



March 3, 2020

James Morley, President
Sterling Ranch Metropolitan District No. 1
20 Boulder Crescent
Colorado Springs, CO 80903

RE: Approval of Drinking Water Final Plans and Specifications for Construction
Sterling Ranch Metropolitan District No.1, New Treatment Facility and Well
Public Water System Identification (PWSID) No. CO0121724, El Paso County
ES Project No. ES.19.DWDR.05273

Dear Mr. Morley:

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 New Treatment System and Well 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:

- A-1 Well (001):
 - Well Permit Number 81846-F. Drilled well. Screen: 1,738 to 1,758 feet and 1,870 to 2,020 feet, total depth: 2,040 feet, static water level approximately 1,286 feet.
 - Surface improvements: positive drainage 50-feet away from wellhead.
 - Well improvements: casing raised to provide a minimum of 18 inches between grade and wellhead, 0.020" wedge wire noncorrodible vent screen.
 - Permitted Flow: 300 gallons per minute (gpm).
 - Pumped Flow: 250 gpm.
 - Associated piping and appurtenances.
- Treatment Plant (002)
 - Treatment for A-1 Well (001), Maximum flowrate of 250 gpm.
 - Sodium hypochlorite treatment (421):
 - Hypochlorite treatment within vault including ventilation and safety eyewashstation.
 - Sodium hypochlorite feed pump (design basis: Stenner SVP4H1), 55 gallon solution feed tank.
 - Sodium hypochlorite injection point prior to storage tank.
 - Well and chlorine pump electrically connected to control dosing.
 - Calibration column for direct physical measurement of feed rate.
 - Treatment appurtenances - raw water sampling tap in treatment vault, raw water totalizing flow meter, on-site back-up generator, chemical feed pump dosage control flow meter (design basis: Signet paddlewheel), Hach Pocket II free chlorine analyzer, treated water flow meter and entry point water hydrant (residual chlorine monitoring location) after storage tank, security fencing around treatment area.
 - Storage Tank (003):
 - AWWA D-110-13 pre-cast / pre-stressed concrete tank with dome roof, 1,000,000 gallons.
 - Circular: 82.5 foot inside diameter and sidewalls 23 feet above grade. Overall sidewall height 27 feet.
 - Contact Time (825) - 333,000 gallons utilized for contact time with a baffling factor of 0.1.
 - Tank Appurtenances:
 - Inlet: 12-inch diameter discharging at finished floor.



- Outlet: 16-inch diameter subsurface outlet with 6" silt stop.
- Drain line: 16-inch diameter with automatic drainage gate, discharge daylight to rip-rap channel. Positive drainage to prevent pooling within 50-feet of the tank.
- Overflow: 1.75 foot diameter weir cone inside tank connecting to a 12-inch diameter overflow line on tank interior. Overflow line terminates approximately 3 feet above grade with flapper gate to a concrete splash pad. Positive drainage to prevent pooling within 50-feet of the tank.
- Vent: 36-inch mushroom vent, approximately 12-inches off tank roof, with 24 mesh noncorrodible screen.
- Manway: 25-inch circular manway approximately 6-foot above grade with access ladder.
- Access hatch: 42-inch square opening access shoebox style hatch on tank roof. Extends a minimum of 6-inches above roof deck with an EPDM gasket. Cover is hinged on one side. Handrail around access hatch.
- Level element (design basis: pressure transducer), supervisory control and data acquisition (SCADA) for operator alarming.
- Distribution system (DS001) - gravity fed pressure zone, pressure regulating device at elevation 7060. Operating pressure 60 psi.
- Associated piping and appurtenances.
- Assessment of Technical, Managerial and Financial Capacity.

Approved Deviations:

The approval includes the following deviations from the Design Criteria:

- Section 5.1.1(a) of the Design Criteria requires that at least two chemical feeders be provided when utilized for the protection of the supply including chlorination. A response to a Division information request states that the operator will always have spare parts and pumps available (not on-site). Based on the information supplied to support this deviation, the Department accepts this deviation and has approved a single installed chemical feeder. Please note that an operator change requires that the supplier will need to have spare parts and/or pumps readily available.
- Section 5.1.4(c) of the Design Criteria requires that a pressure relief valve must be provided on positive displacement solution feed pump discharge lines. The construction plans indicate the positive displacement pump is installed per the manufacturer requirements, and therefore a pressure relief valve is not warranted. Based on the information available to support this deviation, the Department accepts this deviation and has approved the positive displacement pump discharge installation without a relief valve.
- Section 5.1.10(k) of the Design Criteria recommends, but does not require, secondary containment for liquid storage tanks less than or equal to 55 gallons as long as there is no pathway to potable water. The construction plans do not include secondary containment for the 55 gallon sodium hypochlorite solution tank and there is no apparent pathway to the well or potable water. Based on the information available to support this deviation, the Department has approved the design without the recommended chlorine solution tank secondary containment.
- Section 7.0.10(g)(i) of the Design Criteria states pre-cast concrete roof structures with roof joints are not acceptable. The water storage tank is pre-cast with sealed joints and pre-stressed to maintain the sidewall and roof in compression. The tank is then coated with cementitious waterproof coating and high build acrylic resin protective coating. Based on the information available to support this deviation, the Department has approved the design of the domed top pre-cast concrete water storage tank.
- Section 7.0.9(e)(ii)(b) of the Design Criteria requires a vent opening height for water storage tanks between 6,500 and 8,500 feet above MSL be 36 inches above the top of the roof. The construction plans for the Sterling Ranch storage tank indicates that the water storage tank is 82.5 feet diameter and 23 feet above grade and has a domed roof. Based on the domed roof, the Department accepts this deviation and has approved the water storage tank with a vent opening 12" above the tank roof.
- Section 4.4.3(d) of the Design Criteria requires disinfection contact volume to be taken offline for routine cleaning and maintenance activities. For suppliers of water with a single treatment facility and less than three days of distribution system storage, a minimum of two parallel trains must be provided for public water systems serving a population over 500 people. The Sterling Ranch

Metropolitan District No. 1 is a public water system based on the number of connections with an eventual population projection in excess of 500 people. The approved drinking water system includes a single supply well, and as the population expands, the system will be required to obtain design approval of additional well sources and treatment. At that time the system will also be required to obtain design approval for redundant contact volume. Based on the information available to support this deviation, the Department has approved the installation of a single tank for contact time for this initial installation.

Conditions of Approval:

The approval is subject to the following conditions:

General Requirements:

- 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. Transient, Non-Community Water Systems are not required to use ANSI/NSF Standard 61 compliant materials, as long as the substitute material is intended for use with drinking water.
- 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.
- The project includes installation of a new well that requires completion of initial monitoring.
- 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 1.0 mg/L at the entry point monitoring location, assuming a peak distribution flow rate of 4,000 gpm, a pH of 8.0, a liquid temperature at or greater than 5.0-degrees Celsius, a baffle factor of 0.1 and a minimum active storage volume of 333,000 gallons.
 - The Sterling Ranch Metropolitan District No. 1 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 "D" water treatment facility and the distribution system is a Class "1" distribution system.

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

- Technical, Managerial and Financial Capacity Planning Manual dated January 15, 2019 prepared by MMI Water Engineers for Sterling Ranch Metropolitan District No. 1.
- Basis of Design Report dated December 8, 2019 prepared by MMI Water Engineers for Sterling Ranch Metropolitan District No. 1.
- Response to Division RFI dated February 19, 2020 and February 28, 2020 by MMI Water Engineers for the Sterling Ranch Metropolitan District No. 1.
- Miscellaneous correspondences.

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:

Anthony Kerr, 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 303-692-3406 or by email at anthony.kerr@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 at the following website: <http://fs8.formsite.com/cohealth/form627710151/index.html>.

Sincerely,

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

cc: Bradley Simons, MMI Water Engineers
Catherine McGarvey, El Paso County Public Health
Drinking Water File CO0121724
Doug Camrud, WQCD ES Engineering Review Unit Manager
DWCAS