide, 18-inch deep rip-rap channel which flows to the southeast to shared plunge pool with drain line.
    - Vent: Dedicated downward-turned vent with 24 mesh, noncorrodible screen with an opening 36-inches above tank roof.
    - Manway: Two 24-inch circular manways 180 degrees apart.
    - Access hatch on tank roof. Extends a minimum of 4-inches above the roof deck with an overlapping curb. Cover is hinged on one side and lockable.
    - Hydrodynamic mixing system (design basis: Tideflex).

#### Approved Deviations:

The approval includes the following deviations from the Design Criteria:

- Section 2.6 of the Design Criteria requires standby power. The system requested a deviation based on: 1) that backup power will be provided for the distribution pumps and the high capacity pump via an on-site generator in the event of a power failure, however 2) the wells and treatment system will not have backup power and will shut down during a power outage. The finished water storage tank operating levels will be set to provide emergency reserves within the tank during a power outage. Based on the information supplied to support this deviation, the Department accepts this deviation

request and has approved an on-site generator for only the distribution pumps and the high capacity pump.

- Section 2.8 of the Design Criteria requires each public water system to have its own laboratory facility. The system requests a deviation based on the fact that the required water quality sampling consists of chlorine residual, therefore laboratory facilities are not required. Based on the information supplied to support this deviation, the Department accepts this deviation request and has approved the public water system without laboratory facilities given that chlorine residual will be monitored continuously and that there will be a handheld free chlorine analyzer in the treatment plant.

#### Conditions of Approval:

The approval is subject to the following conditions:

#### General Requirements:

- This approval is conditional upon submission for Department review of the complete finished water storage tank and buried reclaim/backwash water storage tank design and drawings prepared by the selected tank manufacturers and includes design calculations demonstrating the tank vent and overflow sizing meets design requirements and the tank designs meets the State of Colorado Design Criteria for Potable Water Systems. Buried reclaim/backwash tank design shall include recycle pump details.
- Section 2.21 of the Design Criteria requires all chemicals and materials that come in contact with treated or partially treated water to be ANSI/NSF 60 and 61 certified, respectively, for potable water use.
- All wells, pipes, tanks and equipment that can convey or store water intended for potable use must be disinfected in accordance with current AWWA procedures prior to initial use as required in Sections 2.15, 6.6.2, 7.0.18 and 8.7.7 of the Design Criteria.
- All change orders or addenda that address treatment, storage or piping must be submitted to this office for review and approval by the Department.
- Upon completion of construction and prior to commencement of operation, a completed "Drinking Water Construction Completion as Approved Certification Form" stating that the system was constructed as approved and the operational starting date must be submitted to the Department. This form is available at <https://www.colorado.gov/cdphe/wq-facility-design-and-approval-forms> under the "Drinking water construction complete form" heading.
- As required by Section 11.4(3)(b) of Regulation 11, if construction of the project is not commenced within one year from the date of this letter, this approval will expire and all information will be required to be updated and resubmitted for review and approval by the Department. Please note that this requirement is specific to this approval and the associated commencement of construction and has no impact on other compliance deadlines that are set forth in Regulation 11 and that may be included in other communications that are issued by the Department.

#### Monitoring Requirements:

- Section 11.5(5) of Regulation 11 requires that suppliers submit any revisions to the Monitoring Plan within 30 days of the effective date of the change. Changes that are made under this approval may require updates to multiple parts of the Monitoring Plan. Information regarding monitoring plan requirements is available online at: <http://www.colorado.gov/cdphe/wqforms> on the Drinking Water page under the "Inventory/System Updates" heading.
- Lead and Copper Monitoring: In accordance with Section 11.26(2)(d)(iv)(D)(I) of Regulation 11, the Engineering Section reviewed the project scope to determine if lead and copper sampling requirement modifications are appropriate as a result of the project. Based on the project scope (new water system), there may be a possible impact to corrosivity. In accordance with the State of Colorado Design Criteria for Potable Water Systems - Table A.2 Impacts to Corrosivity Categories the system is a Category 2, the Engineering Section recommends that the supplier's monitoring frequency and sample sites for lead and copper be increased to the standard six month monitoring following completion of construction.
- The project includes installation of two new wells that requires completion of initial sampling.
- The supplier has elected to perform triggered source water monitoring. Therefore, under normal operating conditions the supplier does not need to maintain 4-log virus inactivation before or at the first customer on a continuous basis. In the event the supplier has a routine positive total coliform

sample, the supplier will be required to monitor and sample the source water for fecal indicators at that time. If the source water sampling determines that fecal contamination exists within the source, the supplier may be required increase treatment to meet 4-log virus inactivation on a continuous basis until the source of contamination can be identified and removed. Alternatively, the supplier may opt to discontinue to use the source. As outlined in the Basis of Design Report, the treatment conditions that must exist to achieve 4-log inactivation of viruses are as follows:

- The treatment conditions that must exist to achieve 4-log inactivation of viruses requires the supplier to continuously maintain a chlorine residual of 2 mg/L at the finished water tap (residual chlorine monitoring location) after distribution system pumps, assuming a flow rate of 250 gpm, a pH of 8.8, a liquid temperature at or greater than 10-degrees Celsius, a baffle factor of 0.6 and a minimum active storage volume of 1,292 gallons.
  - NOTE: The capability of providing 4-log treatment has been shown with a free chlorine residual equal to 2.0 mg/L. The maximum residual disinfection level (MRDL) for chlorine is 4.0 mg/L on a running annual average basis. While the chlorine residual suggested to maintain 4.0 log virus inactivation is below the MRDL, treated water with free chlorine residuals greater than 2.0 mg/L may be considered unpalatable for certain customers.
- The Saddlehorn Ranch MD is a groundwater system with a population less than or equal to 3,300, therefore Section 11.11 of Regulation 11 requires daily chlorine monitoring at the monitoring location specified in the above bullet (i.e., downstream of chlorine contact time). The supplier will be required to work with the Department's Drinking Water Compliance Assurance Section regarding the specific monitoring requirements.

#### Facility Classification under Regulation 100:

- In accordance with the current Colorado Operators Certification Board regulations, the water treatment plant is a Class "C" water treatment facility and the distribution system is a Class "1" distribution system.

The documents that were reviewed for this approval are as follows:

- Engineering Report dated November 2020 titled *Basis of Design Report for Saddlehorn Ranch Metropolitan District*. Prepared by JDS Hydro Consultants, Inc. for Saddlehorn Ranch Metropolitan District.
- Drawing Set dated October 2020 titled *Saddlehorn Ranch Metropolitan District - Overall Water System*. Prepared by JDS Hydro Consultants, Inc. for Saddlehorn Ranch Metropolitan District.
- Project Manual (Specifications) dated November 2020. Prepared by JDS Hydro Consultants, Inc. for Saddlehorn Ranch Metropolitan District.
- Backflow Prevention and Cross-connection Control Program plan. Prepared by JDS Hydro Consultants, Inc. for Saddlehorn Ranch Metropolitan District.
- Preliminary Operations and Maintenance Procedures plan. Prepared by JDS Hydro Consultants, Inc. for Saddlehorn Ranch Metropolitan District.
- Geotechnical report dated April 2019 titled *Soil, Geology, Geologic Hazard, and Wastewater Study, Saddlehorn Ranch Subdivision El Paso County, Colorado*. Prepared by Entch Engineering, Inc. for Saddlehorn Ranch Metropolitan District.
- Public Water System Monitoring Plan dated September 2020 titled *Saddlehorn Ranch Metropolitan District*. Prepared by JDS Hydro Consultants, Inc. for Saddlehorn Ranch Metropolitan District.
- BDR\_Response dated January 2021. Prepared by JDS Hydro Consultants, Inc. for Saddlehorn Ranch Metropolitan District.
- Miscellaneous correspondence.

Please be advised of the following notifications and requirements that may apply to the project:

- Approval of this project is based only upon engineering design to provide safe potable water, as required by Regulation 11 and shall in no way influence local building department or local health department decisions on this project. This review does not relieve the owner from compliance with all Federal, State and local regulations and requirements prior to construction nor from responsibility for proper engineering, construction and operation of the facility.
- Any point source discharges of water from the facility are potentially subject to a discharge permit under the State Discharge Permit System. Any point source discharges to state waters without a

permit are subject to civil or criminal enforcement action. If you have any questions regarding permit requirements contact the Permits Unit at 303-692-3500.

Please direct any further correspondence regarding the technical approval (plans and specifications/design review) to:

Marty Quinn, P.E.  
Colorado Department of Public Health & Environment  
Water Quality Control Division - Engineering Section  
4300 Cherry Creek Drive South  
Denver, CO 80246-1530

Thank you for your time and cooperation in this matter. Please contact me by telephone at 303-692-3513 or by email at martin.quinn@state.co.us if you have any questions.

The Engineering Section is interested in gaining feedback about your experience during the engineering review process. We would appreciate your time to complete a Quality-of-Service Survey regarding your experience during the engineering review process leading up to issuance of this decision letter. The Engineering Section will use your responses and comments to identify strengths, target areas for improvement and evaluate process improvements to better serve your needs. Please take a moment to fill out our [survey](#).

Sincerely,

Marty Quinn, P.E.  
Senior Review Engineer  
Engineering Section | Water Quality Control Division  
Colorado Department of Public Health & Environment

cc: Ryan Mangino, JDS Hydro  
Lisa Lemmon, El Paso County Public Health  
Catherine McGarvy, El Paso County Public Health  
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Doug Camrud, WQCD ES Engineering Review Unit Manager  
DWCAS