UPPER EAGLE REGIONAL
WATER AUTHORITY

GOVERNED BY:

The Metropolitan Districts of:
Arrowhead
Beaver Creek
Berry Creek
EagleVail
Edwards

The Town of Avon

M E M O R A N D U M

TO: Board of Directors
FROM: Diane Johnson, Communications & Public Affairs Manager
DATE: February 18, 2022
RE: February 24, 2022, Board Meeting

This memorandum shall serve as notice of the Regular Meeting of the Board of Directors of the Upper Eagle Regional Water Authority:

Thursday, February 24, 2022
8:30 a.m.

This meeting will be held via Microsoft Teams

Call-in information is available prior to the meeting by emailing info@erwsd.org.

C:
ERWSD Managers

Board Materials via Email:
Caroline Bradford, Independent Consultant
Steve Coyer, Mountain Star
Melissa Nelson, Berry Creek Metropolitan District
Bill Simmons, Beaver Creek Metropolitan District

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The Town of Avon

BOARD OF DIRECTORS REGULAR MEETING
Thursday, February 24, 2022
8:30 a.m.
Remote via Microsoft Teams

AGENDA

1. **Consultant/Guest Introduction**
2. **Public Comment**•
3. **Action/Other Items**
   - **3.1.** Minutes of Meetings – Approval or Modification
     - 3.1.1. Minutes of Jan.27, 2022, Regular Meeting☼
     - 3.1.2. Minutes of Jan. 27, 2022, Joint Meeting with ERWSD☼
   - **3.2.** Rules and Regulations Update – Tug Birk☼
   - **3.3.** NorthStar PUD Request for Cash-in-Lieu of Water Rights Dedication – Micah Schuette☼
   - **3.4.** Information Reports
     - 3.4.1. Development Report*
     - 3.4.2. Board Committees*
     - 3.4.3. Authority January Meeting Summary – draft*
     - 3.4.4. Contract Log (none this month)
4. **Strategy Items**
   - **4.1.** Board Member Input
   - **4.2.** Sustainability Update and 2021 Accomplishments – Kira Koppel
5. **General Manager Report**
   - **5.1.** General Manager Information Items*
     - 5.1.1. COVID-19 update
   - **5.2.** Operations Report – Siri Roman*
     - 5.2.1. Gore Creek Watershed Source Water Protection Plan – Leah Cribari, Kailey Rosema*
   - **5.3.** Engineering and Water Resources Report – Jason Cowles
     - 5.3.1. Unallocated water update*
   - **5.4.** Communications and Public Affairs Report – Diane Johnson*
6. **General Counsel Report – Kathryn Winn**
7. **Water Counsel Report – Kristin Moseley**
   - **7.1.** Waters of the U.S. status*
   - **7.2.** 10th Circuit opinion in Hill v Warsewa*
   - **7.3.** Legislative update
8. **Executive Session pursuant to §24-6-402(4)(b) and (e), C.R.S.**
   - **8.1.** Special Water Counsel Review of Matters in Negotiations – Glenn Porzak

8.1.1. Colorado River Cooperative Agreement matters†

8.2. General Counsel Review of Matters in Negotiation – Kathryn Winn†

8.3. Water Counsel Review of Matters in Negotiation – Kristin Moseley

8.3.1. Next steps for Minturn IGA and Bolts Lake

8.3.2. Eagle River MOU – Jason Cowles

9. Adjournment

This is an all-remote meeting. For Microsoft Teams information to join the meeting, please contact info@erwsd.org prior to the meeting.

EAGLE RIVER WATER & SANITATION DISTRICT

UPPER EAGLE REGIONAL WATER AUTHORITY

BOARD ACTION REQUEST

TO: Eagle River Water and Sanitation District, Board of Directors

Upper Eagle Regional Water Authority, Board of Directors

FROM: Tug Birk, Development Review Coordinator

DATE: February 24, 2022

RE: Rules and Regulations Revisions

Summary of Subject: Update to the Rules and Regulations with revisions to the Main Body and several of the Appendices.

Discussion and Background: The Construction Review Team (CRT) has developed a process to update the Rules and Regulations that provides for timely annual revisions to be presented to the Board near the beginning of each year in an effort to continuously improve upon our construction standards and regulations so that they remain current with industry standards, best practices, and regulations. Revisions are proposed, to the Rules and Regulations Articles I-X, and Appendices B, C, and D. No revisions have been proposed for Appendices A, E, F, G, or H at this time. Theses revisions were sent out for review to Management, Legal, and the Rules and Regulations Subcommittee and no comments were received.

Alternatives: Leaving the Rules and Regulations as is or suggest further revisions.

Legal Issues: Legal Counsel has reviewed the revisions and no comments were received.

Budget Implication: None

Recommendation: Staff recommends that the Board approve the revised Rules and Regulations, as presented.

Suggested Resolution and Motion: I move to approve the revisions to the Rules and Regulations as presented for 2022.

Attached Supporting Documentation:
Table of Contents
Rules and Regulations Articles I-X Revised Sheets
Appendices B, C, D, Revised Sheets

Thank you for your consideration of these revisions. Please let me know if you have any questions or comments regarding the proposed revisions.

2022 Rules and Regulations Revisions

Table of Contents

8. **Appendix G**
    - **No Changes**
9. **Appendix H**
    - **No Changes**

RULES AND REGULATIONS
FOR
WATER AND WASTEWATER SERVICE

EAGLE RIVER
WATER & SANITATION
DISTRICT

Last Approved Revision: February 25, 2021

2.77 Non-Potable Water

Water that is not safe for human consumption or that does not meet the requirements set forth in the State of Colorado Primary Drinking Water Regulations.

2.78 Pass Through

“Pass Through” is defined as a discharge which exits the Wastewater Treatment Plant into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the District’s CDPS permit, including an increase in the magnitude or duration of a violation.

2.79 Pollution – see Contamination

2.80 Potable Water

Water that meets the regulatory standards of the Colorado Department of Public Health and Environment and the Environmental Protection Agency for drinking water.

2.81 Preconstruction Conference

A “Preconstruction Conference” is a mandatory meeting including the Applicant, Applicant’s contractor, excavator, engineer, and District Inspector during which materials, installation methods, and schedule for construction is discussed and agreed upon. The Preconstruction Conference will be scheduled a minimum of three (3) days after final approved plan submittal.

2.82 Pretreatment Standard or Standards

“Pretreatment Standards” shall mean prohibited discharge standards, categorical pretreatment standards, and local limits.

2.83 Private Service Mains

"Private Service Main" is any wastewater collector, or any water distribution main that is connected to the District system but not accepted for District ownership, operation, maintenance or repair. Generally, such an installation is designated as private because: (a) it does not conform to the specifications in these Rules and Regulations and the District’s Standard Specifications for Main Construction; (b) it is not in the best interest of the District to accept the Main because of special and/or mitigating circumstances; (c) legal title to the Main cannot be transferred free and clear to the District; or (d) the owner of the Main does not wish to convey the Main to the District. In order to protect the Public Water System, private water service mains must be isolated from the system via an approved backflow prevention device and metered via a master meter. Responsibility for operation, maintenance and repairs of private service mains is the

responsibility of the properties connecting to such main for service. ~~Generally, private service mains are discouraged.~~

2.84 Prohibited Discharge Standards or Prohibited Discharges

"Prohibited Discharge Standards" or "Prohibited Discharges" are absolute prohibitions against the discharge of certain substances; these prohibitions appear in Section 2.1 of Appendix F, Pretreatment Program Regulations.

2.85 Public Use Facility

"Public Use Facilities" include facilities operated by Eagle County, any municipality, a special district, schools, churches or other facilities designated for and open for use by the public.

2.86 Reduced Pressure Principle Device, Reduced Pressure Zone Device ("RPZ")

An assembly of two independently operating Approved Check Valves with a hydraulic automatic operating differential relief valve between the two Check Valves. The assembly shall be located between two tightly closing (resilient seated) shut-off valves and have four properly located test cocks for the testing of the check and relief valves. The entire assembly shall be an Approved Backflow Prevention Device.

2.87 Regulations Administrator

The "Regulations Administrator" is an employee of the District authorized to perform duties as described in these Rules and Regulations.

2.88 Residential Unit

"Residential Unit" is a single dwelling unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation. If areas within a structure or house are designed or arranged with the capability for occupancy that is independent of the rest of the household, that area is classified as a separate Residential Unit. Examples of a Residential Unit include but are not limited to: single family home, condominium, townhouse, duplex, multiplex, apartment, Efficiency, Studio Unit, lock-off, mobile home, etc. A Residential Unit up to 3,000 square feet in Floor Area is equal to 1.0 SFE. Larger units are considered to be equal to proportionately more SFEs. Refer to the definition of Single Family Equivalent (SFE).

2.89 Rules and Regulations

"Rules and Regulations" are these Rules and Regulations of the District as adopted and amended from time to time by the Board of Directors which state the policy and

(f) All required District inspections and field approvals have been obtained; and

(g) All applicable Connection Fees and any outstanding fees, as determined by the District, have been paid.

Permission to Connect is evidenced by acceptance of payment of Connection Fees by the District.

4.5.3 New Account Application

Application for Water and/or Wastewater Service, or a change in use or expansion of such service, must be made to the District using the New Account Application. All information requested on the application form must be provided. The District will verify compliance with all applicable requirements, calculate Connection Fees, and generate a Connection Fee invoice for the Customer.

4.5.4 Availability of Service Letter

In lieu of providing a receipt for the payment of tap fees or impact fees, a customer requesting new service may be required to submit an Availability of Service Letter to a LUA for a building permit submittal to demonstrate that water and wastewater mains are within the vicinity of the property and that water and wastewater service will be provided to the property upon payment of any applicable tap fees or impact fees.

4.5.5 Meter Sizing

The water meter size, type and manufacturer shall be determined by the District, based on the proposed water use and water flow demand.

4.5.6 Connection Fees

Connection Fees are fees due prior to system connection/release of water meter, that compensate the District for the cost of serving the Customer's water use and/or wastewater collection. Connection Fees may include:

- Water and/or Wastewater Impact Fees (District)
- Water System Impact Fee (Authority)
- Meter Fee
- Inspection and other Service Fees

In addition, the District may collect fees due to other associated entities. The fees due from the Customer at the time of Connection will be calculated by the District. All fees due must be paid by the Customer and accepted by the District before water meter will be released.~~service will be Turned On~~. Refer to Appendix A, Schedule of Fees and Rates.

RULES AND REGULATIONS
FOR
WATER AND WASTEWATER SERVICE

EAGLE RIVER
WATER & SANITATION
DISTRICT

APPENDIX B

WATER AND WASTEWATER SERVICE CONSTRUCTION SPECIFICATIONS

Last Approved Revision: February 25, 2021

1.4 Purpose

These Water and Wastewater Service Construction Specifications are intended to ensure that the Services extended from the Water System and Wastewater System is constructed so as to not adversely impact the Water System or Wastewater System. The extent of Water Service and Wastewater Service is as defined in the Rules and Regulations, Article II, 2.122 and 2.117, respectively.

1.5 Authorization to Connect

This Appendix provides construction specifications, including testing and inspection requirements related to Services, but does not include all of the requirements for Connection to the Water and/or Wastewater Systems. Customers intending to make a Connection must contact the District prior to any construction or work on the Water Service or Wastewater Service so that all requirements for Connection can be determined. A complete description of the requirements for Connection can be found in these Rules and Regulations, refer to Article IV, Authorization to Connect to Water and Wastewater Systems.

Customers must submit a completed Connection Application (available at www.erwsd.org), a completed service line and meter sizing form and a site plan outlining the following items for both water and wastewater service lines.

- Pipe Materials
- Pipe Sizes
- Depths of Bury
- Curb stop location
- Utility crossings identified and mitigated by proper separation or by secondary containment.
- Tracer wire installation plan as outlined in Appendix E.
- Meter pit plan submittal (if applicable).

Water service lines must be sized appropriately, and velocities for maximum domestic use must be under 10fps. Under no circumstance may the water service line from the water main to the meter be sized smaller than the meter..

1.6 Services and Meters

Each separately metered unit shall have a separate and independent Water and Wastewater Service Connection to the Main. Along with the Connection Application, The customer shall submit a schematic/diagram for the mechanical room or location where the meter assembly for domestic use, irrigation use and the fire suppression system are to be installed. This diagram should demonstrate conformance to the Rules

and Regulations Detail B-05. Meter Size and type are determined by the District after submittal of meter sizing form.

1.7 Scheduling Inspections

The Customer shall notify the District when the Water or Wastewater Service is ready for inspection or Connection to the Water or Wastewater Main. Appointments for inspections, testing, Connection, meter inspection, Turn-On, Turn-Off, abandonment of service lines, or operation of Water Main valves must be scheduled with the District a minimum of two (2) business days in advance.

1.8 Joint Service Lines

Joint water or wastewater service lines are prohibited.

1.9 Stub Outs

Stub outs are for the benefit of the property and are not guaranteed to exist; the location, depth, size, and pipe material may or may not be known. If a stub out is not in compliance with current Rules and Regulations, the Customer shall be responsible for modifying/replacing the stub out to meet current specifications.

will be 100 psi minimum per ASTM D1621. Water Absorption, ASTM C272, 03% by volume, maximum. DOW STYROFOAM™ HIGHLOAD 100, OWENS CORNING FOAMULAR 1000 or approved equal. In addition to maintaining cover from the ground surface, specified cover is required from storm sewer crossings and other cold air sources. See Insulation detail C-14 in Appendix C.

2.5 Bedding Material

Bedding material shall consist of uniformly graded granular material, 3/8-inch or ¾-inch minus screened rock material, installed six (6) inches below and twelve (12) inches above the Service pipe. Refer to Appendix E.

2.6 Underground Warning Tape

Underground warning tape shall be installed twenty-four inches (24”) above all buried portions of the Water Service. The tape shall meet the following requirements:

(a) Four (4) mil thick Polyethylene tape
(b) Solid blue color with black lettering
(c) Six (6) inches in width

2.7 Tracer Wire

See Appendix E.

2.8 Curb Stop Location

The Curb Stop shall be located a within maximum of one (1) foot the property line or edge of easement and shall be easily accessible to District personnel. Refer to curb stop detail B-01 and B-02 for services less than or equal to 2” and B-03 and B-04 for services greater than or equal to 4”.

2.9 Fire System Services

Installation, inspection, and testing of underground fire lines shall meet all current adopted International Fire Code, NFPA 24 – Standard for the Installation of Private Fire Service Mains and Their Appurtenances, and local fire authority requirements. All installation work shall be performed by a contractor holding a State of Colorado Division of Fire Prevention and Control certification for underground fire line installation.
Commercial Water Service connections for fire suppression systems shall be as required by the local fire authority. Residential connection of the fire suppression system to the Water Service shall occur downstream from the Curb Stop valve and upstream of the meter. Refer to Detail B-05.

2.10 Connections, Testing and Requirements for Inspection

2.10.1 Water Service Connections

Service Lines smaller than four inches (4”):

All Water Service connections of 1", 1.5”- and 2-inch diameter shall be made only by District personnel using a tapping saddle fitting on existing mains.

Service lines four inches (4”) or larger in diameter:

Water Service Connections 4 inch (4”) in diameter or greater shall be made by a qualified contractor on behalf of the Customer and witnessed and inspected by a District Inspector. For all connections 4" in diameter and larger, a tee shall be installed on the main or a wet tap may be made using a tapping sleeve with prior approval from the District. The tapping sleeve shall be stainless steel Mueller H304 (250 psi working pressure) or approved equivalent. The use of a tapping sleeve shall meet the following conditions:

(a) Tapping sleeve must be approved by the District prior to installation and may only be installed by an approved contractor.

(b) System working pressures shall not exceed the tapping sleeve’s rated working pressure.

(c) Tapping sleeves shall not be permitted for service lines with a diameter that is equal to or greater than one-half (½) the diameter of the main being tapped.

(d) Tapping sleeves shall not be permitted for service connections larger than 6” in diameter. A tee shall be installed on the Water Main.

2.10.2 Water Service Testing

Service Lines smaller than four inches (4”):

No disinfection is required on service lines smaller than 4”. Hydrostatic testing of the service line shall use system pressure. The contractor shall backfill the trench at their own risk. Pressure is held for a minimum of two hours and will be accepted if no leaks are measured or observed. If the test fails, the service line will need to be repaired or replaced. In winter conditions, compressed air to 50 psi may be used for testing at the discretion of the District Inspector.

Service lines four inches (4”) or larger in diameter:

The District Inspector will perform high chlorine, low chlorine, bacteriologic, and hydrostatic testing on the Service, similar to a water main. Details of the testing procedures can be found in Appendix C, Section 5. Customer shall provide a minimum

of two days advance notice to schedule testing. The testing process typically requires a minimum five-day duration before water service can be turned on. Failure to pass these tests will result in the Customer flushing the Service and the District retesting the Service.

2.10.3 Water Service Requirements for Inspection

No Services shall be covered with bedding material or backfill without the District Inspector's approval. All portions of the Water Service must be visible to the District Inspector for an inspection to be completed.

District personnel must attend all underground Fire Protection Service flush tests in order to operate Curb Stop valves. All water service ends shall be capped or covered with a mechanical cap after flush tests until meter assembly installation as required by the local fire authority.

The District shall be notified a minimum of two business days prior to testing.

Customers requesting Connections after November 15 and before April 15 must provide heating, adequate to prevent freezing of water, in the Connecting area.

2.11 Water Service Line Abandonment

For abandonment of 2-inch and smaller water service lines or stub outs, the corporation stop must be shut off at the water main and the line disconnected. For abandonment of 4-inch or larger water service lines or stub outs, a mainline shutdown must be coordinated, the curb stop valve and lateral will be removed, and a ~~megalug~~ MJ flange or~~cap~~ plug installed on the main line tee. Alternatively, a solid sleeve on the mainline is an acceptable abandonment method. All water service line abandonments must be inspected by a District Inspector prior to backfill.

2.12 Meter Assemblies

The following criteria dictate the design and installation of commercial and residential meter assemblies. A meter assembly consists of a pressure reducing valve, shutoff valves, backflow prevention device, water meter, and related appurtenances. All meter assemblies shall be design and constructed per most recently adopted plumbing codes. Please refer to Detail B-05 for a schematic of the approved meter assemblies.

2.12.1 Pressure Reducing Valve (Domestic)

A pressure-reducing valve (PRV) shall be installed on all Water Services upstream of the water meter, ensuring that the water meter and the building plumbing system are protected from fluctuating water system pressures. Water Service will not be turned on until the meter assembly including the PRV is installed. The pressure setting of the PRV shall not exceed 100 psi without written permission from the District. Customers are

responsible for ownership, maintenance and operation of Pressure Reducing Valves. The district recommends periodic inspection and maintenance per the manufacturer's recommendations.

2.12.2 Pressure Reducing Valve (Fire Suppression System)

A pressure-reducing valve (PRV) shall be installed on all fire sprinkler systems to ensure that they are protected from fluctuating water main pressures. The pressure setting of the PRV shall not exceed 200 psi without written permission from the District. Customers are responsible for ownership, maintenance and operation of Pressure Reducing Valves. The district recommends periodic inspection and maintenance per the manufacturer's recommendations.

2.12.3 Shutoff Valves

A shut-off, or isolation, valve shall be installed upstream of the PRV. Additionally, a shut-off valve shall be installed downstream of the backflow preventer isolating the meter assembly to facilitate repairs. For service lines up to 3 inches, ball or gate valves will be allowed. For service lines 3" and above, only gate valves will be allowed. Butterfly valves are prohibited. Refer to detail B-05.

2.12.4 Backflow Prevention Devices

Backflow prevention devices are required on all Water Services. No backflow preventers will be allowed inside of meter pits associated with new construction. Refer to Appendix G of these Rules and Regulations for Backflow Prevention regulations.

2.12.5 Water Meter

All domestic connections to the District's Water System shall include a Water Meter. The meter type and size shall be determined by the District. The District will provide the Customer with a meter once the Customer has paid the appropriate meter fee.

The Customer shall install the meter per the specifications below.

(a) The location of the meter is subject to District approval. The meter location shall be adequately insulated to protect from freezing, fully accessible, adequately ventilated, well-lit, and shall not meet the definition of confined space, as defined by the Occupational Safety and Health Administration (OSHA), unless approved by the District. The design of meter pits must be approved by the District and shall be in conformance with Section 2.14. Meters in crawl spaces are not recommended. Crawl space meter installations are subject to prior approval by the District's meter technician. Any meter installation in a crawl space must have adequate lighting, adequate working room, and be within (3) feet of the opening.

(b) The District shall inspect the installation of all water meters. The Customer will be provided with a three-strand wire for installation of a transmitter. Prior to meter inspection and water Turn-On, the Customer shall install the meter assembly and the wire from the meter location to an appropriate transmitter installation site. The transmitter will be located five (5) feet above ground in an accessible location free from snow that will provide year-round access for District personnel. The maximum distance from the meter to the transmitter shall not exceed one hundred (100) feet without approval of the District. Meters shall be installed in a horizontal only. The Meter shall be no higher than three (3) feet above and no lower than six (6) inches above the floor, as measured from the bottom of the Meter.

(c) The Customer is solely responsible for protecting the meter from freezing, or any other physical damage.

Water will remain turned off until the District accepts payment of all Connection fees.

2.12.6 Bypass Piping on Commercial Meters

All water meters greater than 3 inches or larger in size and serving six (6) or more Residential Units, mixed commercial/residential developments, or a commercial development shall be installed with a bypass line equipped with isolation valves to allow for maintenance of the meter without interruption of water service to the Customer. The bypass line will be unmetered and secured with a District padlock. Refer to Detail B-05.

2.13 Stop and Waste Valves

Stop and waste valves are prohibited.

2.14 Meter Pits

Meter pits shall be adequately sized to contain the meter assembly and allow for maintenance of the assembly. Meters will be required to be installed in a precast concrete manhole with an overall depth of no less than 84 inches.

Meter pits shall be installed at the property line or the edge of easement, and downstream of the Curb Stop valve. A 5’ high 4” x 4” post shall be provided for the Radio Transmitter Unit. A 3-strand wire provided by the District shall be run from the meter to the top of the post. Refer to Detail B-06 and B-07.

Temporary meter pits will need to be completely removed after construction and repairs to the water service line made per Appendix B-2.15

3.1 Materials

3.1.1 Polyvinyl Chloride (PVC) non-pressure:

SDR-35/SDR-26

4 to 8 inches (4" to 8"): ASTM D3034, SDR-35/PS46 or ASTM D3034, SDR-26/PS115

Maximum pipe length shall be 20 feet (20'). Joint lubricant shall be supplied by the pipe manufacturer. Joint lubricant shall be non-toxic and water-soluble.

3.1.2 Polyvinyl Chloride (PVC) pressure:

Yelomine: SDR-21, Restrained joint PVC pressure pipe and fittings having a minimum cell classification of 12454, as defined in ASTM D1784. Conform to ASTM D2241 "Standard Specifications for PVC, pressure rated pipe, 200 psi (SDR Series)."

AWWA C-900 for 4 " through 8" diameter pipe, pressure class 235 psi, DR18, with push-on joints and flexible elastomeric seals ASTM D3139/ASTM F477. All spigot ends shall be beveled to manufacturer's specifications with gaskets meeting ASTM F477 and joints in compliance with ASTM D3139.

For 1 ½" service lines utilizing an ejector pumping system, either Polyethylene (PE) or PVC shall be used. PE piping shall be AWWA C901, pressure class 150 psi. Joints shall be fusion type in accordance with AWWA C901. PVC shall be schedule 80 meeting the requirements of ASTM D1785, with solvent welded, socket type fitting meeting the requirements of ASTM D2467.

3.1.3 Ductile Iron:

Pipe per ASTM A746, Class 52, 350 psi, AWWAC151. Push-on joints per ANSI/AWWA C111/A21.11. Factory applied Protecto 401, or equivalent, ceramic epoxy interior lining for DIP & fittings. U.S. Pipe and Foundry Company/Griffin Pipe Products or approved equal.

3.2 Service Line Design

(a) The Wastewater Service gravity piping shall be four (4) inch or greater in diameter.

(b) Gravity wastewater services shall be installed at a constant grade of not less than one quarter (¼) inch per foot, (2%) with a minimum of bends and no glue joints.

(c) Clean Outs should be installed every 100 feet, at every change of direction greater than 45 degrees ~~or greater~~, and a maximum (rectify B-08) of three (3) feet from the face of the building or inside the building footprint with dual direction sweeps. Cleanouts located within ROW require a traffic rated cleanout cover.

(d) If the service line is pressurized via lift station or ejector system, the service line shall be designed by an Engineer and submitted with the Connection Application for review and approval by the District.

(e) The service line must be electronically locatable from the sewer main to the structure or building being served, terminating at the cleanout located near the building footprint and applicable details in this Appendix. Refer to Appendix E.

(f) If the wastewater service line will be used in connection with a food service establishment, a Control Manhole shall be installed per the requirements in Article 6.9.6 and designed by an Engineer.

~~(e)~~(g)

3.3 Separation of Services

Refer to Appendix B, Section 2.3

3.4 Depth of Bury

Wastewater Service piping shall be buried a minimum of four feet six inches (4’ 6”) below the ground surface. If minimum bury depth cannot be achieved, insulation is required per Appendix D. A depth of bury greater than fourteen (14) feet requires the approval of the District.

3.5 Bedding Material

Bedding material shall consist of uniformly graded granular material, 3/8-inch or ¾-inch minus screened rock material, installed six (6) inches below and twelve (12) inches above the Service pipe. Refer to Appendix E.

3.6 Underground Warning Tape

Underground Warning Tape shall be installed twenty four inches (24”) above all buried portions of the Wastewater Service. The tape shall meet the following requirements:

(a) Five (5) mil thick Polyethylene tape
(b) Solid green color with black lettering
(c) Six (6) inches in width

3.7 Tracer Wire

See Appendix E

3.8 Connections, and Requirements for Inspection

3.8.1 Wastewater Service Connections

The connection of the Wastewater Service to the Wastewater Main shall be made as follows:

(a) A factory wye shall be installed on all new mainline installations for service line stub outs on gravity mains. The wye shall be located no closer than ten (10) feet from a manhole. A saddle tap, provided by the District, shall be used on new service line connections to existing mainlines. All service connections shall be above spring line.

(b) On four inch (4”) or six inch (6”) diameter new service connections to existing mains, a saddle connection is required. The saddle connection shall be located no closer than ten (10) feet from a manhole. The flow line of the Service pipe shall enter the Main above the spring line of the Main. Connections into manholes are prohibited. All Connections up to six (6) inches in diameter shall be made by District personnel.

(c) If the Service pipe is eight (8) inches or greater in diameter, the connection shall be made into an existing manhole or into a new manhole placed on the existing Main. Connections eight (8) inches or greater in diameter shall be made by a qualified contractor on behalf of the Customer and witnessed and inspected by a District Inspector.

3.8.2 Wastewater Service Requirements for Inspection

No Services shall be covered with bedding material or backfill without the District Inspector’s approval. All portions of the Wastewater Service must be visible to the District Inspector for an inspection to be completed.

3.9 Stub Out or Service Line Abandonment

If a Stub Out or existing service pre-exists on a property and will not be utilized by the Customer, the Stub Out must be abandoned by the Customer by one of the following methods:

1. The Customer shall cut and cap the service at the main. The abandonment shall be inspected by the District prior to backfill. The use of a Stub Out for Connection to the Wastewater Main must be approved by the District.

2. The Customer shall cut and cap the service at the property line and abandon the stub out at the main with a Cured-In-Place Pipe Point Patch (CIPP-PP). The abandonment shall be inspected by the District prior to backfill. The use of a CIPP-PP shall meet the following conditions:

a. The CIPP-PP shall be designed against corrosion and typical chemicals found in domestic sewage. The System Supplier shall provide testing data that supports the chemical resistance in accordance with ASTM F1216 on the exact CIPP-PP system to be used.

b. The CIPP-PP shall be a full wrap section; the CIPP-PP liner sheet shall be flat with one end overlapping the second end by a minimum of 10% and sized accordingly to create a circular liner equal to the inner diameter of the pipe. To ensure a properly tight fitting full wrap in the pipe and consistent minimum wall thickness, pre-manufactured tubes will not be permitted.

c. The contact surface area of the packer shall extend past the termination points of the CIPP-PP liner, thereby ensuring both ends remain open and fully pressed against the host pipe. The packer shall distribute the excess resin into a natural taper at both ends of the CIPP-PP liner.

d. The resin shall be cured to form the CIPP-PP into a structural, water tight Cured-in-Place pipe-within-a-pipe. When cured, the CIPP-PP shall seal the pipeline section in a continuous tight-fitting, leak-proof seal. The CIPP-PP shall eliminate any visible leakage and shall provide a water-tight seal to prevent root intrusion, infiltration, and ex-filtration between the CIPP-PP and the host pipe.

e. The installed CIPP-PP shall be free from visual defects such as foreign inclusions, dry spots, pinholes, major wrinkles (greater than 2% of the pipe diameter) and de-lamination. The system shall be impervious and free of any leakage including exfiltration from the pipe to the surrounding ground or infiltration from the ground to inside the lined pipe.

f. Before the work starts, the Customer shall provide the District with a pre-installation CCTV inspection showing the service tap(s) that will be abandoned via CIPP-PP

g. After the work is completed, the Customer will provide the District with a post-installation CCTV inspection in the specified video format, including NASSCO PACP coding, showing the completed work including the restored conditions.

h. The materials used for the project shall be certified by the System Supplier for the specified purpose. The System Supplier shall warrant the CIPP-PP materials to be free from defects in raw materials for one (1) year from the date of manufacture. The Contractor shall warrant the “as-built” CIPP-PP

for a period of one (1) year after installation or from the date of acceptance by the District, whichever is later.

3.10 Reuse of Existing Sewer Service Line

The Customer shall provide the District with CCTV footage of the proposed sewer service line for reuse to confirm the sewer service line is an acceptable condition for reuse. Existing service lines with materials that do not meet the current specifications will not be allowed to be reused.

3.11 Repair Couplings

Repair Couplings shall be Sheer Guard, Max Adapter or approved equivalent on a wastewater service line must be compatible with the Sewer Service pipe, installed per the manufacture's specifications and inspected by District personnel.

3.12 Prohibited Discharges

Floor drains and garage drains shall not be connected to the Wastewater System without written permission from the District. Please refer to Article VI of the Rules and Regulations.

RULES AND REGULATIONS

FOR

WATER AND WASTEWATER SERVICE

APPENDIX C

STANDARD SPECIFICATIONS FOR WATER MAINS

Last Approved Revision: February 25, 2021

test" shall be borne by the Applicant. The District shall witness and oversee the "flow test" in conjunction with other appropriate governmental agencies.

2.5 Distribution Regulating Requirements

Regulating installations are required to control pressure, provide pressure relief, and separate pump and gravity zones throughout the distribution system. When main extension plans are submitted for review, the need for regulating installations must be approved by the District as determined by existing and proposed pressure zones, booster pump areas and the existing distribution system piping. Regulating installations shall be categorized as follows:

(a) Pressure Regulating Station

(b) Check Valve Station

(c) Surge Control Station

Location, design, and pressure settings of main line pressure regulating devices will be determined by the District on a case-by-case basis. All regulating installations are considered Major Facilities and will be designed and constructed by the District.

2.6 Layout of the Distribution System

2.6.1 Easement Width Requirements for Main Installations

All mains shall be installed in dedicated public street rights-of-way or, when ROW installation is not possible, ~~a dedicated~~a dedicated water line easement~~s~~. The installation of Public Water facilities on developable lots or tracts intended for private use should be avoided to the extent practicable. The standard easement width for all mains shall be a minimum of 20 feet and depth of cover shall be 7 feet to 9.5 feet. The main shall be generally centered within the easement. The easement width shall be in accordance with Standard Detail C-15.

2.6.2 Fire Hydrants

Fire hydrant branch lines shall be set at right angles to street mains. The fire hydrant shall be set at the end of the branch line and shall face the direction as dictated per local fire authority. No bends or offsets shall be used in installing fire hydrant branch lines unless approved by the District. Under no circumstances shall any size or manner of tap be made on a fire hydrant branch line between the hydrant and hydrant valve. The maximum length of a 6-inch hydrant branch line is 50 feet. All fire hydrant valves shall be attached to the tee off of the main. A fire hydrant shall be installed at the end of all dead-end water mains.

Fire hydrant depths shall be 7-feet to 9.5-feet. All fire hydrants shall be installed within dedicated streets, rights-of-way, or easements as herein above defined. Fire hydrant flange elevations shall be indicated on plans.

Fire hydrants shall be installed at locations approved by the Fire Department, the District and the appropriate governmental agency.

2.6.8 Location Tape

All lines connected to District mains in any way shall be marked with the appropriate locating tape per Section 3.5.

2.6.9 Abandonment of Existing Water Mains and Valves

All abandoned water mains shall be appropriately terminated at the main connection with a mechanical joint cap, plug or equivalent. The Contractor shall maintain the existing waterline until such time as the new waterline has been disinfected, pressure tested and accepted. Valve ~~stacks~~ boxes on abandoned lines shall be completely removed and backfilled.

2.6.10 Pipe Deflections/Bends

All plans must indicate deflections, elbows, bends, and the degree of deflection. Pipe deflections shall not exceed the Manufacturer's maximum recommended deflection, or the values identified in Tables C-1and C-2 below, whichever is lower. Joint restraints shall be used in all change of direction fittings. The use of two 45-degree elbows is preferable to the use of 90-degree elbows. The use of 90-degree elbows will be considered on a case-by-case basis.

Normal Pipe Size (in.)	Deflection Angle (deg.)	Max. Offset (inches)		Approximate Radius of Curve Produced by Succession of Joints (feet)	
		L = 18’	L = 20’	L = 18’	L = 20’
4	5	19	21	205	230
6	5	19	21	205	230
8	5	19	21	205	230
10	5	19	21	205	230
12	5	19	21	205	230
14	5	19	21	205	230
16	5	19	21	205	230
18	5	19	21	205	230
20	5	19	21	205	230
24	5	19	21	205	230

Table C-1 - Maximum Deflection Full Length Pipe - Push-On Joint Pipe

3.3.1 Gate Valves

Valves 4"-24" in size shall be resilient wedge gate valves with a working pressure of 250 psi. Body components shall be epoxy coated ductile iron or cast iron and shall be manufactured in compliance with AWWA C509 or C515. Valves shall have non-rising stems made of bronze in accordance with ASTM B 763. Valve wedge shall be constructed of ductile iron and provided with protective wedge guide covers in sizes 4"-24". All wedges shall be fully encapsulated with EPDM or SBR rubber.

Valve bodies shall be designed to allow for the lifting of the valves by the bonnet flange, gland flanges, or other appurtenances. All internal and external ferrous surfaces of the valve shall have a fusion-bonded epoxy coating, complying with AWWA C550. End connections shall be mechanical joint. Mechanical joint components shall be in accordance with AWWA C111 with tee-head bolts and hexagon nuts fabricated from a high strength, low alloy steel including Star Blue Bolts with fluoropolymer coating, 304 or 316 stainless steel. Valves shall be capable of operating satisfactorily with bidirectional flows and shall provide zero leakage past the seat. Acceptable gate valves shall be Mueller A-2361, Waterous AFC-2500, or AVK Series 45. Valves shall have 2-inch operating nut with stem seal consisting of two O-rings. In certain large diameter or high pressure applications, geared 'laydown' valves may be required.

Direction of opening: All District valves are to open left (counterclockwise).

Valve openings shall be furnished and installed with valve boxes and covers in accordance with Section 3.3.2.

The valve shall be structurally designed so that if excessive torque is applied to the stem in the closing direction, with the disc seated, failure of the pressure retaining parts does not occur. Stem failure under such conditions shall occur externally at such a point as to enable the stem to be safely turned in the opening direction by use of a pipe wrench.

3.3.2 Valve Boxes

Valve boxes shall be Tyler 6860, D&L M-9042 (with an M-9071-73 Extension), East Jordan 8560 or Castings Inc CI-5000. All buried valves shall be provided with a six-inch (6") cast iron (ASTM A48, Class 35B) valve box, ~~3-piece~~3-piece adjustable screw type with 16- inch top section, variable extensions and 30-inch bottom and base; with minimum five- inch (5") diameter shaft and a cover marked "Water". The valve box shall be of a design which will not transmit shock or stress to the valve and which shall have enough extension capability to be raised to final street grade.

3.3.3 Air Release/Vacuum Valves

Air Release/Vacuum Valves shall be sized by the engineer and manufactured by ARI, Model No. D-040 Combination Air Valve and Thermal Protection Jacket. The valve shall be designed and manufactured in accordance with AWWA C512. Valve shall have reinforced nylon body and base, with a Foamed Polypropylene float and E.P.D.M. rolling seal. Valve seats shall be Buna-N. The seat shall be fastened into the valve cover, without distortion, and shall be easily removed, if necessary. Air release/vacuum valves shall be installed at all high points in the system on any main line extensions. A four (4)

Marking Tape

The installation of blue marking tape is required on all water mains and service lines. The tape shall be installed approximately 24-inches (24") above the main or line. The tape shall meet the specifications listed in 3.5.

4.12 Installation of Valves

Valves shall be handled in such a manner as to prevent any injury or damage. All joints shall be thoroughly cleaned before installation.

Valves shall be set and joined to the pipe in the manner previously specified for cleaning, installing and joining push-on and mechanical joint pipe. Valves shall be set in such a manner that the valve stems are plumb. Valves shall be wrapped with polyethylene encasement material in accordance with 3.2.10.

8-inch and larger valves should be provided with support, crushed stone or a thoroughly tamped trench bottom (95% Standard Proctor Density per AASHTO T99).

Valves shall be operated prior to installation to ensure good operating condition.

4.12.1 Valve Box Installation

A valve box shall be provided for every valve. The valve box shall not transmit shock or stress to the valve, and shall be centered and plumb over the operating nut of the valve, with the box cover set to the required elevation. It will be the responsibility of the Applicant to insure that valve boxes are plumb and raised to finish grade elevation.

4.12.2 Installation of Fittings

All buried fittings in the system shall be mechanical joint applications and joined per 3.2.5 and 3.2.6

4.13 Fire Hydrants

4.13.1 Installation

Fire Hydrants shall be installed in conformance with drawing C-08. The location of all hydrants shall be staked. Final location and grade shall be in accordance with the approved drawings and care shall be taken to set hydrant grade-line marking at the finished grade elevation. Offset stakes not farther than 12 feet from the fire hydrant are acceptable. All hydrants shall stand plumb.

Each hydrant shall be connected to the main by a six-inch (6") branch line. An independent six-inch (6") gate valve shall be installed on the ~~branch line.~~ tee off of the water main. The six-inch (6") branch line servicing the fire hydrant shall not be longer than 50 feet. If the length of the branch line extends beyond 50 feet, an eight-inch (8") main with an
eight-inch (8") by six-inch (6") concentric reducer shall be used from the main until a point 50 feet from the hydrant is reached. At that point, a six-inch (6") branch line may be extended to the fire hydrant.

4.14.2 Form Work for Thrust Blocks and Anchors

All concrete thrust blocks and anchors shall be formed. Refer to Concrete Thrust Block details C-03, C-04 and C-05 and Anchor Detail C-10. A plastic bond-breaker must be provided around all portions of the main to keep concrete from adhering to pipe and fittings.

No thrust block shall be smaller than that size required for an eight-inch (8") main fitting.

4.14.3 Concrete and Curing Time

Thrust block and anchor block concrete shall be per Materials Specification Section 3.6.

Minimum curing time prior to line pressurization for concrete thrust blocks and anchors regardless of additives shall be 36 hours for placed concrete containing two (2) cubic yards or less, 48 hours for placed concrete containing more than two (2) cubic yards but less than six (6) cubic yards, and 72 hours for placed concrete containing more than six (6) cubic yards but less than 12 cubic yards. Protect against loss of moisture, rapid temperature change, from rain, and flowing water for not less than curing time from the placement of the concrete.

No water main will be charged or pressurized without the approval of the District. All thrust blocks and anchors must meet the minimum curing time.

4.14.4 Compaction of Fill Over Thrust Blocks and Anchors

Backfill may be placed over thrust blocks and anchors once the surface has set sufficiently to resist the weight of the backfill and compaction.

4.14.5 Mechanical Joint Restraints

Mechanical Joint Restraints (Megalugs or approved equal) or Internal Joint Restaints shall be used in conjunction with all thrust blocks as described in Sections 3.2.5 and 3.2.6

4.15 Air Vac Vaults

The installation of Air Vac Vaults shall be in conformance with Details C-01 and/or C-02. All dimensions, locations and elevations shall be coordinated and submitted by the Applicant and Contractor and meet the District requirements.

4.16 Tie-in to the District System

4.16.1 Tie-ins

Tie-ins shall be inspected and approved by the District. Under no circumstances shall a non-disinfected main, which cannot be isolated, be tied into an existing distribution main in service.

4.16.2 Tapping Existing Mains

Main Line Tie-ins:

Unless otherwise approved by the District, all main line tie-ins shall be made by means of a tee.

Service Taps/Stub outs:

During new main line construction, service line stub outs and service line taps may only be installed by the Contractor after hydrostatic pressure and bacteriological tests have been completed and approved by the District. Stub outs shall terminate at the curb stop valve. Curb stop valves shall be installed at the property line or edge of easement, whichever comes first. The minimum separation distance between service line taps on the main shall be 18 inches. No service line “dry taps” are allowed. Service line “wet taps” will only be allowed after the line has passed the entire District required inspections and tests. The main line Contractor shall perform “wet taps” on all newly constructed lines. Water taps shall be made above the spring line of pipe. Spring line is defined as the horizontal mid-line of any main line.

All tees/taps shall be witnessed and approved by the District. Any tap preformed without a District inspection and approval shall be considered "illegal system tampering" and subject to a five~~one~~ thousand dollar ($5,000~~1,000~~) fine.

4.16.3 Service Stub Outs

When Water Service Stub Outs are installed in conjunction with the installation of the Water Main, the stub out shall be valved off and plugged, watertight, with a valve box, the top of which is installed at the ground surface, and located by a surveyor. A copy of the lot plan showing the Stub Out locations shall be provided to the District for inspection and location verification. Electronic survey points shall be provided to the District in a format compatible with the District’s GIS mapping system as described in Article IX. Stub Outs shall not be buried prior to inspection by the District.

4.16.4 Operation of Valves

When tying in to the District system, it may be necessary to operate existing District valves. Only District personnel will operate valves on the District system. The Contractor shall give the District Inspector 48 hours’ notice to arrange for operating valves. Both the Contractor and the District Representative shall be present when the valves are operated.

4.16.5 Interruption of Service

Installation of a connection that will require closing existing valves may cause an interruption of water service to existing District customers. The Contractor shall coordinate all shutdowns at least one week in advance with the District Inspector. The Contractor will be responsible to furnish the District all necessary information as to the date and time that the interruption will begin, and the total time required to complete the installation.

Notification: The District will deliver written notice to all affected customers at least 48 hours prior to the proposed shut down. The notice shall state the date, time, and probable duration of shutdown, the name and telephone number of the Contractor, District, and District Inspector.

RULES AND REGULATIONS
FOR
WATER AND WASTEWATER SERVICE

EAGLE RIVER
WATER & SANITATION
DISTRICT

APPENDIX D

STANDARD SPECIFICATIONS FOR SEWER MAINS

Last Approved Revision: February 25,2021

2. Manning's Equation; unless conditions require or are best addressed with other methods referenced in MOP FD-5.
3. CDPHE-State of Colorado Design Criteria for Domestic Wastewater Treatment Works. (CDC-DWTW)

Peak design flow rates shall be reported, based on average per SFE wastewater generation rates, a peaking factor, and shall include flow from inflow and infiltration (I&I). The minimum wastewater generation rate shall be 195 gpday/SFE inclusive of I&I. Alternative design standards for wastewater generation by development type that are submitted with documentation will be considered by the District on a case by case basis. Hydraulic design parameters shall be documented in the BDR including:

1. Hydraulic design shall be based upon a Manning's Formula, using a Roughness Coefficient or 'n' value of 0.013.
2. All mains shall be designed to give mean velocities, when at average annual daily flow, of not less than two feet per second (2 fps) to insure self-cleaning, and maximum velocities of not more than ten feet per second (10 fps).
3. Peaking Factor per CDC-DWTW guidance pdf Figure 3.1
4. Initial operating conditions may not provide for conditions to attain a flow velocity of 2 fps at annual average daily flow. In this case, the flow velocity at peak hour flow must be analyzed. If the initial peak hour flow velocity is 2 fps or greater, the minimum flow velocity criteria is satisfied.

If initial operating conditions do not provide for conformance with the minimum flow velocity criteria at average daily flow or peak hour flow, written acknowledgement shall be provided to the ERWSD. Design conditions shall provide for maximum depth of flow at peak hour flow rate of no more than 80 percent of the internal pipe diameter (i.e., d/D). Full pipe design conditions shall not be allowed, except for siphons which require full pipe flow. The District reserves the right to request oversized mains to provide service for projected future needs. The additional cost for the oversizing may be negotiated between the District and the Applicant and will be reviewed on a case-by-case basis.

2.4 Layout of the Collection System

2.4.1 Easement Width Requirements for Main Installations

All mains shall be installed in dedicated public street rights-of-way, when ROW installation is not possible, a~~or~~ dedicated sewer line easement~~s~~. The installation of Public Wastewater facilities on developable lots or tracts intended for private use should be avoided to the extent practicable. The standard easement width for all mains shall be a minimum of 20 feet. The main shall be generally centered within the easement. The easement width shall be in accordance with Standard Detail D-09.

The remaining pre-cast sections shall be placed and aligned to provide vertical sides and alignment of the ladder rungs. Plumbness shall be checked as each barrel section is added. A bitumastic or other approved sealer shall be placed between pre-cast sections so that the completed manhole is rigid and watertight. The sealer shall be placed both on the inside lip as well as the outside lip of each section.

3.3.11 Interior Coatings

For drop manholes (or other applications as identified by the District), manhole interiors shall be coated with a Polyamidoamine Epoxy Primer with Polyamidoamine Epoxy Top Coat such as Tnemec Epoxoline Series L69 or equivalent. Preparation and application shall be per manufacturers' recommendations and installed by a qualified applicator. All manhole coatings are subject to inspection by a 3rd party coatings inspector.

3.4 Concrete/Grout

3.4.1 General Requirements

Contractor shall provide the District Inspector with a specification sheet or mix design from the concrete supplier.

3.4.2 Concrete

All concrete used in construction of cast-in-place manholes and bases shall be CDOT Class D. Construction shall be in conformance with the Detail D-01.

3.4.3 Mortar and Grout

Non-shrink mortar and grout used in the shaping of inverts, grade ring gaps, sealing penetrations, or setting and anchoring cast iron shall consist of one part Type II Portland Cement and two parts of fine, clean sand. Only sufficient water shall be added to provide a stiff, workable cement mixture for proper troweling. Hydrate lime or masonry cement shall not be used. Where relatively thin portions of grout are to be applied (to a flow channel or top of bench) an approved epoxy bonding coat shall be applied to the exposed concrete surfaces prior to grouting.

3.5 Locating Disk

The District will provide green 3M brand Full-Range Disk Marker locating disks to the contractor for stub outs. The contractor shall ensure their correct installation.

3.6 Marking Tape

The installation of green marking tape is required on all sewer mains and service lines. The tape shall be installed approximately 24 inches (24") above the main or line. The tape shall meet the following specifications:

UPPER EAGLE REGIONAL
WATER AUTHORITY

GOVERNED BY:

The Metropolitan Districts of:
Arrowhead
Beaver Creek
Berry Creek
EagleVail
Edwards

The Town of Avon

BOARD ACTION REQUEST

TO: Authority Board of Directors

FROM: Micah Schuette

DATE: February 24, 2022

RE: NorthStar PUD Amendment - Water Rights Dedication

Summary of Subject: Staff is requesting Board consideration of a $146,524 cash payment in lieu of a 4.44 acre-feet water rights dedication to cover NorthStar Planned Unit Development (PUD) Amendment.

Discussion and Background: This Board Action Request is concerning the water rights dedication for the NorthStar PUD Amendment located off Interstate 70 - exit 163, Edwards interchange.

Figure 1. Proposed NorthStar PUD Amendment project location

The proposed NorthStar PUD Amendment allows for the phased redevelopment of parcels 2105-051-00-014 and 2105-042-08-001. Phase I proposes the construction of a 39,600 square-foot behavioral health facility located on the west side of the site's existing parking lot. This redevelopment expands upon Vail Health's behavioral health services to include 28 In-Patient beds, staff support space, social detox, and evaluation rooms. Phase II proposes the redevelopment of approximately 40,000 square feet of commercial space and a net increase of 30,000 square feet of building space for outpatient and medical office services. The owner, Vail Health, is seeking approval of a cash payment in lieu of a water rights dedication to serve the increased demand for the redevelopment.

Staff has made the following assumptions in calculating the water demands for the redevelopment:

1. Staff is projecting the Phase I's indoor water demands at 3.5 acre-feet annually or 112 gallons per day per bed. This estimate reflects the EPA's commercial /medical building projections, existing medical facility demands in the Authority service area, and information gathered by water resource consultants (see attached memo for further detail).

2. Staff is projecting Phase II's indoor water demand at 3.61 acre-feet under the following assumptions: 15,000 sqft at our standard office space projection of 0.16 gpd/sqft and 15,000 square feet at 20 gal/sqft annually per the EPA data sheet projection of medical outpatient facilities.

3. Staff is projecting an additional 0.63 acre-feet of demand to cover the proposed 0.25 acres of irrigated area.

4. The project is located in the Edwards "gap in the river"; therefore, the water dedication calculation assumes that the total diversions to serve the project must be augmented in dry years during the months of January, February, August, September, and December.

The following measures will be included in the NorthStar PUD Guide Amendment for the project to ensure compliance with the Authority's goals for water efficiency:

1. Monthly indoor and outdoor irrigation budgets for the project based on the calculated demands for the water dedication.

2. Landscaping and Irrigation Efficiency standards based on the Irrigation Association's Model Irrigation Ordinance that require best management practices for irrigation system design, installation, and operation including separate metering of indoor and outdoor uses, smart irrigation controllers, separate spray and drip irrigation zones, and soil amendments to improve water retention of the native soils. These measures will be enforced during plan review by District and County staff, and will require an irrigation audit and proof of soil amendment application before a certificate of occupancy is issued for the project.

3. Language that allows temporary irrigation of disturbed areas for a period of two growing seasons by an above ground system, which must be disconnected upon successful reestablishment of native vegetation. The temporary demand has been excluded from the dedication requirement, which the 2016 Water Dedication Policy gives the Board the discretion to permit.

Monthly indoor and outdoor budgets, based on the calculated demands for the water dedication, will be enforceable through both the water service agreement and PUD Guide with Eagle County. Staff is recommending that the Board utilize 120% dedication requirement per policy for a dedication out of the Authority's Unallocated Water Rights.

Alternatives: A number of other alternative demand calculations could be considered based on input from the Board.

Legal Issues: Legal Counsel will be present at the Board meeting to discuss any potential legal questions.

Budget Implication: The proposed water dedication will have a positive impact to the revenues equal to fee collected. The commitment to serve will reduce the Authority's unallocated water pool by 3.7 acre-feet.

Recommendation: Staff recommends approval of the proposed cash in lieu of water rights dedication amount for the NorthStar PUD Amendment.

Suggested Resolution and Motion: I move to adopt the acceptance of a $146,524 cash payment in lieu of the NorthStar PUD Amendment's 4.44 water rights dedication requirement, and I instruct staff to execute a Water and Wastewater Service Agreement for the Development.

Attached Supporting Documentation:

- **NorthStar PUD Amendment Phase I Water Demand Worksheets**
- **NorthStar PUD Amendment Phase II Water Demand Worksheets**
- **WaterDM Memo on NorthStar Phase I Demands**

WATER DEMAND WORKSHEET

EAGLE RIVER WATER & SANITATION DISTRICT

UPPER EAGLE REGIONAL WATER AUTHORITY

Note to Applicant: Please complete all information highlighted in blue. Additional comments to be entered on the Comments worksheet.

Project Name: Vail Health/Northstar Center - Building C/New Behavorial Health Building
Contact Person: Tom Braun 970 376-3316/Mark Luna 970 389-5750
Telephone:
Date: 2/16/2022

Description of Proposed Project:
New medical building to accommodate behavorial health facility. Based on current conceptual design, the building is approximately 39,600 gross square feet (this is all interior SF exclusive of loading dock and outdoor/deck spaces). The main uses of the building include 28 in-patient beds, staff support space, social detox, and patient evaluation rooms. The building represents Phase I of Vail Health's development of this site, it is anticipated to occur in the near term. Refer to the accompanying memo for further explanation of the project.

Location of Proposed Project (qtr qtr section, township, range, lot/filing) (attach legal description):
The project site includes two contiguous parcels. Legal descriptions are Northstar Center Parcel 1 and Northstar Center Building B.

Total Area (square feet or acres):

Has this area been annexed to a metropolitan district or town?	**Yes**	X
	No	

If yes, identify: Edwards Metropolitan District

Is this project a redevelopment of existing lots and structures?	**Yes**	X
	No	

If yes, identify by water/sewer billing address:
ERWSD billings are sent to Vail Health P.O. Box 40000 Vail, CO 81658

1. RESIDENTIAL INDOOR WATER DEMAND

A. Detached single family lots (number):	0	
Average lot size:	0	square feet
B. Average floor area of house:	0	square feet
(inclusive of garage and unfinished basement)		
C. Greater of A or A x B / 3,000:	0.0	single family equivalents (SFEs)
D. In-house demand @ 350 GPD/SFE (C x 0.3921):	0	acre-feet per year
E. Multi-family units (number):	0	
(inclusive of duplex, condominium, and apartment units)		
F. Average floor area of unit:	0	square feet
(inclusive of garage and unfinished basement)		
G. Greater of E or E x F / 3,000:	0.0	single family equivalents (SFEs)
H. In-house demand @ 300 GPD/SFE (G x 0.3360):	0	acre-feet per year
I. Total In-house demand (D + H):	**0.00**	acre-feet per year

Project Name: Vail Health/Northstar Center - Building C/New Behavorial Health Building

2. IRRIGATION WATER DEMAND

A. Average irrigated area per detached single family lot:	0	square feet
B. Irrigated area (1A x 2A / 43,560):	0.00	acres
C. Average irrigated area per multi-family unit:	0	square feet
D. Irrigated area (1E x 2C / 43,560):	0.00	acres
E. Other irrigated areas:		
1. Irrigated parks	0.00	acres
2. Irrigated entry features	0.00	acres
3. Irrigated street ROW	0.00	acres
4. Common space	0.00	acres
5. Total other	0.00	acres
F. Total irrigated areas (2B + 2D + 2E5):	0.00	acres
G. Total irrigation demand (2F x 2.5):	**0.00**	acre-feet

Describe irrigation methods (sprinkler, drip, etc.) & Type of irrigated area(s):

Irrigated area associated with Building C is very limited. Landscape islands within the parking lot will include mulch beds and trees, irrigation will be limited to drip irrigation for the trees and temporary irrigation for restoration of native vegetation/grasses. Refer to the attached diagram depicting the site and landscaped areas. Not adding irrigated area for Phase 1. It is estimated that up to .25 acres of additional irrigated area may be established in the redevelopment of Buildings A and B per landscape package.

3. OTHER OUTDOOR WATER USES

A. Pond water surface area:	0	square feet
B. Fountain water surface area:	0	square feet
C. Swimming pool:		
1. Surface area	0	square feet
2. Volume	0	gallons

4. OTHER INDOOR WATER USES

Type			Annual Requirement (acre-feet)	
A. Medical Office Building	0	square feet	0.00	20 gal/sqft
B. Office	0	square feet	0.00	0.16 gpd/sqft
C. Warehouse or storage		square feet	0.00	0.06 gpd/sqft
D. Motel/hotel without kitchens		guest rooms	0.00	100 gpd/room
E. Motel/hotel with kitchens		guest rooms	0.00	150 gpd/room
F. Restaurant		seats	0.00	35 gpd/seat
G. Tavern		seats	0.00	20 gpd/seat
H. Inpatient Room - Water Requirements.	3.5	Acre-Feet	3.50	

39,600 reflects the total, gross square footage of the building. While listed undr the "office" category, the use of this building is quite unique given the in-patient beds and the large amount of space devoted to storage and circluation. Refer to the accompanying memo for an explanation of building and uses.

I. Total other indoor usage	**3.50**	acre-feet

Describe below the expected number of employees/guests/daily hours and anything that impacts the number of people using the facilities or special featurs such as swimming pools, hot tubs, or other indoor water features (use the Comments worksheet if more space is needed):

Staffing levels are currently being defined. Peak times are during daytime hours when approximately 13 staff members will be on site. Staffing levels will reduce to approximately 6 during evening and night shifts. The building will have up to 28 overnight patient beds, Due to time changing over rooms and staffing logistics, the average occupancy of patient beds is estimated to be 70%, or 20 patients.

Project Name: Vail Health/Northstar Center - Building C/New Behavorial Health Building

5. AVERAGE ANNUAL CONSUMPTIVE USAGE (FOR ERW&SD STAFF USE)

	Demand (acre-feet)	Consumptive Use (acre-feet)
A. Indoor usage	3.50	0.18
B. Irrigation usage	0.00	0.00
C. TOTAL	**3.50**	**0.18**

APPLICANT:

Project Name: Vail Health/Northstar Center - Building C/New Behavorial Health Building

By: Craig Cohn/owners rep, Tom Braun/authorized rep
(Owner/Authorized Representative)

Date:

DISTRICT:

Verified By: Micah Schuette
(ERW&SD Employee)

Date: 2/16/2021

Disclaimer: *Eagle River Water & Sanitation District and Upper Eagle Regional Water Authority retain the right to revise the factors and cash-in-lieu payments.*

Additional information, explanations and comments:

WATER RIGHTS DEDICATION REQUIREMENTS OR CASH IN LIEU

Eagle River Water & Sanitation District and Upper Eagle Regional Water Authority

(values in acre-feet)

Note to Applicant: This worksheet to be completed by ERWSD personnel.

Project Name: NorthStar PUD Ammendment Phase I (Building C)

Wastewater treated at: **Edwards WWTP? (Yes or No):** yes

Component	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential Indoor Usage	0.29726	0.26849	0.29726	0.28767	0.29726	0.28767	0.29726	0.29726	0.28767	0.29726	0.28767	0.29726	3.50000
Other Indoor Usage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00000
Irrigation Usage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00000
Other Outdoor Usage													
Total Demand	0.29726	0.26849	0.29726	0.28767	0.29726	0.28767	0.29726	0.29726	0.28767	0.29726	0.28767	0.29726	3.49999
Total Consumptive Use	0.01486	0.01342	0.01486	0.01438	0.01486	0.01438	0.01486	0.01486	0.01438	0.01486	0.01438	0.01486	0.17496
Augmentation Requirement	0.29726	0.26849	0.01486	0.01438	0.01486	0.01438	0.01486	0.29726	0.28767	0.01486	0.01438	0.29726	1.55052
Dedication Requirement @ 120%	0.35671	0.32219	0.01783	0.01726	0.01783	0.01726	0.01783	0.35671	0.34520	0.01783	0.01726	0.35671	1.86062

Cash in Lieu of Water Rights Payment:

$66,694

Row description:

Residential Indoor Use: The annual total comes from cell "C46" in the "AnnualWorksheet". The annual amount is distributed monthly based on number of days in month.

Other Indoor Usage: The annual total comes from cell "E94" in the AnnualWorksheet. The annual amount is distributed monthly based on number of days in month.

Irrigation Usage: The annual total comes from cell "C66" in the "Annual/Worksheet". The annual amount is distributed monthly based on the ratio of estimated monthly consumptive use to annual consumptive use: May 14%, June 23%, July 26%, August 21%, September 14%, October 2%.

Other Outdoor Usage: The annual total comes from section 3 of the "AnnualWorksheet". The annual amount is distributed monthly depending on the type of other use and must be analyzed on a project specific use.

Total Demand: Sum of the 4 use types.

Total Consumptive Use: Monthly Indoor use x 5% + Irrigation Use x 80% + Outdoor Use (dependent on specific use).

Dedication Requirement: Total Consumptive Use for March, April, May, June, July, October and November & Total Consumptive Use in January, February, August, September and December.

Cash in Lieu of Water Rights Payment: Dedication Requirement x $10,000 in May, June, July and August and x $41,000 in January, February, March, April, September, October, November and December.

Notes:

The values used in the Cash in Lieu calculation are taken from the most recent ERWSD Resolution on Water Dedication Rates effective January 1, 2022

WATER DEMAND WORKSHEET

EAGLE RIVER WATER & SANITATION DISTRICT

UPPER EAGLE REGIONAL WATER AUTHORITY

Note to Applicant: Please complete all information highlighted in blue. Additional comments to be entered on the Comments worksheet.

Project Name: Vail Health/Northstar Center - Redeveloped Buildings A and B
Contact Person: Tom Braun 970 376-3316/Mark Luna 970 389-5750
Telephone:
Date: 1/5/2020

Description of Proposed Project:
Demolition and redevelopment of existing Buildings A and B at Northstar Center. The redevelopment of these buildings would increase gross building square footage from +/-30,000 to a maxium of approximately 70,000sf, a net increase of 30,000sf. Medical uses,clinics, offices and some limited commercial uses are anticipated. The redevelopment of these existing buildings represent Phase II of Vail Health's development of this site, there is no timeframe for this project. Refer to the accompanying memo for further explanation of the project.

Location of Proposed Project (qtr qtr section, township, range, lot/filing) (attach legal description):
The project site includes two contiguous parcels. Legal descriptions are Northstar Center Parcel 1 and Northstar Center Building B.

Total Area (square feet or acres):
The combined site area of both parcels is 4.9 acres.

Has this area been annexed to a metropolitan district or town?	**Yes**	X
	No	

If yes, identify: Edwards Metropolitan District

Is this project a redevelopment of existing lots and structures?	**Yes**	X
	No	

If yes, identify by water/sewer billing address:
ERWSD billings are sent to Vail Health P.O. Box 40000 Vail, CO 81658

1. RESIDENTIAL INDOOR WATER DEMAND

A. Detached single family lots (number):		
Average lot size:		square feet
B. Average floor area of house:		square feet
(inclusive of garage and unfinished basement)		
C. Greater of A or A x B / 3,000:	0.0	single family equivalents (SFEs)
D. In-house demand @ 350 GPD/SFE (C x 0.3921):	0	acre-feet per year
E. Multi-family units (number):	0	
(inclusive of duplex, condominium, and apartment units)		
F. Average floor area of unit:		square feet
(inclusive of garage and unfinished basement)		
G. Greater of E or E x F / 3,000:	0.0	single family equivalents (SFEs)
H. In-house demand @ 300 GPD/SFE (G x 0.3360):	0	acre-feet per year
I. Total In-house demand (D + H):	**0.00**	acre-feet per year

Project Name: Vail Health/Northstar Center - Redeveloped Buildings A and B

2. IRRIGATION WATER DEMAND

A. Average irrigated area per detached single family lot:		square feet
B. Irrigated area (1A x 2A / 43,560):	0.00	acres
C. Average irrigated area per multi-family unit:		square feet
D. Irrigated area (1E x 2C / 43,560):	0.00	acres
E. Other irrigated areas:		
1. Irrigated parks		acres
2. Irrigated entry features		acres
3. Irrigated street ROW		acres
4. Common space	0.25	acres
5. Total other	0.25	acres
F. Total irrigated areas (2B + 2D + 2E5):	0.25	acres
G. Total irrigation demand (2F x 2.5):	**0.63**	acre-feet

Describe irrigation methods (sprinkler, drip, etc.) & Type of irrigated area(s):

Without detailed design for the future redevelopment of Buildings A and B, it is very difficult to know the extent of irrigated area at this time. Currently a small portion of the property along the Edwards Spur Road is irrigated. With the development of new Building C, no permanently irrigated area will be added. It is estimated that up to .25 acres of additional irrigated area may be established in the redevelopment of Buildings A and B.

3. OTHER OUTDOOR WATER USES

A. Pond water surface area:	0	square feet
B. Fountain water surface area:	0	square feet
C. Swimming pool:		
1. Surface area	0	square feet
2. Volume	0	gallons

4. OTHER INDOOR WATER USES

Type			Annual Requirement (acre-feet)	
A. Retail		square feet	0.00	0.10 gpd/sqft
B. Office	15,000	square feet	2.69	0.16 gpd/sqft
C. Warehouse or storage		square feet	0.00	0.06 gpd/sqft
D. Motel/hotel without kitchens		guest rooms	0.00	100 gpd/room
E. Motel/hotel with kitchens		guest rooms	0.00	150 gpd/room
F. Restaurant		seats	0.00	35 gpd/seat
G. Tavern		seats	0.00	20 gpd/seat
H. Medical Office	15,000		0.92	20 gal/sqft

The maximum expansion potential in the redevelopment of Buildings A and B is an increase of 30,000 gross squre feet. It is assumed that half of this space will be used for outpatient medical purposes (clinics of various types, physical theropy, behaviorial health, imaging, etc.), and half of the space will be used for commercial purposes (primarily office uses that will prodominantly be for VH operational and admin functions,and along with other general commercial uses).

I. Total other indoor usage **3.61** acre-feet

Describe below the expected number of employees/guests/daily hours and anything that impacts the number of people using the facilities or special featurs such as swimming pools, hot tubs, or other indoor water features (use the Comments worksheet if more space is needed):

It is assumed that this development will operate during normal business hours only. Based on the Town of Vail employee generation rates for general office use and medical clinics, the 30,000 additional SF would generate 150 employees. Assuing six clinics or medical offices, each with 100 patient visits per day, the medical uses would geneate approximately 600 patient visits per day.

Project Name: Vail Health/Northstar Center - Redeveloped Buildings A and B

5. AVERAGE ANNUAL CONSUMPTIVE USAGE (FOR ERW&SD STAFF USE)

	Demand (acre-feet)	Consumptive Use (acre-feet)
A. Indoor usage	3.61	0.18
B. Irrigation usage	0.63	0.50
C. TOTAL	**4.24**	**0.68**

APPLICANT:

Project Name: Vail Health/Northstar Center - Redeveloped Buildings A and B

By: Tom Braun
(Owner/Authorized Representative)

Date: 2/8/2022

DISTRICT:

Verified By: Micah Schuette P.E.
(ERW&SD Employee)

Date: 2/16/2022

Disclaimer: *Eagle River Water & Sanitation District and Upper Eagle Regional Water Authority retain the right to revise the factors and cash-in-lieu payments.*

Additional information, explanations and comments:

WATER RIGHTS DEDICATION REQUIREMENTS OR CASH IN LIEU

Eagle River Water & Sanitation District and Upper Eagle Regional Water Authority

(values in acre-feet)

Note to Applicant: This worksheet to be completed by ERWSD personnel.

Project Name: NorthStar PUD Amendment Phase II

Wastewater treated at: **Edwards WWTP? (Yes or No):** yes

Component	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential Indoor Usage	0.30660	0.27693	0.30660	0.29671	0.30660	0.29671	0.30660	0.30660	0.29671	0.30660	0.29671	0.30660	3.61000
Other Indoor Usage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00000
Irrigation Usage	0.00	0.00	0.00	0.00	0.09	0.14	0.16	0.13	0.09	0.02	0.00	0.00	0.63000
Other Outdoor Usage													
Total Demand	0.30660	0.27693	0.30660	0.29671	0.39660	0.43671	0.46660	0.43660	0.38671	0.32660	0.29671	0.30660	4.23997
Total Consumptive Use	0.01533	0.01385	0.01533	0.01484	0.08733	0.12684	0.14333	0.11933	0.08684	0.03133	0.01484	0.01533	0.68452
Augmentation Requirement	0.30660	0.27693	0.01533	0.01484	0.08733	0.12684	0.14333	0.43660	0.38671	0.03133	0.01484	0.30660	2.14728
Dedication Requirement @ 120%	0.36792	0.33232	0.01840	0.01781	0.10480	0.15221	0.17200	0.52392	0.46405	0.03760	0.01781	0.36792	2.57676

Cash in Lieu of Water Rights Payment:

$79,830

Row description:

Residential Indoor Use: The annual total comes from cell "C46" in the "Annual Worksheet". The annual amount is distributed monthly based on number of days in month.

Other Indoor Usage: The annual total comes from cell "E94" in the Annual Worksheet. The annual amount is distributed monthly based on number of days in month.

Irrigation Usage: The annual total comes from cell "C66" in the "Annual/Worksheet". The annual amount is distributed monthly based on the ratio of estimated monthly consumptive use to annual consumptive use: May 14%, June 23%, July 26%, August 21%, September 14%, October 2%.

Other Outdoor Usage: The annual total comes from section 3 of the "Annual Worksheet". The annual amount is distributed monthly depending on the type of other use and must be analyzed on a project specific use.

Total Demand: Sum of the 4 use types.

Total Consumptive Use: Monthly Indoor use x 5% + Irrigation Use x 80% + Outdoor Use (dependent on specific use).

Dedication Requirement: Total Consumptive Use for March, April, May, June, July, October and November & Total Consumptive Use in January, February, August, September and December.

Cash in Lieu of Water Rights Payment: Dedication Requirement x $10,500 in May, June, July and August and x $43,000 in January, February, March, April, September, October, November and December.

Notes:

The values used in the Cash in Lieu calculation are taken from the most recent ERWSD Resolution on Water Dedication Rates effective January 1, 2022

MEMO

February 15, 2022

To: Len Wright and Micah Schuette, Eagle River Water and Sanitation District

From: Peter Mayer, P.E., Principal, WaterDM

Re: Water demand estimate for Northstar Center PUD Phase I

Overview

The Northstar Center PUD Phase I will be a new approximately 40,000 square foot behavioral health building including 28 in-patient beds, staff support space, evaluation rooms, detox rooms and other uses located in Edwards, CO and operated by Vail Health. Water and wastewater services will be provided by the Upper Eagle Regional Water Authority (UERWA) and the Eagle River Water and Sanitation District (ERWSD) respectively.

ERWSD contracted with WaterDM to review and comment on the likely water demands for Northstar Phase I to assist with future water supply planning and for properly setting service dedication fees.

End Uses of Water

This analysis is focused exclusively on the indoor water demands of the 40,000 sf Northstar Phase I facility. The anticipated end uses of water in the facility will include:

- In-patient domestic use – toilets, showers/baths, faucets
- Staff use – toilets, showers/baths, faucets, medical sinks, laboratory sinks, cleaning, etc.
- Visitor domestic use – toilets, faucets
- Laundry facilities
- Food service for in-patients and cafeteria
- Other miscellaneous indoor uses

This building will include new fixtures and water using appliances all which will comply with Colorado law requiring WaterSense labeled toilets, showerheads, and faucets.

Expected Water Demand

Northstar Phase I will be a unique facility in the ERWSD service area with few comparable local buildings available to use as examples. To develop annual water demand estimates for Northstar Phase I, ERWSD and WaterDM used two separate approaches:

- Comparisons based on gallons per square foot per year
- Comparisons based on gallons/bed/day and other metrics

Analysis of Gallons Per Square Foot

Water use records from three existing medical facilities in the ERWSD service were reviewed as potential comparison with Northstar Phase I. The square footage of heated space at each facility was know to ERWSD enabling a calculation of the gallons per square foot per year. These data are shown in Table 1.

Water use at the Avon heath facility, Avon urgent care and Vail Mountain medical facility ranged from 10.5 - 24 gallons per square foot per year. This falls within into the range found in national research studies such as the Commercial and Institutional End Uses of Water (WRF 2000).[1]

While useful for comparison, none of these three medical facilities is a perfect analog for the Northstar Phase I. The residential focus of Northstar Phase I facility distinguishes it from these three existing facilities and thus warrants further investigation.

Table 1: Water use in three regional medical facilities

Customer	Size (SF)	Annual Water Use (kgal)				Gal./SF
		2020	2019	2018	Average (2018-20)	
Avon health facility	36,263	856	923	919	899	24.8
Avon urgent care	7,215	99	72	81	84	12.0
Vail Mountain medical facility	27,558	276	310	278	288	10.5

EnergySTAR Portfolio Manager

The US EPA's EnergySTAR Portfolio Manager tool includes self-reported water consumption data from buildings across the US. Analysis of this data by the EPA shows that water use for hospitals is significantly more variable than for schools and offices.[2] Portfolio Manager estimates a median value 50 gallons per square foot per day of water use for a hospital facility.

The range of demand for hospitals shown in the 2012 EnergySTAR Portfolio Manager Data Trends report indicates the difficulty in predicting future demand for this sector. Figure 1 shows the range of water use intensity for three sectors: Schools, Offices, and Hospitals, using data from Portfolio Manager. The range of demand in the hospital sector is notable.

[1] Dziegielewski, B. et. al. 2000. Commercial and Institutional End Uses of Water. American Water Works Association Research Foundation. Denver, CO.

[2] US EPA. 2012. Data Trends - EnergySTAR Portfolio Manager. October 2012.

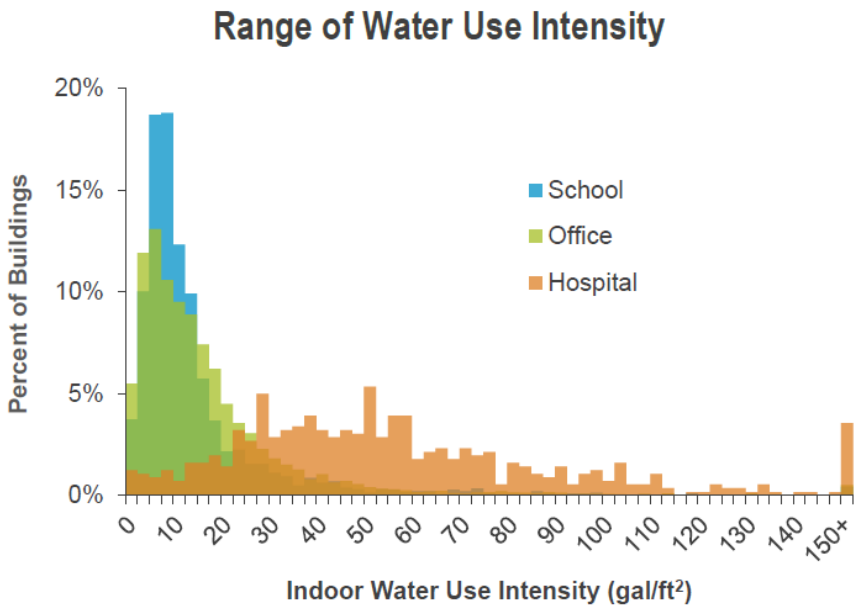


Figure 1: Range of water use intensity for three sectors (from EnergySTAR Portfolio Manager)[3]

To explore the reasonable range of demands based on these data, WaterDM estimated water use for Northstar using a range of values for gallons per square foot per year based on the rates found from the regional comparisons and the Portfolio Manager median.

Table 2 shows the estimated annual water demand for Northstar Phase I using range of values from 20 to 50 gallons per square foot.

Table 2: Hypothetical demand estimates based on gallons per square foot comparisons

Northstar Phase I Area (sf)	Gal/SF	Estimated AF/Year	Source for Gal/SF
40,000	20	2.5	Similar sites in ERSWD service area
40,000	40	4.9	EnergySTAR Portfolio Manager residence hall/dorm median[4]
40,000	50	6.1	EnergySTAR Portfolio Manager hospital median[5]

[3] US EPA. 2012. Data Trends - EnergySTAR Portfolio Manager. October 2012.
[4] US EPA. 2012. Data Trends - EnergySTAR Portfolio Manager. October 2012.
[5] US EPA. 2012. Data Trends - EnergySTAR Portfolio Manager. October 2012.

Demand Estimated Based on Other Data Sources

Clearview, Greeley

The 92 bed Clearview Behavioral Health Facility in Greeley Colorado only operated for a few years before shutting down but provides a comparison with an in-patient mental health-oriented facility. The square foot area of the Clearview facility was not available, but Greeley Water provided consumption records which enabled water use to be calculated on a per bed basis.

During the period when it was operating and water use appears consistent, the per square foot water use at Clearview ranged from 25.4 to 65.9 gallons per bed per day when in full use. The average during this period was 41.4 gallons per bed per day. This provides a range of water demands based on a single, similar facility in Colorado, but 65.9 gallons per bed is probably the best value to use since it represents a "full use" estimate.

Army Corps - 1983

In 1983 the Army Corps of Engineers published data on water usage rates as part of its industrial water use model.[6] The closest analog to Northstar Phase I is the "Nursing Home" category which had an estimated water use of 133 gallons per bed per day. Ironically this is the same value, 133 gallons per bed per day, used to estimate water demand for the "Jail" category using the 1983 Army Corps tool. These data are clearly old and out of date.

Water Research Foundation - 2000

More than 2,000 hospitals and medical facilities of all shapes and sizes located in five different water utilities were included in the Commercial and Institutional End Uses of Water Study. This study reported a scaled average daily use for these facilities of 48.0 gallons per customer per day. However, what constitutes a "customer" in this context is not clear thus the proper multiplier to apply to estimated use at Northstar Phase I estimated to be 60 to include staff and visitors.

Table 3 presents three demand estimates for Northstar Phase I using the values calculated from Clearview in Greeley and from the Commercial and Institution End Use study. Demand estimates using these methods range from 2.1 – 4.2 AF/year.

Table 3: Demand estimates for Northstar Phase I based on various data sources

Number of Beds	Gal/bed/day	Estimated AF/Year	Source for Gal/bed
28	65.9	2.1	Clearview Behavioral Health Facility, Greeley
28	133	4.2	CI End Use Study (WRF 2000)
Number of "Customers" Per Day	**Gal/customer/day**	**Estimated AF/Year**	**Source for Gal/customer**
60	48	3.2	CI End Use Study (WRF 2000)

[6] Crews, James E. and Mary Ann Miller. 1983. Forecasting Municipal and Industrial Water Use. IWR Research Report 83R-3. U.S. Army Corps of Engineers, Fort Belvoir, Virginia.

Summary and Recommendations

The estimates of future water demand for Northstar Phase I developed in this analysis range from 2.1 AF/year up to 6.1 AF/year. The high estimate of 6.1 AF/year comes from an analysis of more traditional hospitals which have substantial additional end uses beyond what are expected at Northstar, and thus could be too high. The low estimate of 2.1 AF/year is based on Clearview in Greeley which may have never achieved full occupancy and thus may be too low. Thus, the most reasonable, most likely demand estimates for Northstar Phase I, from this analysis, range from 2.5 – 4.9 AF/year.

Based on these results, WaterDM recommends an annual demand allocation of 3.5 AF/year as a reasonable estimate for Eagle River water supply planning purposes. At roughly 28.5 Gal/sf and 112 gpd/bed this is at the lower end of the mostly likely medical demand estimate range seen in this report and similar to ERWSD's demand estimate for hotel rooms (100 gpd/room) reflecting the efficient fixtures that are mandated in Colorado.

New Development Report

February 2022

		Type of Use	SFEs Proposed	Location	Projected Water Demand Annual Acre-Feet Augmentation (AF)	Development Approval Process Step:	Construction Approval Process Step:
Projects Requiring Water Rights Dedication	**Authority**						
	ECO School District Housing	Residential	37	Edwards	3.7	1. Connection Application	1. Plan Review
	Edwards River Park PUD	Mixed Use	440+com	Edwards	61.8	3. Cond. Capacity	0. Conceptual
	Mountain Hive	Residential	188	Edwards	10.5-15.2	3. Cond. Capacity	0. Conceptual
	NorthStar PUD Amendment	Commercial	TBD	Edwards	3.7	4. Water Rights	1. Plan Review
	Riverwalk Edwards Ammendment	Residential	18	Edwards	1.8	2. Water Analysis	N/A
	Vogelman Parcel (Carwash)	Mixed Use	1.5	Edwards	1.1-2.6	2. Water Analysis	1. Plan Review
	Warner Building 2 Conversion	Residential	13.25	Eagle-Vail	0.07	3. Cond. Capacity	N/A
	West End PUD Ammendment	Residential	335	Edwards	34.3	2. Water Analysis	0. Conceptual
	District						
	534 E Lionshead Circle - Elevation	Residential	12	Vail	0.49	2. Water Analysis	0. Conceptual
	500 E Lionshead Circle - Legacy	Residential	23	Vail	0.31	2. Water Analysis	1. Plan Review
	Alura (Miradoro)	Residential	10	Vail	0.83	1. Connection Application	1. Plan Review
Projects Under Construction	**Authority**						
	Avon Hotel Development	Commercial	85	Avon	--	2. Water Analysis	1. Plan Review
	CVC Clubhouse Residences	Residential	9	Edwards	1.34	6. Ability to Serve Letter	2. Plan Approval
	140 W Beaver Creek Bvld	Residential	112	Avon	--	N/A	0. Conceptual
	185 Elk Track	Residential	4	Beaver Creek	--	N/A	4. Warranty Period
	6 West Apartments (formerly Via)	Residential	120	Edwards	12.56	6. Ability to Serve Letter	4. Warranty Period
	Fox Hollow Amended PUD	Mixed Use	108	Edwards	14	6. Ability to Serve Letter	1. Plan Review
	Frontgate	Mixed Use	84	Avon	2.6	6. Ability to Serve Letter	1. Plan Review
	Kudel Parcel	Residential	4	Edwards	2.4	6. Ability to Serve Letter	1. Plan Review
	Maverik Gas Station	Commercial	3	Avon	1.03	6. Ability to Serve Letter	2. Plan Approval
	Piedmont	Residential	240	Avon	--	N/A	4. Warranty Period
	Riverfront Lot 1	Residential	53	Avon	53	N/A	2. Plan Approval
	Riverfront Village	Residential	59	Avon	--	N/A	4. Warranty Period
	S. Frontage Rd Roundabout	Residential	21	Edwards	1.7	6. Ability to Serve Letter	4. Warranty Period
	Stolport Restaurant	Commercial	TBD	Avon	--	2. Water Analysis	1. Plan Review
	District						
	3010 Basingdale (Phase II)	Residential	2	Vail	--	N/A	4. Warranty Period
	841/851 Main St Minturn	Residential	4	Minturn	--	N/A	4. Warranty Period
	Belden Place (1200 Block Main St)	Residential	41	Vail	N/A	N/A	2 Plan Approval
	Highline (Double Tree Expansion)	Residential	43.65	Vail	0.79	6. Ability to Serve Letter	1. Plan Review
	North Minturn PUD	Residential	184	Minturn	--	N/A	1. Plan Review
	Red Sandstone Parking Garage	Infrastructure	N/A	Vail	--	N/A	4. Warranty Period
	The Residences at Main Vail	Residential	72	Vail	0.81	6. Ability to Serve Letter	1. Plan Review
	S. Frontage Rd Roundabout	Infrastructure	N/A	Vail	--	N/A	2. Plan Approval
	Vail Mountain View Phase II	Mixed Use	37	Vail	--	6. Ability to Serve Letter	N/A
	VVMC Phase II-East Wing	Commercial	--	Vail	--	N/A	2. Plan Approval
	Vail Marriott Residence Inn	Mixed Use	75	Vail	--	N/A	2. Plan Approval
Process	**Construction Approval Process Steps:**	0. Conceptual	1. Plan Review	2. Plan Approval	3. Acceptance	4. Warranty Period	5. Final Acceptance
	Development Approval Process Steps:	1. Connection Application	2.Water Demand Worksheet Analysis	3.Conditional Capacity to Serve Letter	4.Water Rights Allocation	5.Water Service Agreement	6. Ability to Serve Letter

EAGLE RIVER WATER & SANITATION DISTRICT

UPPER EAGLE REGIONAL WATER AUTHORITY

COMMITTEES

DISTRICT

AUDIT/BUDGET
Dick Cleveland
Steve Coyer

EMPLOYEE HOUSING
Steve Coyer
Dick Cleveland

RETIREMENT PLANS
Bob Warner
Linn Brooks
David Norris

ORGANIZATIONAL DEVELOPMENT
Bill Simmons
Dick Cleveland

FACILITIES MASTER PLAN (*FORMERLY REAL ESTATE AND NEW DEVELOPMENT*)
George Gregory
Bob Warner

AUTHORITY

AUDIT/BUDGET
Geoff Dreyer
George Gregory

JOINT

WATER QUALITY
Sarah Smith Hymes (A)
Timm Paxson (D)

RULES AND REGULATIONS
Kim Bell Williams (A)
Bob Warner (D)

WATER SUPPLY PLANNING
Sarah Smith Hymes (A)
Mick Woodworth (A)
Kate Burchenal (D)
Steve Coyer (D)

CLIMATE ACTION PLAN
Sarah Smith Hymes (A)
Kate Burchenal (D)
Timm Paxson (D)

UNIFICATION *

UNIFICATION
Geoff Dreyer (A)
Sarah Smith Hymes (A)
Steve Coyer (D)
Bill Simmons (D)

(A) = Authority (D) = District

*unification will be discussed on board level, not subcommittee

UPPER EAGLE REGIONAL WATER AUTHORITY

GOVERNED BY:

The Metropolitan Districts of:
Arrowhead
Beaver Creek
Berry Creek
EagleVail
Edwards

The Town of Avon

MEMORANDUM

TO: Board of Directors

FROM: Diane Johnson, Communications & Public Affairs Manager

DATE: Feb. 15, 2022

RE: Summary of Authority's Jan. 27, 2022, Board Meeting

The following is a summary of items discussed at the Jan. 27, 2022, Authority Board Meeting.

Board members present and acting were Chair George Gregory, Vice-Chair Sarah Smith Hymes, Secretary Kim Bell Williams, Treasurer Geoff Dreyer, Pam Elsner, and Mick Woodworth.

Resolution Designating Location to Post Notice	The board approved a Resolution that designated the ERWSD website as the location to post notice and agendas for UERWA board meetings and adopted the 2022 board meeting schedule.
ERWSD employee housing program	Vice-Chair Sarah Smith Hymes congratulated the Eagle River Water & Sanitation District for its leadership in employee housing as the district houses about 40% of its employees.
Unification	Chair George Gregory acknowledged receipt of a letter from the Town of Avon. He also commented on a Beaver Creek letter distributed to its constituents and adjoining area property owners.
COVID-19 update	David Norris reviewed staff vaccination and booster rates, ongoing COVID-19 protocols, and various effects of the omicron variant.
Quarterly Financial Report	David Norris discussed the report and noted even with a large employee housing program, more units are needed to support recruitment and retention.
COVID-19 wastewater monitoring	Siri Roman said Eagle River Water & Sanitation District will likely participate in Colorado Department of Public Health and Environment's wastewater monitoring program to detect COVID-19 trends.
Backflow Prevention & Cross Connection Control Program	Shane Swartwout summarized the work required to successfully meet all CDPHE backflow prevention and cross connection control program requirements for the 2021 compliance year.
Macroinvertebrate Sampling Results	Leah Cribari shared results from sampling conducted in fall 2020 and provided comparisons to previous year's results. Conditions have improved since the town of Vail began a program to protect water quality.
Molybdenum Rulemaking	The board reviewed a memo that summarized previous and current developments related to domestic water supply and agricultural molybdenum standards, as well as Colorado's rulemaking process.
Unallocated water	Jason Cowles reviewed augmentation sources, commitments, and constraints on available supply and noted that the Authority has about 55 acre-feet of unrestricted water remaining, which includes 25AF pledged by the District.
New Normal	Diane Johnson noted the change to a new meteorological "normal" where data such as snowpack and precipitation is now based on the 30-year period from 1991 to 2020, which is a drier period than the previous 1981-2010 normal.

EAGLE RIVER WATER & SANITATION DISTRICT

UPPER EAGLE REGIONAL WATER AUTHORITY

M E M O R A N D U M

TO: Boards of Directors

FROM: Linn Brooks, General Manager

DATE: February 17, 2022

RE: General Manager Report

Town of Eagle Lower Basin Drinking Water Plant Tour

The town of Eagle held a ribbon-cutting ceremony and tours of its new Lower Basin Drinking Water Plant, located on the Eagle River. Jason Cowles and I attended and were impressed with the new technologies for settling basins and membrane filtration. The plant supplements the supply of the original water treatment plant located south of town on Brush Creek. The plant treatment capacity is 2.5 million gallons per day and the cost to construct it was approximately $25 million.

District Strategic Plan

The district leadership team began work on a District Strategic Plan last spring and completed a high-level draft plan in November. The draft includes Mission and Vision statements, and nine Primary Objectives. For each Objective, the leadership team chose a project lead and developed a list of initial goals. These Objectives and Goals were the basis of director, manager, and staff goals for 2022 included in annual performance reviews, which will be complete by the end of this month.

We are currently presenting the draft Strategic Plan document to staff in a series of focus groups to garner feedback and gauge alignment with staff values and perception of priorities. Once we have incorporated that feedback, we will present the draft to the District board for board input and ultimate approval.

Walking Mountains Science School Climate Series

Walking Mountains and Colorado Mountain College are hosting a 3-part speaker series on the societal and ecological impacts of climate change. On Feb. 24, Brian Macpherson, Colorado Water Conservation Board, will present an overview of the Colorado River system and up-to-date data and trends from the CWCB's Decision Support System, which tracks climate data for the state. I will present data and observations on the impacts of climate change in our local watershed and water operations. To register for the event, follow this link.

EAGLE RIVER WATER & SANITATION DISTRICT

UPPER EAGLE REGIONAL WATER AUTHORITY

OPERATIONS MONTHLY REPORT
February 2022

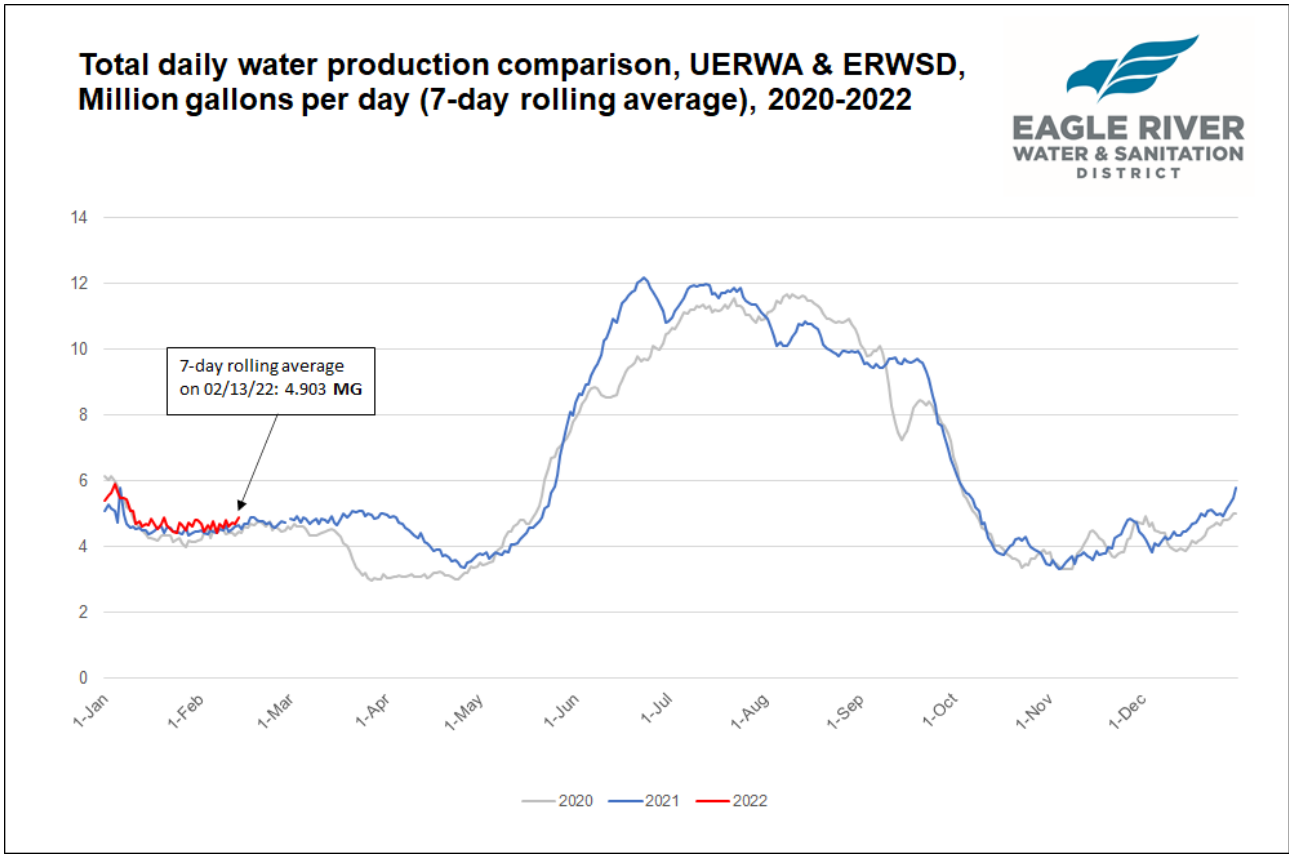
LOCAL NEWS

No updates.

WATER

Brad Zachman

The system-wide water production comparison was updated through Feb. 13. System production is normal for this time of the year.



The Avon Drinking Water Facility (ADWF) and the Edwards Drinking Water Facility (EDWF) are both online. Seasonal water uploading to the District system was initiated on Dec. 1, and is expected to continue through late spring. The annual intersystem transfers are on pace to be at the required net-zero balance by April 30 (the end of contract year).

Vail groundwater wells R4 and R6 are currently out of service for motor replacements. A new motor was installed for well R6 on Jan. 19, but the pump will remain offline until spring to allow additional repairs to be made to the underground electrical service wiring and conduit. The pump and motor for well R4 was removed on Feb. 15. The well casing will be video inspected the week of Feb. 21.

Vail Well R4 Pump and Motor Removal, Feb 15.

LABORATORY & WATER QUALITY

Leah Cribari & Siri Roman

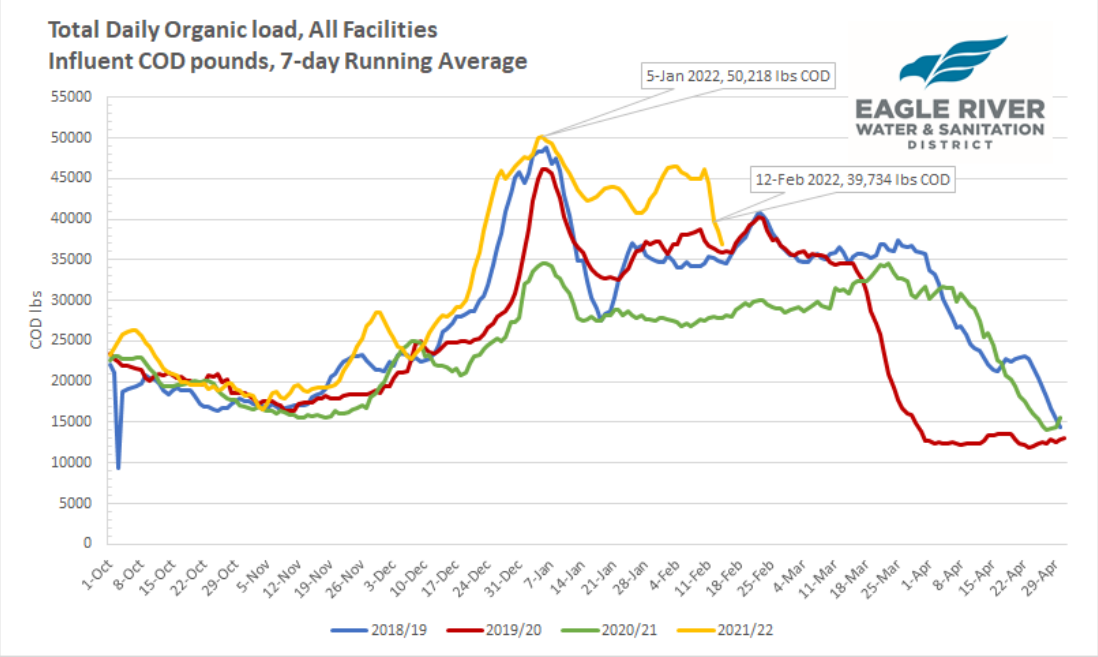
The District will be participating in the Colorado Wastewater Collaborative, a partnership between CDPHE, Colorado State University, and 29 other wastewater utilities across the state. This partnership provides the opportunity to participate in a wastewater surveillance program. The program allows us to identify the presence of a virus in a community before results are available from clinical testing. This testing provides estimation of the prevalence of disease within a community, because it can capture data on individuals who are asymptomatic or who may not seek testing. This gives the partnership the opportunity to respond to viral hotspots quickly and help control the spread of disease in our communities.

Wastewater samples will be tested for COVID-19 and will provide information on new variants as they emerge. The Vail, Avon, and Edwards wastewater treatment facilities will collect influent samples on Mondays and Thursdays starting Feb. 28. The District laboratory will be coordinating the program with the wastewater facilities and the partnership. Sample results will be available 3-4 days after receipt via a secure internal dashboard. Wastewater trends will be communicated to Eagle County Public Health and Environment via a weekly report. Trends can be viewed on the dashboard.

WASTEWATER

Rob Ringle

Organic loading to the three wastewater (WW) facilities has remained high with respect to data from recent past years. Loading is characterized in terms of pounds of carbonaceous oxygen demand (COD lbs). The Feb. 12 7-day average total COD loading of 39,734 lbs represents 79% of the Jan. 5 peak. We expect that loading will remain elevated through late-March. While total influent flows have also been elevated, they have generally fallen in-line with seasonal norms.



Avon WW staff contributed a significant operational effort to enable the commissioning of the new Aeration Basin #2 process train on Jan. 19. This marked the start of operation with the new Anaerobic-Anoxic-Aerobic (A2O) treatment process, which will facilitate the new total phosphorus (TP) and total inorganic nitrogen (TIN) effluent limits. Staff invested significant time and effort to optimize the new aeration equipment and controls. The new TIN and TP limits will take effect in Jan. 2023.

Operation of new Avon WW Aeration Basin #2 secondary process train.

The biosolids annual report has been drafted and will be submitted prior to the Feb. 19 deadline. This report serves to document the operation of the District's solids handling efforts, as performed with the Auto Thermal Thermophilic Aerobic Digestion (ATAD) process at Edwards WW. Analysis presented in the report shows continued compliance with Class A biosolids criteria, which is the highest criteria identified by the Colorado Department of Public Health and Environment (CDPHE) and Environmental Protection Agency (EPA). Compliance with the Class A criteria facilitate public use of the nitrogen and phosphorus rich biosolids. This report can be made available upon request.

WW Department staff have contributed to efforts in kicking off several 2022 capital project efforts, including the continued detailed design and contractor recruitment for the Vail Phase I Master Plan Improvements Project, scoping of the Wastewater Master Plan Update effort, and replacement of Air Handler Unit 4901 at Edwards WW.

FIELD OPERATIONS

Niko Nemcanin

Field Operations team is focused on operator certification trainings, commercial driving license training and practicing, and national association of sewer service companies (NASSCO) workshops. Mandatory regulatory trainings are scheduled for the next couple of weeks.

UTILITY SERVICES

Shane Swartwout

Backflow Prevention and Cross Connection Control

A new regulatory requirement for BPCCC is effective as of Jan. 1. Each backflow prevention assembly not tested during the previous calendar year (2021), is now required to be tested no later than 90 days after the active date of the assembly in this current year. We have 199 assemblies that did not get tested in 2021. There are currently 59 remaining that still need to be tested. The team is working diligently on scheduling and testing the remaining assemblies by April 1.

All non-single-family-residential accounts were surveyed by Dec. 31, 2021 meeting the compliance schedule deadline.

Meter Services – Advanced Metering Infrastructure Status

Meter Services is focusing on replacing the remaining 482 outdated meters in the District to new smart meters and upgrading the transmitters to SmartPoint radios. The District accounts have been prioritized due to the age and condition of the existing meters. Once upgraded, the meters will be communicating interval consumption data to the AMI fixed network and drive-by meter reading will no longer be necessary. Onsite appointments for all 482 meters will need to be scheduled with the property owner. The team has already mailed letters for these accounts and are currently calling each property owner to help in the effort to schedule appointments. Once the team reaches 100% AMI in the District, they will redirect efforts to upgrading the remaining meters in the Authority.

Report Date:	2/15/2022

AMI SYSTEM STATUS	ERWSD	UERWA	TOTAL
(1) Total No. of Meters	3183	6794	9977
(2) No. of AMI Meters	2701	5473	8174
(3) System Percentage of AMI Meters	85%	81%	82%
Meters Remaining to Reach 100% AMI	482	1321	1803

Fleet and Facilities

The Fleet and Facilities team is working with contractors to finishing an interior painting project at several of the facilities. Interior painting of offices, hallways, and conference rooms have been completed at Vail Admin, and Avon Wastewater Treatment Facility, and the contractors are finishing at Avon Drinking Water Facility.

ENGINEERING

Jeff Schneider

WATER PROJECTS

Radio Telemetry Unit (RTU) System Upgrades Carter Keller

General Project Scope: This project is a systematic approach to install standardized communication equipment to increase the reliability of the telemetry system throughout the distribution system (82 sites) and develop a standard (i.e., non-proprietary) telemetry platform to allow competitive pricing for upgrades, replacement, and system maintenance. Implementation is anticipated over a three-year period with a highly detailed sequence and schedule to limit distribution system disruptions.

Project Update: Authority Phase 2 commissioning has been completed on schedule, and Phase 2 final closeout is underway. Phase 3 submittals, procuring equipment, and building the RTU panels are underway and will continue through Q1 with Factory Acceptance Testing (FAT) to follow.

Traer Creek Water Storage Tank Mark Mantua

General Project Scope: This project consists of the replacement of the Traer Creek Water Storage Tank. In addition to the tank replacement, the scope includes piping, appurtenances, and selective replacement of identified equipment including the RTUs and control cabinets.

Project Update: Electrical improvements and telemetry installation are underway. Concrete issues on the dome roof have been identified and the contractor, engineer, and District staff are working collaboratively on a solution, which will be implemented once temperatures allow for overnight curing of patching materials. ERWSD staff filled the tank for leak testing in January. Two very small leaks were observed while leak testing. The tank passed the volumetric portion of the test, which measures volume loss, but did not pass the visible portion of the leak test. Small visible leaks were repaired using a hydrophobic crack injection material. After these repairs, the tank is under a second leak test. The tank is expected to pass the second leak test. This project is under budget and on track to be substantially complete in spring 2022.

Avon Drinking Water Facility (ADWF) PLC Upgrades Jenna Beairsto

General Project Scope: This project includes replacement of two of the programmable logic controllers (PLCs) at ADWF. Additionally, a new server room will be constructed within the facility. All programming and PLC logic will be reverse engineered to determine required updates and improvements associated with the modification and replacement of the existing PLCs.

Project Update: Stantec delivered the issued for bid (IFB) set of contract documents on Feb 15. The project will be advertised for bidding on Feb. 24 and Mar. 3. Bids are due on Mar. 31. Construction is expected to begin in late spring or early summer of 2022.

Edwards Spur Road Phase 2 Water Main Mark Mantua

General Project Scope: The Edwards Spur Road Phase 2 consists of two projects. The first is installation of 1,700 linear feet of water main that was installed in conjunction with the CDOT Edwards Spur Road project. The second is installation of a water main that will run parallel and under the railroad tracks to connect the Edwards Drinking Water Facility to the water main that was previously installed during the 2019 Spur Road project and to a main near Miller Ranch Road. The project will alleviate hydraulic issues in the Edwards low pressure zone.

Project Update: The project is in winter shutdown and an update will be provided once work resumes.

Fenno Wellhouse and Raw Water Conveyance Jeffrey Schneider

General Project Scope: The project consists of complete replacement of a small treatment facility in Cordillera that treats water from seven groundwater wells and pumps into the distribution system. The previous facility did not meet electrical code, had some safety concerns, and was generally at the end of its useful life. Improvements to the wells and raw water piping are also included in this project.

Project Update: Electrical equipment delays have pushed the project schedule into March. The variable frequency drives (VFDs) were delivered to the site the week of Feb. 7 and were installed by the electrical subcontractor. Wiring for power and controls are currently being installed. We are now awaiting one critical electrical component delayed due to supply chain issues: the main distribution panel (MDP). Since the panel runs the power for the entire station, startup of systems cannot occur until it is installed. The contractor is working through minor punchlist type items while we await delivery of the electrical panel.

The project also includes work at each of the seven groundwater wells feeding the wellhouse. Staff has prepared correspondence and easement documentation for accessing the wells for inspection and design. We performed initial outreach to Cordillera Metro District personnel and homeowners and will follow up over the winter with more detailed outreach and plans to access six of the seven groundwater wells for assessment.

Water Production and Treatment Masterplan Jenna Beairsto

General Project Scope: This project was first approved in the capital budget in 2018 but has been deferred due to staffing and competing priorities. The masterplan will be a wholistic look at all production and treatment facilities system-wide including treatment plants and wells. The goal is to do a thorough risk-based analysis and provide a roadmap for future capital project implementation in light of threats from climate change, low stream flows, wildfires, etc. along with a detailed condition assessment of existing assets.

Project Update: Statements of qualifications (SOQ) from firms were submitted to the District on Jan. 20. The District received seven SOQs from interested firms. The selection committee met on

Feb. 2 to review scores and compare comments on the submissions. After unanimous scoring and ranking for the top firm, it was determined that Carollo would be selected. A scoping meeting is scheduled for Mar. 1 to finalize the scope for Carollo and begin fee negotiations.

Arrowhead Transmission Main & Valve Vault Mark Mantua

General Project Scope: This project consists of the replacement of 2,300 linear feet of water transmission main and a valve vault which both serve Arrowhead Tank 1. The existing ductile iron transmission main pipe is severely corroded and is nearing the end of its service life. The valve vault will reduce operational issues in the water distribution system. The new valve vault will include a new flow control valve allowing Arrowhead Tank 1 to hydraulically balance better with the Cordillera Valley Club (CVC) tank.

Project Update: Preliminary design is complete, which included survey, geotechnical analysis and subsurface utility investigations. The consultant, Tetra Tech, provided a 30% deliverable plan set on Feb. 13. This deliverable included a memo with recommendations on pipe materials, alternate alignments and stream crossing methods. District staff is currently reviewing and will provide feedback on Feb.18, with the plans presented at a workshop with operations and the construction review team. Design is ongoing and the project is expected to be bid in late spring 2022.

WASTEWATER PROJECTS

Avon Wastewater Treatment Facility (AWWTF) Nutrient Upgrades Melissa Marts

General Project Scope: The Avon WWTF requires upgrades to meet Regulation 85, which requires a reduction of the concentrations of nitrogen and phosphorus in the effluent. The scope of this project includes the following: addition of 0.6 million gallons of aeration basin capacity, a new secondary clarifier, structural modifications to the existing aeration basins to remove the existing double-tees and replace with a building structure, a new odor control study and system, and other improvements throughout the facility. This project also includes improvements identified in a 2017 condition assessment in other process areas throughout the facility.

Project Update: The project team successfully completed the largest start-up of the project on Jan. 19. Modified aeration basin 2 was placed into service and commissioned along with three new blowers, diffuser system, mixers and sump pumps. Work to remove the soil and double tees from aeration basin 1 has begun. Work continues to progress on the new secondary clarifier and site utilities. The project on schedule for completion before January 2023.

Dowd Junction Collection System Improvements Jenna Beairsto

General Project Scope: The project consists of four major components, all of which are at the end of their useful lives: the aerial interceptor crossing at Dowd Junction; Lift Station 4, which conveys all of Minturn's wastewater; the aerial interceptor crossing at the Minturn Road bridge; and the force main downstream of Lift Station 4. The project will also include capacity for growth in its respective service areas, most notably the Minturn area improvements.

Project Update: *West Vail Interceptor Aerial Crossing:* Ductile iron pipe was delivered and is being stored at the contractor's storage yard offsite. The first segment of the bridge has been fabricated and the second segment is currently being fabricated. Remaining materials are scheduled to be delivered in Mar. 2022. The contractor will mobilize to the site in late May to complete the project. The District is renegotiating the contract completion dates with the Contractor based on global supply chain issues.

Lift Station 4 and Force Main Replacement: This project combines three packages of work in to one large project. Package A includes the Lift Station 4 replacement, Package B is replacement of the exiting force main with two 8" HDPE force mains and Package C in partnership with Eco Trails (Eagle County) to connect the bike trails from the lift station to the West Vail Interceptor crossing. HDR, Murraysmith and Otak submitted the issued for bid (IFB) set of drawings and specifications for each of the three packages associated with this project. The project was put out to bid on Feb. 10 and will be advertised a second time on Feb. 17. Bids are due on Mar. 24.

Avon Lab Improvements Melissa Marts

General Project Scope: A new inductively coupled plasma mass spectrometer (ICP-MS) purchased by the District will be installed in the lab. This will provide improved analytical capability to our internal and external customers. This device enables District staff to perform in-house metals analyses that are normally outsourced. Lab and architectural modifications will be constructed, including a new gas cabinet, duct chase, and fume hood. During design, the makeup air unit (MAU) serving the lab was identified to be at the end of its useful life; the HVAC system for the lab and lab offices will also be replaced.

Project Update: Moltz is finalizing their proposal for the work but has already requested submittals for the HVAC equipment to help with the long lead time of this equipment. Contingent upon successful negotiation, work is anticipated to be underway in the summer of 2022.

Vail Wastewater Treatment Facility (VWWTF) Master Plan Improvements Melissa Marts

General Project Scope: A condition assessment of the Vail WWTF conducted as part of the 2017 Master Plan identified various upgrades required to keep the facility in reliable and operable condition. The scope includes a new, larger diesel generator and associated electrical, structural repairs in the aeration basin, equalization, and clarifier rooms, replacement of the aging ultraviolet (UV) system, and construction and installation of an external facility bypass.

Project Update: Construction manager at risk (CMAR) solicitation documents were issued Jan. 28. The contractor pre-proposal was held on Feb. 10 at the Vail WWTF. Three contractors including Filanc, Aslan, and PCL were in attendance. The project team is reviewing the 30% design deliverables and continues progressing design with Black and Veatch. Due to the long lead time of equipment, construction is anticipated in fall 2022 and continuing throughout 2023.

GENERAL CAPITAL

Vail Office Remodel Jenna Beairsto

General Project Scope: The project will provide a safe and secure singular entry point for facility visitors by reconfiguring the vestibule entrance. The scope also includes reconfiguring and reorganizing of the Vail Administration Office. Most of the construction will be concentrated on the south half of the first floor; however, reorganization will occur building wide. In addition to the front entrance, the project will provide improved ADA access to the building. Several departments will shift within the lower level to allow for additional office and meeting space. The project includes cubicle and office furniture purchase and replacement for some of the improved areas.

Project Update: Demolition for the project is complete. Departments have been temporarily relocated out of the work zone. The electricians and mechanical subcontractors have begun roughing in and relocating items for the project. Framing for the new walls and ceilings is underway. The Contractor is beginning tiling for the renovated front entry.

Progress of demo and wall framing in the new customer service area

Progress of demolition and electrical rough-in at the new utility services area

WATER RESOURCES

Len Wright

The latest Drought Monitor shows that Colorado remains out of category “D4-Exceptional Drought”, as shown below in Figure 1. Eagle County remains unchanged from last month, with western Eagle County in “D0-Abnormally Dry” and Southern and Eastern portions of Eagle County in “D1-Moderate Drought”, as shown below in Figure 2.

Figure 1. Colorado Drought Monitor, Feb. 8, 2022. (https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CO).

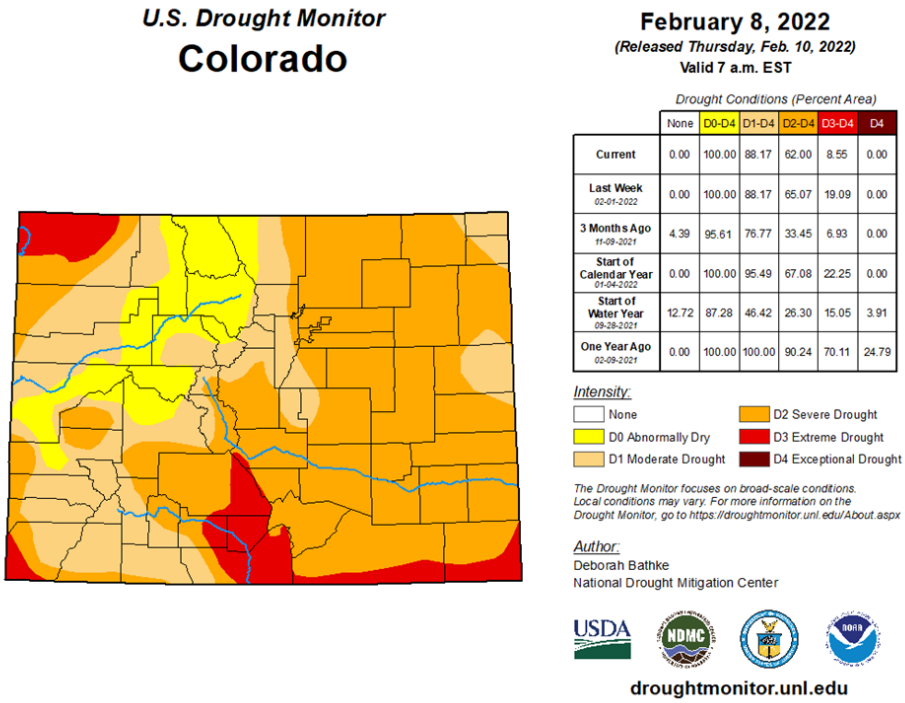
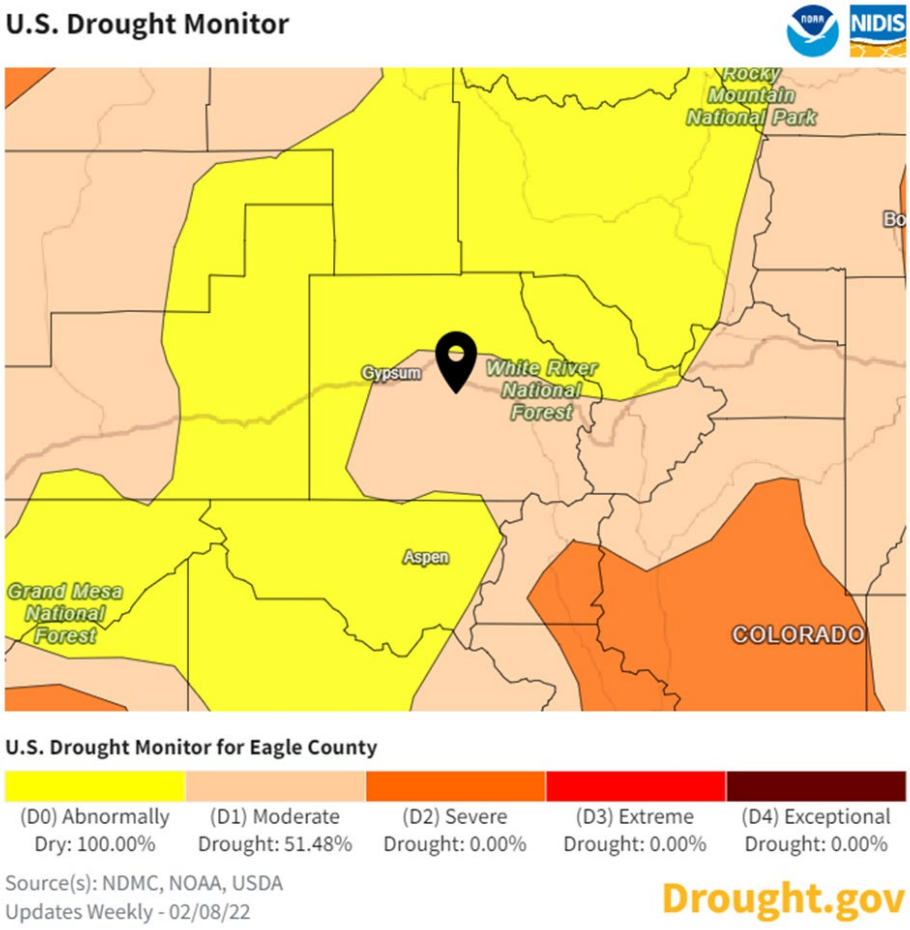
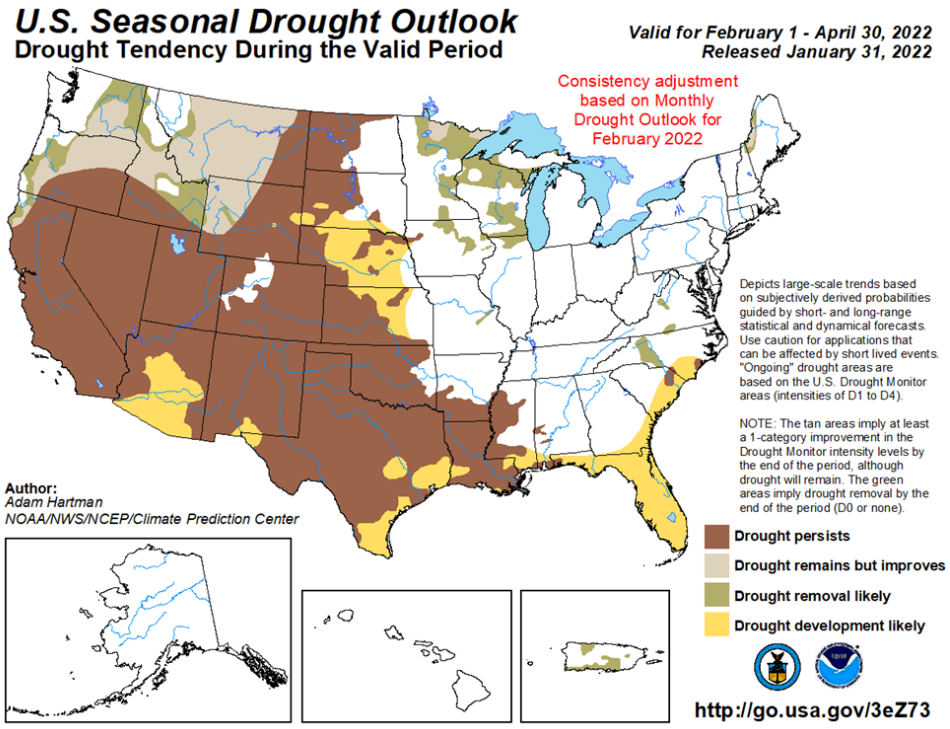


Figure 2. Eagle County Drought Monitor, Feb. 8, 2022 (NOAA, NIIDIS).



The seasonal drought outlook is not expected to change for Colorado through April 2022. This is largely because the La Nina conditions show a likelihood of average precipitation and temperature for the remainder of the winter.

Figure 3. US Seasonal Drought Outlook through April 30, 2022 (NOAA).



Snowpack is hovering near average for all local Eagle River SNOTEL sites as well as Copper Mountain. The four Eagle River Basin SNOTEL sites are shown in Figure 4, at 90% of the 1991-2020 median value for February 15th, 2022. Total cumulative precipitation for Water Year 2022 is shown in Figure 5 for the same four stations, at 91% of the 1991-2020 median. The five individual local SNOTEL stations are shown in Figures 6-10, showing a range of 80% of normal at Beaver Creek to 97% of normal on Vail Mountain.

Figure 4. Eagle River Basin SNOTEL stations, Feb. 15, 2022 (Beaver Creek, McCoy Park, Fremont Pass, Vail Mountain).

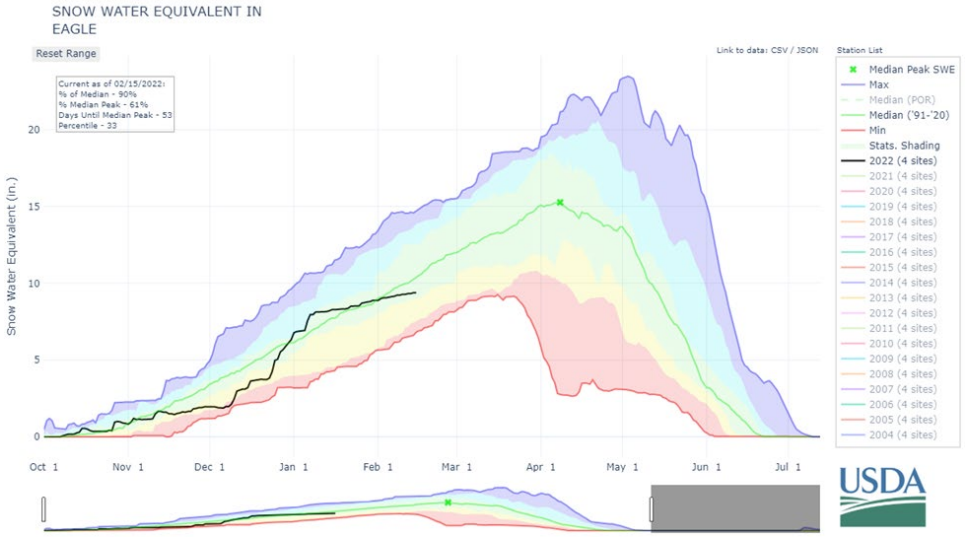


Figure 5. Cumulative precipitation for the Eagle River Basin, Water Year 2022 (NOAA/CBRFC).

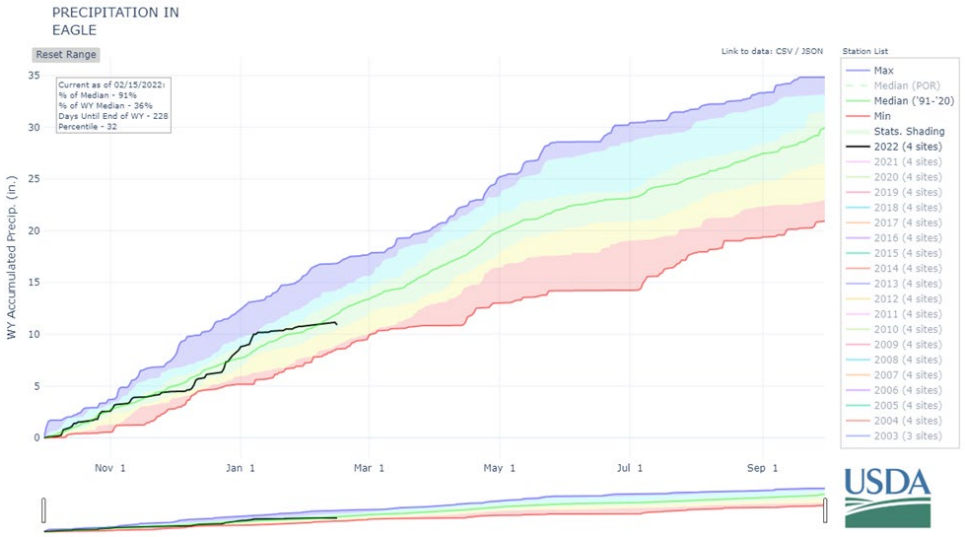


Figure 6. Snow Water Equivalent, Beaver Creek Village SNOTEL, January 18, 2022 (USDA).

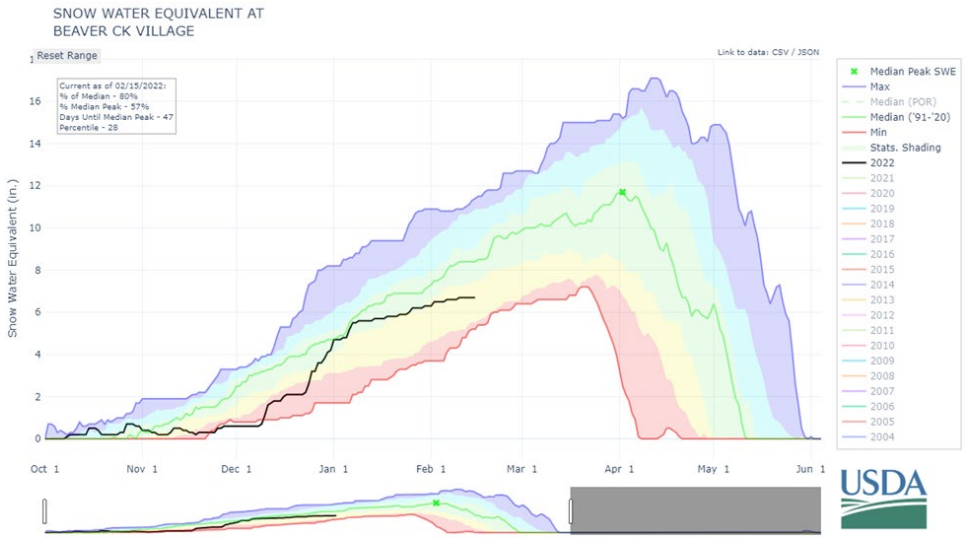


Figure 7. Snow Water Equivalent, McCoy Park SNOTEL, January 18, 2022 (USDA).

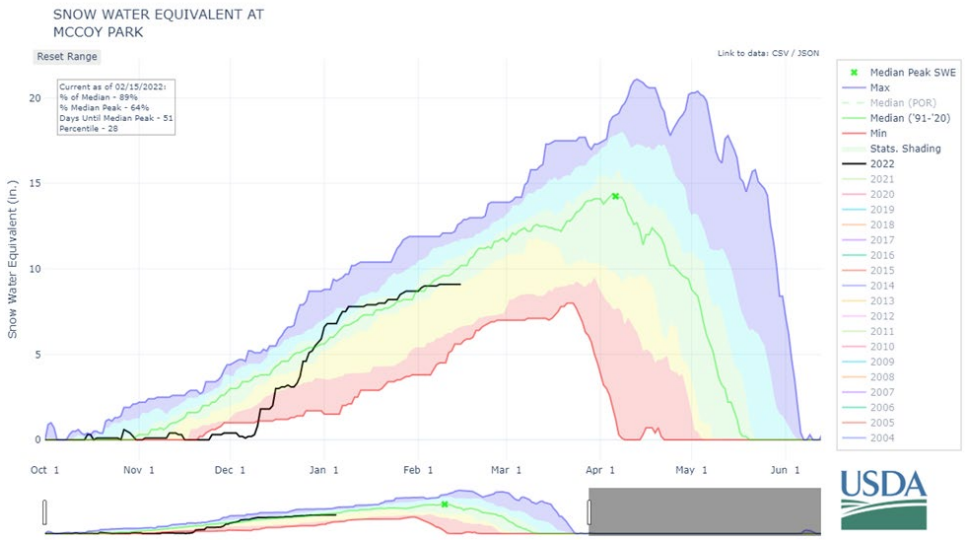


Figure 8. Snow Water Equivalent, Fremont Pass SNOTEL, January 18, 2022 (USDA).

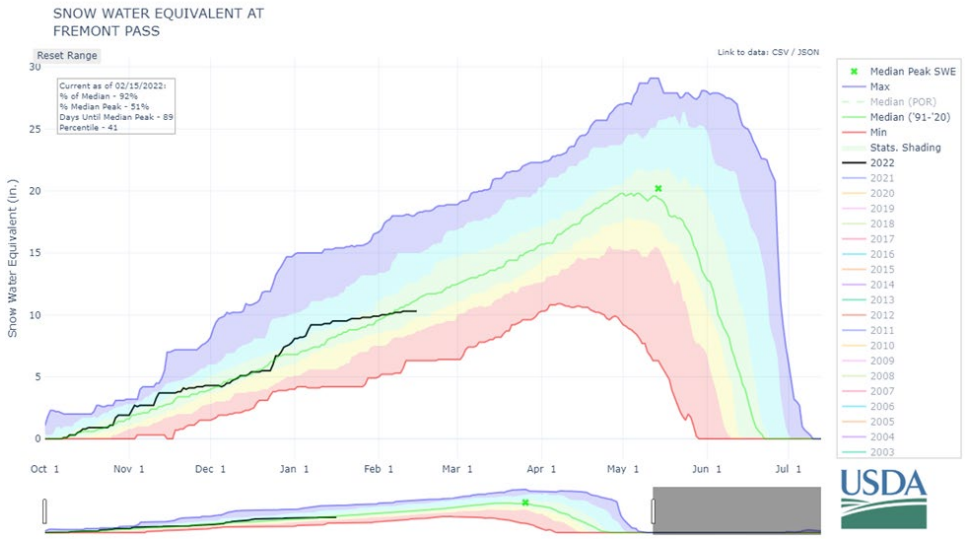


Figure 9. Snow Water Equivalent, Copper Mountain SNOTEL, January 18, 2022 (USDA).

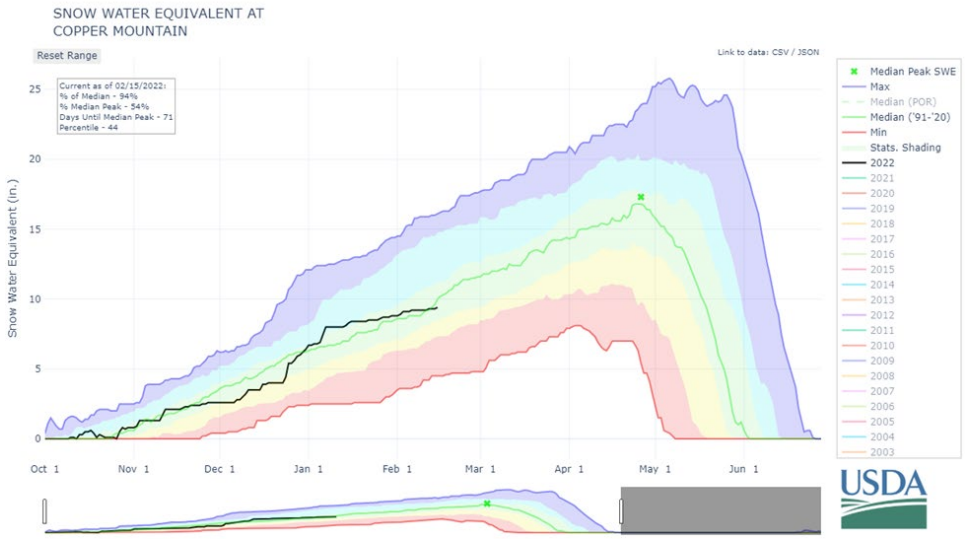
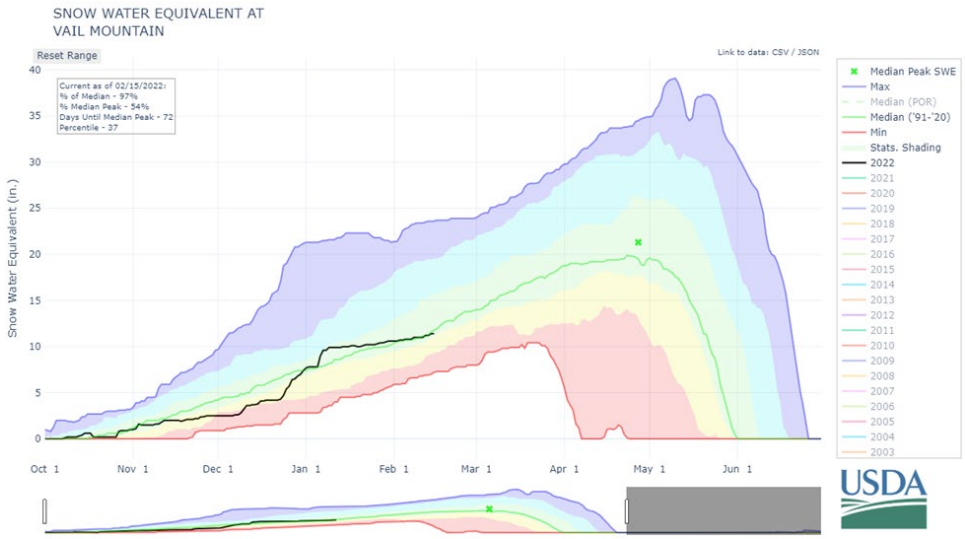


Figure 10. Snow Water Equivalent, Vail Mountain SNOTEL, January 18, 2022 (USDA).



Streamflows remain low, even for the typically low-flow winter season. Stream hydrographs plotted from the USGS gages on Gore Creek above Red Sandstone Creek and the Eagle River at Avon are shown below in Figures 11 and 12.

Figure 11. Streamflow for Water Year-to-Date 2022, Gore Creek (CBRFC).

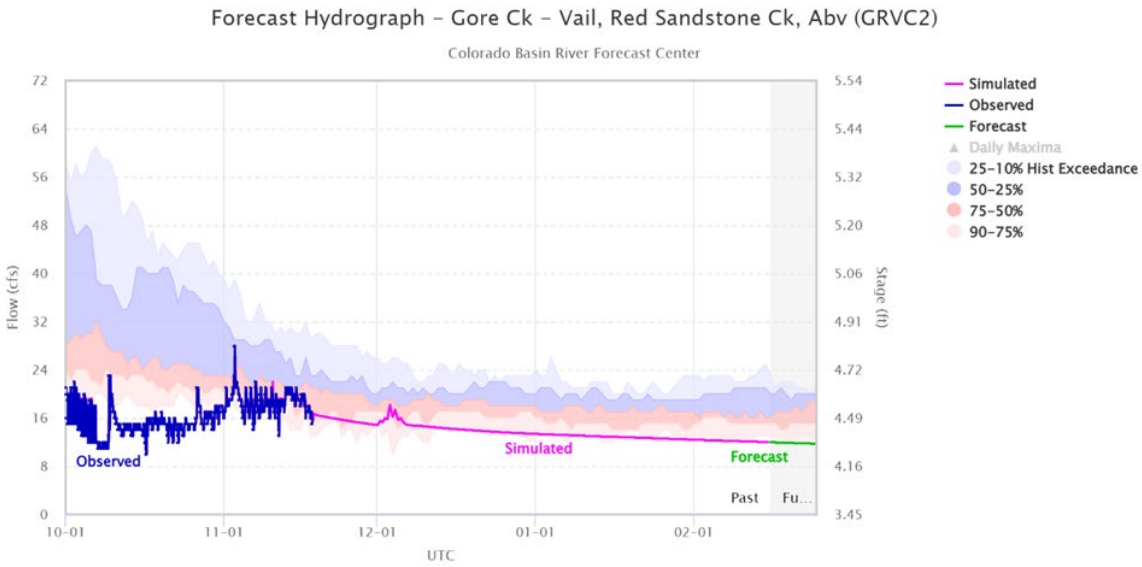
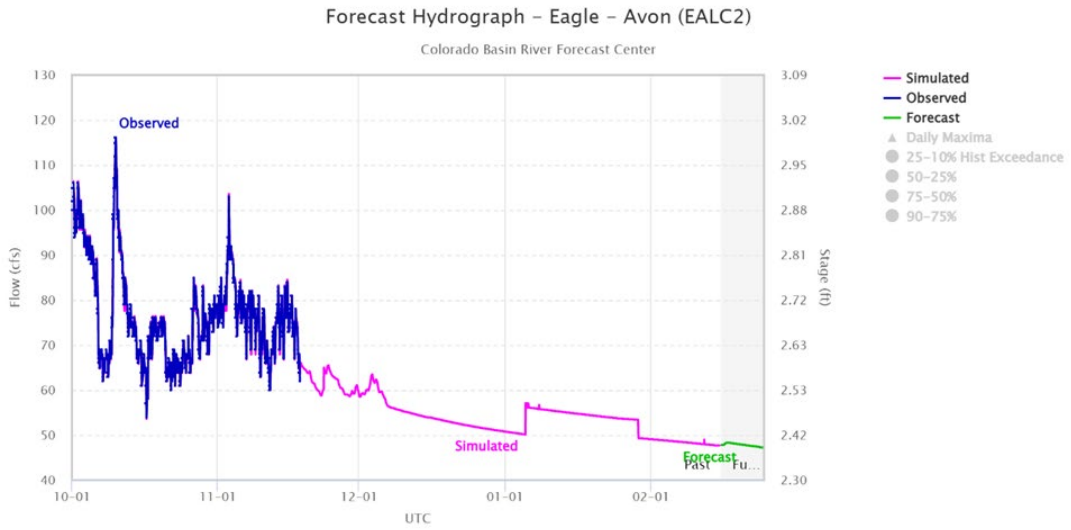


Figure 12. Streamflow for Water Year-to-Date 2022, Eagle River at Avon (CBRFC).

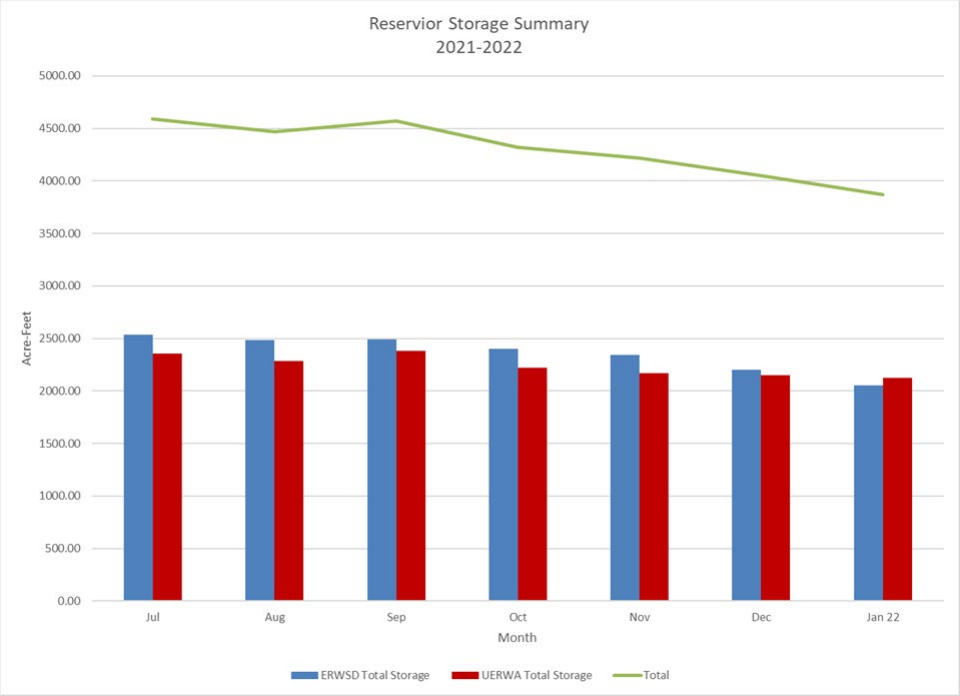


ERWSD and UERWA storage accounts are shown in Table 1 as of Feb. 1. Overall District and Authority accounts combined are at 77% full. District accounts are at 74% and Authority accounts are 81% full. Storage accounting for recent months is shown in Figure 13.

Table 1. ERWSD and UERWA Storage accounts as of Jan. 1, 2022 (Helton and Williamsen).

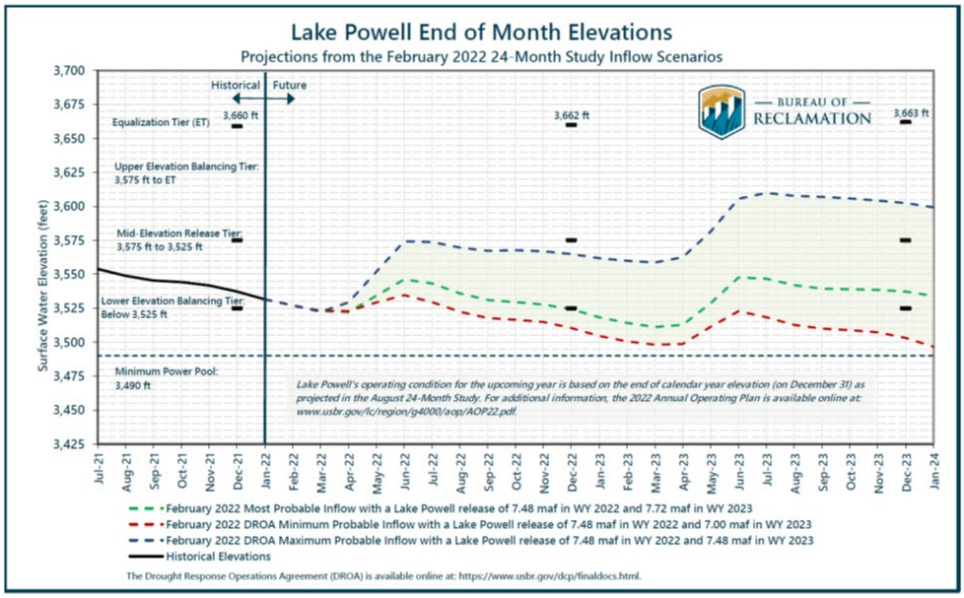
Reservoir	ERWSD		UERWA		TOTAL	
Green Mountain	567.38	61%	447.54	82%	1014.92	68%
Black Lakes	222.40	52%	222.40	74%	222.40	52%
Eagle Park	430.38	99%	676.86	99%	1107.25	99%
Homestake Res	164.23	66%	38.42	15%	202.66	40%
Wolford Mtn	500.00	100%	621.61	87%	1121.61	93%

Figure 13. Sum of Storage Accounts (Helton and Williamsen, 2022).



Current projections by the US Bureau of Reclamation for Lake Powell indicate is it unlikely to drop below the power pool elevation over the next 24 months. The current modeled level projection is shown below in Figure 14.

Figure 14. USBR Predicted Water Elevation (February 2022).



Current long-range forecasts from the National Weather Service show average conditions are expected for the next three months. Current maps are shown in Figures 15 and 16.

Figure 15. Three-month precipitation outlook (NOAA 2022).

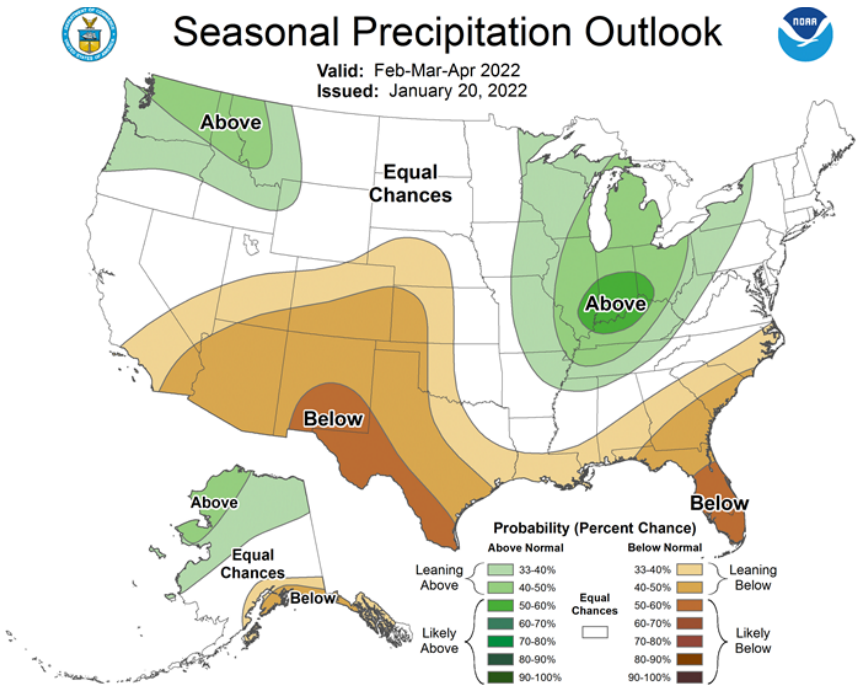
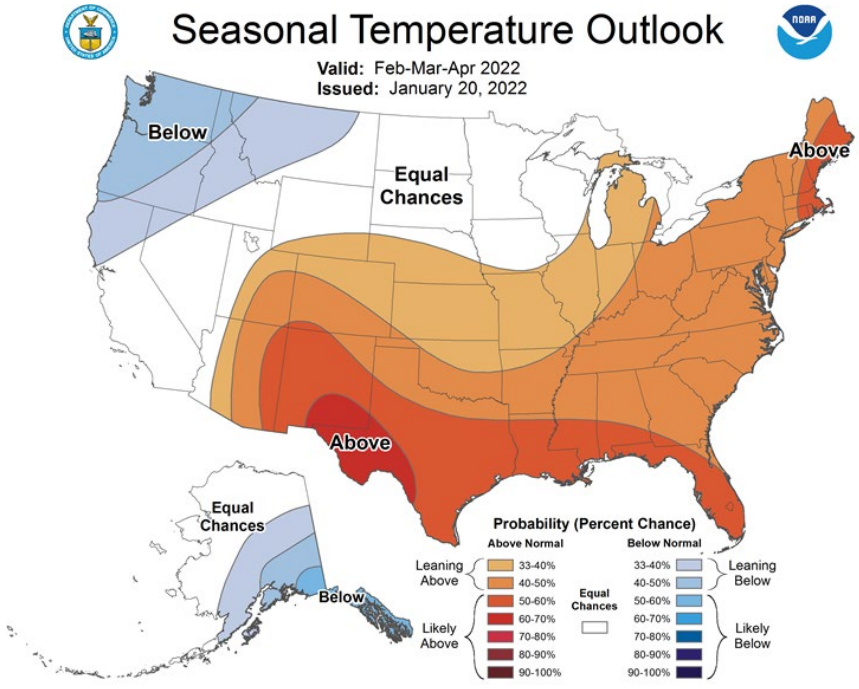


Figure 16. Three-month temperature outlook (NWS 2022).



EAGLE RIVER WATER & SANITATION DISTRICT

UPPER EAGLE REGIONAL WATER AUTHORITY

M E M O R A N D U M

TO: District and Authority Board Members

FROM: Leah Cribari, Laboratory and Regulatory Compliance Supervisor

DATE: Feb. 16, 2022

RE: Gore Creek Watershed Source Water Protection Plan

The purpose of this memo is to notify the board that staff and its partners have successfully completed the Gore Creek Watershed Source Water Protection Plan (SWPP). Protecting source water and preventing contaminants from entering the public water supply is a vital component of meeting the District's mission to provide safe and reliable drinking water to the community. The plan is available upon request.

A version of the SWPP will soon be publicly available on the Colorado Department of Public Health and Environment's (CDPHE) website; sensitive information has been redacted from the publicly available version. The SWPP protection area boundary will be designated on the map that encompasses all SWPP protection areas for Colorado. The goal of making the SWPP publicly available is to educate and increase community awareness of the importance of protecting drinking water sources.

Community stakeholder involvement in the development of the SWPP was imperative to ensure all potential sources of contamination (PSOCs) were captured in the Gore Creek protection area. The stakeholders include CDPHE, Colorado Department of Transportation, Colorado Parks and Wildlife, Colorado Rural Water Association, Eagle County, Eagle River Watershed Council, Vail Fire District, Town of Vail (TOV), Vail Health, Vail Recreation District, Vail Resorts, and U.S. Forest Service. Stakeholders identified close to 100 PSOCs in the Gore Creek watershed. PSOCs in the Gore Creek watershed include I-70, wildfire, dispersed residential chemical use, operational fuels, chemical storage, and unpermitted discharges.

Stakeholders are currently prioritizing structural and programmatic actions that the plan recommended. These recommendations address potential source water contaminants or threats and include reducing hazardous spill incident frequency on I-70, providing feedback to the Black Gore Creek Sediment Control Action Plan, defining vegetation setback targets for critical water resource infrastructure, and supporting TOV education outreach programs.

In 2022, staff will be initiating phase II of the effort which will be to develop the Eagle River Watershed SWPP. Leah Cribari and Kailey Rosema will be giving a brief presentation of this plan at the board meetings.

EAGLE RIVER WATER & SANITATION DISTRICT

UPPER EAGLE REGIONAL WATER AUTHORITY

M E M O R A N D U M

TO: District and Authority Boards of Directors

FROM: Jason Cowles, P.E.

DATE: February 16, 2022

RE: Director of Engineering & Water Resources Report

Authority Unallocated Water Update

I have updated my projection of the Authority's unallocated water based upon the final estimate of cash in lieu of water rights dedication needed for the Northstar PUD amendment, which Micah will present in this month's meeting. The Authority's unallocated water is currently projected at 230.78 acre feet. This includes 54.31 acre feet of unrestricted Eagle Park Reservoir water, which includes the 25 acre feet pledged to the Authority by the District. It also includes 78.13 acre feet of Eagle Park Reservoir water committed to workforce housing, and 98.33 historic irrigation season consumptive use credits.

Attachments
Authority Surplus Augmentation Supply, Updated 2022-02-16

Authority Surplus Augmentation Supply

Updated: 2/16/2022 by JEC

	HCUs, acft	In-basin Reservoir Storage, acft	In-basin Reservoir Storage, acft	Out-of-basin Reservoir Storage, acft	Total HCU & In-Basin Storage, acft
	Summer only	Affordable Housing Reserve	Unrestricted		
Modeled Augmentation Surplus[1]	105.70	87.40	127.30		320.40
Projects with Ability to Serve Letters					
Club Residences at CVC	0.04		1.04	0.03	1.08
Current Augmentation Surplus[2]	**105.66**	**87.40**	**126.26**		**319.32**
Augmentation Projections for Projects in Land Use Entitlement Process					
Edwards River Park PUD	5.52	9.27	53.54	1.89	68.32
Mountain Hive	1.27		13.56	0.39	14.83
NorthStar PUD Amendment	0.45		3.16	0.09	3.61
Warner Building Dormitories	0.02		0.02	0.01	0.04
Riverwalk PUD Guide Amendment	0.07		1.67	0.05	1.74
Total Pending Augmentation	**7.32**	**9.27**	**71.95**	**2.44**	**88.54**
Projected Augmentation Surplus	**98.33**	**78.13**	**54.31**		**230.78**

Notes:

1) Modeled Augmentation Surplus based on June 25, 2020 unallocated model runs adjusted for Edwards River Park changes.

2) Current Augmentation Suplus Projection considers all projects with Ability to Serve Letters to be allocated.

3) Projects in Land Use Entitlement Proces have Conditional Capacity to Serve Letters but have not yet received land use approvals or completed the Authority's water rights dedication process.

3) Affordable Housing Reserve In-basin Reservoir Storage is Eagle Park water transferred to UERWA by Eagle County and can only be used for affordable/workforce housing projects.

4) Unrestricted In-basin Reservoir Storage includes 25 acft pledged by ERWSD.

5) Out-of-basin Reservoir Storage supplies include 711 acft Wolford Mtn. Res. Contracts and 475 acft Green Mtn. Res. Contracts.

6) The Authority's existing commitment of 34.3 acft of augmentation for the West End PUD is included in the modeled augmentation suruplus.

EAGLE RIVER WATER & SANITATION DISTRICT

UPPER EAGLE REGIONAL WATER AUTHORITY

MEMORANDUM

TO: Boards of Directors

FROM: Diane Johnson, Communications & Public Affairs Manager

DATE: February 24, 2022

RE: Communications and Public Affairs Report

2022 Colorado Legislative Session
Kristin will report on several bills of interest, including HB22-1151, "Concerning measures to incentivize water-wise landscapes, and, in connection therewith, creating a state program to finance the voluntary removal and replacement of irrigated turf." See the attached Feb. 9 Colorado Sun story for more info.

Colorado Water Conservation Board
Paul Bruchez of Kremmling will replace Gail Schwartz as a director of the CWCB. I've served on the Colorado Basin Roundtable with Paul for years. See the attached Feb. 15 Aspen Journalism story for more information.

Colorado River Basin supplies and climate change
Reporting on reduced flows, supply challenges, drought operations, climate change, etc. steadily continues. A new study published Feb. 14 received considerable media coverage, locally, regionally, and nationally. The Los Angeles Times report is attached. The study abstract, figures, and references are available online, Rapid intensification of the emerging southwestern North American megadrought in 2020–2021. If you are interested in the full text, let me know.

Attachments (or hyperlinks):
1. Feb. 9 Colorado Sun: *Tired of mowing your lawn? Colorado could pay you $2 a square foot to rip it out.*
2. Feb. 15 Aspen Journalism: *Kremmling rancher picked to replace Schwartz on state water board*
3. Feb. 14 LA Times: *Western megadrought is worst in 1200 years intensified by climate change study finds*

Supplemental info – electronic only
4. Feb. 6 Colorado Sun: *As Colorado warms, dry soil sucks up more water. That's bad news for rivers and farmers.*
5. Feb. 6 Aspen Journalism: *Popular ditch inventories remain private despite being publicly funded*
6. Feb. 7 Vail Daily: *Running out of winter: Vail area snow totals lagging after dry January*
7. Feb. 9 Fresh Water News: *Feds, 4 Colorado River states unveil draft drought operations plan as 2022 forecast shifts*

Tired of mowing your lawn? Colorado could pay you $2 a square foot to rip it out.

coloradosun.com/2022/02/09/grass-lawn-turf-buyouts-colorado-drought

February 9, 2022

Turf buyout programs could start to solve some of the water shortages during long-term drought. A bill would expand grass buyouts statewide and double local payments.

Units at the Geos community in Arvada contain xeriscaped yards to minimize the need for watering. (Olivia Sun, The Colorado Sun)

Colorado would expand grass turf buyouts statewide and double existing city rip-and-replace programs in a bill aimed at solving misuse of precious water during the state's long-term drought.

The bipartisan bill would create a $2 million to $4 million annual pool from general fund money to pay homeowners, businesses or any other landlords willing to replace thirsty bluegrass on lawns, road medians, highway ditches and other places the decorative greens are draining state reservoirs.

Most current turf buyout programs in Colorado pay $1 per square foot to replace grass with drought-friendly alternatives, and they only cover about 25% of the population. The turf buyout bill would match local spending to increase the buyouts to $2 a square foot, and bring $1 a foot buyouts to the other 75% of the state living without a buyout option, sponsors and environmental backers said.

"No one has a picnic on the strip of grass in the median at a shopping mall," cosponsor Sen. Jeff Bridges, D-Greenwood Village, said. With the Colorado River Basin draining in a decades-long drought, and neighboring downriver states threatening legal action to get their water rights from Colorado, Bridges said, "we need to do more to make sure we're getting the most possible use, the most benefit, from what we have here in the state."

Conservation groups, who have long argued it's time to trim nonnative grass watering that Colorado State University experts estimate makes up most of the 55% of Front Range urban water used on the outdoors, hail the statewide buyout idea as a great first step that they hope will expand.

"This is all part of a strategy to make Colorado landscapes more water efficient. And so we think a statewide turf buyback program is one great way to do that," said John Berggren, a water analyst with the nonprofit Western Resource Advocates.

"There's a growing recognition that we have to reduce the amount of irrigated turf we have, and a growing recognition that while some turf is definitely beneficial – parks, sports fields, parts of people's yards – we all know there's a lot of turf that doesn't get used," Berggren said.

House Bill 1151 is sponsored by Bridges, Sen. Cleave Simpson, R-Alamosa; Rep. Marc Catlin, R-Montrose; and Rep. Dylan Roberts, D-Avon.

Bill sponsors and conservation supporters estimate all the buyout programs in the state currently spend about $1.3 million a year, and they want to at least double that amount. Legislators are still negotiating on the general fund amount they will ask for.

Some southwestern cities have more aggressive buyout programs. Las Vegas offers $3 a square foot to help tear out grass and design low-water gardens and landscaping.

A $2 million to $4 million budget would be tiny in the big picture – Denver Water revenues in 2021 from water sales were projected at $311 million. But advocates see public acceptance of buyouts as an important initial goal as climate change and shorter-term drought shrink the amount of water available in Colorado.

Environmental groups also believe city water departments need to participate more in conservation efforts – 80% to 85% of Colorado's water goes to agricultural use, but conservation advocates say they want rural and urban areas to cooperate on long-term water demand issues. Front Range cities rely heavily on river water diverted from the Western Slope.

Sponsors also emphasize Colorado won't be dictating that every town have a buyback program, or how they run their payouts.

Grass lawns are not getting outlawed, Bridges noted.

"We're creating a fund to say if you agree with us, which we hope you do," he said, "here's a way to make it less expensive for you to make the fix that we all know you need to make."

Aspen Journalism

WATER

Kremmling rancher picked to replace Schwartz on state water board

New basin rep Bruchez sees water scarcity as top Colorado River issue

by **Heather Sackett**
February 15, 2022

CREDIT: PHOTO PROVIDED

Gov. Jared Polis has chosen Kremmling rancher and fly-fishing guide Paul Bruchez to represent the Colorado River basin on the Colorado Water Conservation Board. Bruchez will replace Basalt resident and former state Sen. Gail Schwartz, who is stepping down after one term.

Gov. Jared Polis has appointed a Kremmling rancher to replace former state Sen. Gail Schwartz on the state's top water board.

Paul Bruchez will now represent the main stem of the Colorado River on the Colorado Water Conservation Board. Bruchez, 40, currently serves as the agriculture representative and vice chair of the Colorado Basin Roundtable.

Along with his family, Bruchez runs Reeder Creek Ranch, a 6,000-acre cattle and hay operation, about five miles east of Kremmling, which is irrigated with water from the headwaters of the Colorado River. Bruchez is also a fly-fishing guide and has been active since about 2012 in state-level water

management discussions. He is a governor appointee to the Inter-Basin Compact Committee and is on the board of the Colorado Water Trust.

“For the last 23 years, everything Colorado River and water has touched and impacted my life substantially, as well as my entire family,” he said. “We all live and breathe Colorado River issues.”

Bruchez is also spearheading a project with other neighboring irrigators to see what happens when water is temporarily removed from high-elevation hay meadows. The results of the state grant-funded study could have implications for demand management, a program state officials are exploring, designed to save water by paying irrigators to temporarily fallow fields.

The nine voting members of the CWCB are representatives from each of the state’s river basins, plus Denver. The Colorado main stem section extends from the headwaters in Grand County, through Glenwood Springs and the Grand Valley to where the river exits the state. The CWCB is tasked with developing and protecting Colorado’s water.

Bruchez said he thinks the biggest issue facing his basin is water scarcity.

“While we have challenges in the Colorado River, we also have some great people, and I hope I can make everyone proud,” he said.

Bruchez must still be confirmed by the state Senate and sworn in at the next CWCB meeting in March.

CREDIT: COURTESY GAIL SCHWARTZ

Basalt resident and former state Sen. Gail Schwartz is stepping down from the Colorado Water Conservation Board after one term. Her replacement is slated to be Kremmling rancher and Colorado Roundtable vice-chair Paul Bruchez.

‘Too challenging’

Schwartz, a Democrat who represented a purple district in the Senate from 2007-2015, decided to step down after serving just one three-year term on the board, which began in March 2019. Schwartz said that although it was an honor to hold the seat, she felt she couldn’t be as effective as she wanted in the position.

“I am super concerned about aridification, and I feel that it was just too challenging to move the needle on these incredible challenges to the Colorado River basin because our work is so broad,” she said on Friday. “It was just too difficult to make the kind of impact I would like to make.”

At the July 2021 board meeting, Schwartz had strong words regarding the gravity of the shortages on the Colorado River and urged the CWCB to act at what she called this extraordinary moment in time.

“This is a desert, and we are going to empty every bucket, we are going to empty every river, and this is the inevitable unless we can develop the courage and the ability to step forward,” Schwartz said in July.

Some have urged the state to move more quickly on a demand management program in the face of worsening climate change, drought and water shortages. At the heart of a demand management program is paying irrigators to use less water and store that water in Lake Powell to prop up the reservoir and help the upper basin states meet Colorado River Compact obligations. If a program were implemented, Utah, Wyoming and New Mexico would also have to agree to it. CWCB board members adopted a demand management “decision-making roadmap” in September.

“(Demand management) is on the back burner, in my opinion,” Schwartz said. “There was some fabulous input, and it was a really well-run process, but there wasn’t a very clear outcome.”

Schwartz, who lives in Basalt, is also the president of Roaring Fork Habitat for Humanity and said she wants to focus her time and energy on helping to solve the valley’s housing issues.

Aspen Journalism covers water and rivers in collaboration with The Aspen Times. This story ran in the Feb. 15 edition of ***The Aspen Times****,* ***Vail Daily****,* ***Summit Daily*** *and* ***Sky-Hi News****.*

HEATHER SACKETT

Heather Sackett is the managing editor at Aspen Journalism and the editor and reporter on the Water Desk. She has also reported for The Denver Post and the Telluride Daily Planet. Heather has a master’s... **More by Heather Sackett**

Western megadrought is worst in 1,200 years, intensified by climate change, study finds

latimes.com/environment/story/2022-02-14/western-megadrought-driest-in-1200-years

By Ian JamesStaff Writer Feb. 14, 2022 8 AM PT February 14, 2022

Tree stumps rise from parched earth in the Nevada ghost town of St. Thomas, which was submerged after the construction of Hoover Dam in the 1930s but has reemerged as the water level at Lake Mead has fallen to its lowest point in history amid an ongoing megadrought.

(Luis Sinco / Los Angeles Times)

The extreme dryness that has ravaged the American West for more than two decades now ranks as the driest 22-year period in at least 1,200 years, and scientists have found that this megadrought is being intensified by humanity's heating of the planet.

In their research, the scientists examined major droughts in southwestern North America back to the year 800 and determined that the region's desiccation so far this century has surpassed the severity of a megadrought in the late 1500s, making it the driest 22-year stretch on record. The authors of the study also concluded that dry conditions will likely continue through this year and, judging from the past, may persist for years.

The researchers found the current drought wouldn't be nearly as severe without global warming. They estimated that 42% of the drought's severity is attributable to higher temperatures caused by greenhouse gases accumulating in the atmosphere.

"The results are really concerning, because it's showing that the drought conditions we are facing now are substantially worse because of climate change," said Park Williams, a climate scientist at UCLA and the study's lead author. "But that also there is quite a bit of room for drought conditions to get worse."

Williams and his colleagues compared the current drought to seven other megadroughts between the 800s and 1500s that lasted between 23 years and 30 years.

They used ancient records of these droughts captured in the growth rings of trees.

Wood cores extracted from thousands of trees enabled the scientists to reconstruct the soil moisture centuries ago. They used data from trees at about 1,600 sites across the region, from Montana to California to northern Mexico.

The study, which was published Monday in the journal Nature Climate Change, adds to a growing body of research that shows the American West faces major challenges as the burning of fossil fuels continues to push temperatures higher, intensifying the drying trend.

Williams was part of a team that published a similar study in 2020. At the time, they found the drought since 2000 was the second-worst after the late 1500s megadrought. With widespread heat and dryness over the past two years, the current drought has passed that extreme mark.

Some scientists describe the trend in the West as "aridification" and say the region must prepare for the drying to continue as temperatures continue to climb.

Williams said the West is prone to extreme variability from dry periods to wet periods, like a yo-yo going up and down, but these variations are now "superimposed on a serious drying trend" with climate change.

"The dice have been loaded so heavily toward drying," he said.

The average temperature in southwestern North America since 2000 has been 1.6 degrees Fahrenheit warmer than the average during the previous 50 years, the researchers said. The warmer temperatures have compounded the drought by increasing evaporation, drying soils and leaving less water flowing in streams and rivers.

Higher temperatures make the atmosphere thirstier, drying out soil and vegetation in much the same way that "our house plants dry out when we turn on the heater," Williams said.

The scientists pointed out that the flow of the Colorado River during the 2020 and 2021 water years shrank to the lowest two-year average in more than a century of recordkeeping.

The river supplies water across seven states, from Wyoming to California, and to northern Mexico. But it has been chronically overused, and the drought has compounded the problems. Over the past year, its two largest reservoirs, Lake Mead and Lake Powell, declined to their lowest levels on record.

“We need to understand that the water budget of the West is changing beneath our feet rapidly,” Williams said. “We need to be prepared for a much drier future and to not rely so much on hope that when it gets wet again, we can just go back to business-as-usual water management.”

The hot, dry years have taken a major toll on water supplies and landscapes throughout California and the West. California’s reservoirs have dropped during the past two years. In Utah, the Great Salt Lake has declined to record-low levels. Extreme heat has contributed to explosive wildfires. And in the Mojave Desert, scientists have attributed major declines in bird populations to hotter, drier conditions brought on by climate change.

Even without climate change, the past two decades would have been a “bad luck period” naturally for the region, Williams said. But without the influence of climate change, he said, “this drought wouldn’t even be coming close to matching the worst of the megadroughts.”

Some of the long droughts included those from 1213 to 1237 and from 1271 to 1300. During that century, the Indigenous people who lived and farmed in villages in the Four Corners region are thought to have left their cliffside homes because of drought.

The scientists studied data compiled over decades by hundreds of other researchers, who extracted wood cores by boring into long-lived trees such as Douglas firs, piñon pines, ponderosa pines and blue oaks.

They found the current drought has included two years — 2002 and 2021 — that rank among the driest in the past 1,200 years. And with the surge in drying over the past year, Williams said, these 22 years have already been drier on average than most of the longer megadroughts.

The late 1500s drought ended abruptly after 23 years when wet conditions swept across the region. But the current drought shows no signs of subsiding.

According to the U.S. Drought Monitor website, 96% of the Western U.S. is now abnormally dry or worse, and 88% of the region is in drought.

The scientists projected it’s highly likely the drought will continue at least through this year. They considered a hypothetical future scenario based on soil moisture during all 40-year periods in the past 1,200 years and then superimposed the same amount of climate change-driven drying that has occurred in recent years. They found that in 94% of their simulations, the drought continued for at least a 23rd year. And in 75% of the simulations, the drought lasted 30 years.

“When it’s in a very depleted state, it takes a long time to fill the bucket back up,” Williams said. “It would take exceptional luck to end this drought in the next few years. There’s only been a couple of examples of that type of luck in the last 1,200 years of data that we have.”

Williams coauthored the study with researchers Benjamin Cook and Jason Smerdon of Columbia University’s Lamont-Doherty Earth Observatory. They used 29 climate models to estimate the influence of higher temperatures unleashed by climate change.

When they analyzed how the drought would have evolved without climate change, they found that the region would have emerged from drought during wet years in 2005 and 2006, and then drought would have set in again in 2007, Williams said.

The scientists used a 10-year running average in assessing long-term trends, so a single wet year, such as 2019, wasn't enough to end the run of mostly parched years.

The research focused on the entire region, but there were differences depending on the area. While the dryness has been most extreme in areas from Arizona to the Rocky Mountains, the study showed that much of California experienced one of the driest 22-year periods, though not the absolute driest.

Williams said the research should serve as a warning that the drying could get much worse in the years and decades to come.

"The big megadroughts that occurred last millennium occurred in the absence of climate change," Williams said. When such megadroughts return, they'll be occurring "in a world where the atmosphere is also artificially warmer because of human-caused climate change, which would be absolutely catastrophic."

Isla Simpson, a climate scientist at the National Center for Atmospheric Research who wasn't involved in the study, said she thinks the methods are solid and the findings make an important contribution to previous science.

"It's really useful to have this update, given how severe the last two years have been," Simpson said.

She said the current drought has occurred in part due to low precipitation, but it's really the effect of higher temperatures that has worsened the drying and is "very clear climate change signal."

"We have emerged out of the climate of the 20th century in terms of temperature, which will have an impact on evaporation and soil moisture," Simpson said. There will still be the natural swings from dry to wet, she added, "but we're experiencing this variability now within this long-term aridification due to anthropogenic climate change, which is going to make the events more severe."

Williams said the research points to real problems in the chronic overuse of water sources like the Colorado River, which fueled the growth of cities from Los Angeles to Phoenix over the past century. He said the widespread depletion of groundwater is another symptom of overdrawing the region's critical water reserves.

Many people in the West may not feel like they're living through a megadrought, he said, because "we have all of these buffers in our system now, like groundwater and large reservoirs."

"But we are utilizing those backstops so rapidly right now that we're at real risk of those backstops not being there for us in 10 or 20 years," he said, "when either this event still hasn't ended, or when the next megadrought has already begun."

Ian James

Ian James is a reporter who focuses on water in California and the West. Before joining the Los Angeles Times in 2021, he was an environment reporter at the Arizona Republic and the Desert Sun. He previously worked for the Associated Press as a correspondent in the Caribbean and as bureau chief in Venezuela. He is originally from California.

January 12, 2022 | Written by Kyler C. Rayden

Proposed New Waters of the United States Rule Reminiscent of Pre-2015 Regulatory Framework

The U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps) recently released the long-anticipated proposed rule redefining the scope of waters protected by the Clean Water Act (CWA). The CWA strictly prohibits discharges of pollutants into "navigable waters of the United States" unless specifically permitted; however, the definition of what constitutes "waters of the United States" (WOTUS) has evolved over the past five decades, shifting with the political tides in Washington.

Prior to 2015, WOTUS was defined by regulation (40 C.F.R. § 230.3(s)) and interpreted by U.S. Supreme Court decisions to include the following:

- Traditional navigable waters (including coastal zones), and adjacent wetlands.
- "Relatively permanent" non-navigable tributaries of traditional navigable waters, and wetlands that directly abut such tributaries.
- "Other Waters" which could affect interstate or foreign commerce.
- Non-navigable tributaries that are not relatively permanent, wetlands adjacent to non-navigable tributaries that are not relatively permanent, and wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary that possess a "significant nexus" to traditional navigable waters.

See Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, 531 U.S. 159 (2001); *Rapanos v. United States*, 547 U.S. 715 (2006) (*Rapanos*).

Under the holdings of these landmark cases, courts used the following two tests to determine whether waters fall within the jurisdiction of the CWA:

> ***Significant Nexus Test***: A "significant nexus" exists between the tributary or wetland in question and traditionally navigable waters. This fact-specific analysis assesses the flow characteristics and functions of the tributary itself, as well as the functions performed by all wetlands adjacent to the tributary to determine if either "significantly affect" the chemical, physical, and biological integrity of downstream traditional navigable waters.
>
> ***Relatively Permanent Test***: WOTUS includes only those "relatively permanent," standing or continuously flowing bodies of water forming geographic features ordinarily described as streams, oceans, rivers, and lakes. Notably, the phrase "relatively permanent" generally exempts tributaries that flow "intermittently" or "ephemerally," or channels that "periodically" provide drainage for rainfall.

In 2015, at the direction of the Obama administration, the EPA and Corps promulgated the Clean Water Rule, significantly expanding the CWA's jurisdiction by broadening the definition of WOTUS. Five years later, the Trump administration repealed and replaced the Obama-era rule with the Navigable Water Protection Rule (NWPR), significantly narrowing the definition of WOTUS and the scope of CWA's jurisdiction, including the categorical exclusion of ephemeral streams. In 2021, U.S. District Courts in Arizona and New Mexico repealed and vacated the NWPR, citing "fundamental, substantive flaws that cannot be cured without revising or replacing the NWPR's definition of 'waters of the United States.'"[1] The agencies subsequently halted implementation of the NWPR, began interpreting WOTUS consistent with the pre-2015 regulatory regime, and announced their intention to adopt revised regulations.

Last month, the Biden administration circulated new proposed regulations that would restore the longstanding, familiar pre-2015 interpretation of WOTUS, and codify the Supreme Court's holding in *Rapanos.* For example, the proposed regulations incorporate the "significant nexus" and "relatively permanent" tests to help determine the CWA's jurisdiction, and further expand CWA's jurisdiction over wetlands. While the proposed regulations may help to clarify the definition of WOTUS, stakeholders who backed the narrower NWPR will likely seek injunctive relief as soon as the regulations are published in the Federal Register.

The EPA and Corps are currently seeking comments on numerous contentious topics within the proposed regulations, such as whether the final rule should define the terms "intermittently," "ephemerally," or "periodically" as used in the "relatively permanent" test, as well as the phrase "significantly affect" as used in the "Significant Nexus" test. The agencies are hosting virtual public hearings on **January 12th, 13th, and 18th**, and the comment period for the proposed regulations closes on **February 7, 2022**.

For further information please contact Kyler Rayden at krayden@somachlaw.com.

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[1] *Pasqua Yaqui Tribe v. United States EPA*, No. CV-20-00266-TUC-RM, 2021 U.S. Dist. LEXIS 163921, at *14 (D. Ariz. Aug. 30, 2021); *Nation v. Regan*, No. 20-CV-602-MV/GJF, 2021 U.S. Dist. LEXIS 184147, at *9 (D.N.M. Sept. 27, 2021).

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10th Circuit Revives Fisherman's River Dispute

lawweekcolorado.com/article/10th-circuit-revives-fishermans-river-dispute

Legal scholars and water law experts have weighed in on what could be a precedent-setting case

By

Jessica Folker
-

February 4, 2020
Fishing takes patience, and Roger Hill might need more of it than other fans of the sport.

A recent 10th Circuit decision gave the fly fisherman another shot at testing his right to access a stretch of the Arkansas River, but he'll likely be waiting a while for the courts to rule on whether he may cast his line from his favorite spot.

He isn't the only one awaiting an outcome. Environmental law scholars, water law attorneys and property owners are watching the case, which some say could set precedent in determining title to riverbeds in the state.

Hill has for years been feuding with landowners Mark Warsewa and Linda Joseph about who ultimately owns the riverbed on their property in Fremont County. Hill claims he should be able to wade in the river because the state holds title to the riverbed in trust for the public, while the landowners assert it's their private property.

In 2018, Hill sued the property owners in state court to ask for declaratory judgment on the dispute. The case was removed to federal court due to federal question jurisdiction, and the State of Colorado was later added as a defendant.

In January 2019, a federal district court dismissed the lawsuit, finding Hill lacked prudential standing to bring his claims because they rested on the rights of a third party—the state of Colorado — rather than his own. However, on Jan. 23, the 10th Circuit Court of Appeals reversed the district court's decision and remanded the lawsuit to the lower court.

OUTSTANDING ISSUES

Colorado Attorney General Phil Weiser expressed "disappointment" in the appellate court's decision. "It is the job of Colorado — and only the State of Colorado — to assert its right over the land in question. The Department of Law is studying the ruling and considering its options moving forward," Weiser said in a statement.

Hill's team was happier about the reversal, even though it only addressed the prudential standing issue. "We're really delighted about the initial outcome, because had we lost in the 10th Circuit, we basically would have been barred from the courthouse," said Mark Squillace, a University of Colorado Law professor representing Hill. "And now at least we have a chance to make our case."

But there are other questions of standing Hill has to overcome before he can test his case on the merits. On remand, the district court will consider whether Hill's complaint is too general to grant him constitutional standing.

Hill has argued his claims are more than a generalized grievance because he's suffered harm in the form of harassment and violence from the property owners.

In his complaint, Hill alleged that Joseph had thrown rocks at him and that Warsewa had shot at his fishing buddy with a gun.

Others are skeptical those arguments will hold up. The district court originally found Hill's was a generalized grievance, but the 10th Circuit majority didn't weigh in on that conclusion because it didn't apply to the prudential standing question. In his dissent, 10th Circuit Judge Robert Bacharach questioned the logic of remanding the case just to have the district court come to the same conclusion a second time.

"It seems likely that's where this is headed — they give the district court one more opportunity to find this is a generalized grievance and therefore doesn't belong in federal court," said Burns Figa & Will shareholder Steve Leonhardt, who filed an amicus brief on behalf of the Colorado Water Congress in support of the defendants.

If that happens, the case could end up back in state court. "We feel like, at worst, we're in a position where Mr. Hill can go back and test his rights on the river," Squillace said, adding that if Hill were to be arrested or face other harm, "presumably, then, the court would agree to hear his claim."

RIVER BY RIVER

No matter where the case lands, Squillace said his client is just asking for his day in court to prove he — and the rest of the public — has the right to access the stream. Hill's argument rests on the equal footing doctrine under constitutional law, which holds that Colorado took title to the beds of all its navigable streams when it became a state. However, there was no determination made in 1876 about which streams were navigable, Squillace said.

"While the doctrine is there, we have to go through river by river, and river segment by river segment, to determine whether or not any particular rivers are navigable for title purposes," Squillace said.

To establish navigability, Hill cited in his complaint newspaper articles from the 1870s that suggest his favorite stretch of the Arkansas River was being used to transport railroad ties when Colorado entered statehood. He also referred to accounts from the early 19th century as evidence of other commercial uses of the river, including travel by fur traders.

However, another amicus brief supporting the defendants disputed these claims of navigability. "The Colorado courts have repeatedly stated that there are no navigable rivers in Colorado," said the brief filed by property owners and developments, citing state Supreme Court decisions dating back over a century.

Leonhardt said that courts, including the U.S. Supreme Court, have determined the only navigable stretch of the Arkansas River is downstream from Tulsa, Oklahoma. "Courts have recognized that in this stretch of the river in Fremont County, it's a mountain torrent that is not navigable by any criteria

that have historically been considered for navigability," he added.

WADING INTO CONTROVERSY

Those who have taken a position in the case have waded into a debate about the public trust doctrine, which says the state holds certain natural resources in trust for public use.

The defendants and their supporters argue that Colorado courts haven't adopted the public trust doctrine and that the doctrine is inconsistent with water use protections under the state constitution. Leonhardt said that the theory of the public trust doctrine has become a "significant limitation" on water rights in states like California. "That's part of the reason why Colorado has steadfastly rejected the public trust doctrine," he said.

Law professors at the University of Denver and Columbia University argued in an amicus brief supporting Hill that the state hasn't actually rejected the public trust obligations it gained at statehood.

"Colorado just hasn't taken any type of clear action or express statement that would have altered the nature of its trust relationship or the fact that it holds title in land under navigable waters," said Sarah Matsumoto, a clinical fellow at the University of Denver Sturm College of Law. It's not even clear the state could fully "reject" its trust obligations regarding navigable waters, even if it wanted to, Matsumoto and her colleagues argued in the brief. As far as real-world consequences, Squillace said it could be a "major precedent-setting case" if Hill can show the Arkansas River is navigable for title. That would open up the possibility of other rivers in the state meeting the same test, he said.

The state has voiced concern that if Hill is successful, it could expose Colorado to takings claims from property owners. Similarly, the housing developments argued in their brief that "Hill's assertion of state ownership of riverbeds could result in a destabilizing and radical transfer of property rights" to the state. But the law professors' brief dismissed these as "Chicken Little" fears, arguing the state can't "take" property it has owned since 1876. "I don't think that Mr. Hill is trying to necessarily do anything that's really earth shattering here," Matsumoto said of the controversy. "He's really just trying to exercise his own personal right of access that has existed until somebody says otherwise."

— Jessica Folker