TO: Board of Directors
FROM: Catherine Hayes, Board Secretary
DATE: March 20, 2019
RE: March 28, 2019, Special Board Meeting

This memorandum shall serve as notice of the Special Board of Directors Meeting of the Eagle River Water & Sanitation District:

Thursday, March 28, 2019
12:00 p.m.

Eagle River Water & Sanitation District Office
Walter Kirch Room
846 Forest Road
Vail, CO
81657

Cc public items:
ERWSD Managers
Ken Marchetti, Marchetti & Weaver, PC

Board Materials via Email:
Bob Armour, Vail resident
Caroline Bradford, Independent Consultant
Robert Lipnick, Vail resident
Rick Sackbauer, Vail resident
BOARD OF DIRECTORS SPECIAL MEETING  
March 28, 2019, 12:00 p.m.

1. Consultant/Guest Introduction
2. Public Comment*
3. Action Items
   3.1. Meeting Minutes of February 28, 2019, Regular Meeting
   3.2. Rules and Regulations Updates – Jason Cowles
   3.3. Easement Request at Avon WWTF – Jeff Schneider
   3.4. Consent Agenda: Contract Log
4. Strategy Items
   4.1. Board Member Input
5. General Manager Report – Linn Brooks*
   5.1. General Manager Information Items
5.2. Operations Report*
   5.2.1. Eagle Mine Superfund Site Consent Decree – Siri Roman*
   5.2.2. West Vail Pass Auxiliary Lane Project Update – Siri Roman
   5.2.3. Eagle Park Reservoir Company Operations Update†
   5.2.4. Eagle Park Reservoir Inundation Mapping Update – Len Wright
5.3. Engineering Report – Jason Cowles*
5.4. Public Affairs Report – Diane Johnson*
   5.4.1. Legislative Update
5.5. Monthly Reports
   5.5.1. Development Report*
   5.5.2. Authority February Meeting Summary – draft*
   5.5.3. District and Authority Committees*
6. General Counsel Report – Jim Collins†
7. Water Counsel Report – Glenn Porzak
8. **Executive Session pursuant to § 24-6-402(a)(b) and (e), C.R.S.**

8.1. General Counsel Review of Matters in Negotiation – Jim Collins

8.2. Water Counsel Review of Matters in Negotiation – Glenn Porzak

8.2.1. Bolts Lake Agreement†

8.2.2. Bulk Water and Delivery Agreement†

8.2.3. Eagle River Model Sharing Agreement†

8.2.4. River Access Amicus Brief

9. **Adjournment**
BO A R D  A C T I O N  R E Q U E S T

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: March 20, 2019

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 A, B, C, D, and E. Theses revisions were sent out for review to Management and the Rules and Regulations Subcommittee and all comments or suggestions have been addressed.

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

Legal Issues: Legal Counsel has reviewed the revisions and their comments have been incorporated.

Budget Implication: None

Recommendation: We recommend 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 2019.

Attached Supporting Documentation:
Table of Contents
Rules and Regulations Articles I-X Revised Sheets
Appendices A, B, C, D, E Revised Sheets
Public Input Document
Staffs Rationale

Thank you for your consideration of these revisions. Please let me know if you have any questions or comments regarding the proposed revisions.
2019 Rules and Regulations Revisions

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   • 2.7 Approved Backflow Prevention Device-Page 16
   • 2.57 Floor Area-Page 23
   • 2.99 Survey-Page 30
   • 2.115 Warranty Period-Page 33
   • 4.5 Connection to Water and Wastewater System (Fire Suppression Systems)-Page 49
   • 6.5 Line Locations-Page 56
   • 6.6 Scheduling of Service or Inspections-Page 56
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   • Re-inspect Fee

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   - 1.14 Insulation Board –Page 8

7. Appendix F
   - No Changes

8. Appendix G
   - Approved 2.28.19

9. Appendix H
   - No Changes
is now enacted or may subsequently be enacted by the Colorado General Assembly pertaining to the governmental or proprietary affairs of the District.

1.7 Amendment

The District, through its Board of Directors, shall retain the power to amend these Rules and Regulations to reflect those changes determined to be necessary by the Board of Directors. Prior public notice of amendments to these Rules and Regulations shall not be required by the Board of Directors when exercising its amendment powers.

1.8 Waiver, Suspension, or Modification of Rules

The General Manager acting on behalf of the Board of Directors shall have the sole authority to waive, suspend, or modify these Rules and Regulations. Any such waiver, suspension, or modification must be in writing authorizing the specific action. Such waiver, suspension or modification is an exception to these Rules and Regulations for the specific instance and shall not be construed as precedent for future instances. Waivers, suspensions, or modifications are not deemed an amendment of these Rules and Regulations.

1.9 Inclusion in Contract

All Customers of the District who receive water or wastewater services are bound by these Rules and Regulations as a matter of contract for which there is good and valuable consideration. These Rules and Regulations are automatically incorporated into every contract, written or oral, for service from the District whether expressly referenced or not, to the extent they are not inconsistent with the contract for service.

1.10 Discontinuance or Revocation of Service

The District reserves the right to temporarily discontinue service to any property, at any time, for any reason deemed necessary or appropriate. The District shall have the right to revoke service to any property for violations of these Rules and Regulations in accordance with the procedures set forth in these Rules and Regulations.

1.11 Reinstatement of Service

Reinstatement of service to a property to which service has been discontinued or revoked shall not occur until all charges due to the District by the Customer are paid and all other requirements for service are satisfied, as determined by the District.

1.12 Authority to Access Customer Property

Authorized representatives of the District, upon presentation of a work order and identification, shall be permitted to enter upon a Customer’s property at all reasonable times for the purpose of inspection, observation, measurement, sampling, testing, Turn-
On or Turn-Off of Water Service, and inspection of records of the Water or Wastewater System, in accordance with the provisions of these Rules and Regulations. Authorized representatives of the District, upon presentation of a work order and identification, must be permitted to and shall have a right to enter upon a Customer’s property at reasonable times for the purposes of inspection, observation, measurement, sampling, testing, detection of leaks, Turn-On or Turn-Off of Water Service, inspection of records, and investigation of any violation of these Rules and Regulations. Failure of a Customer to permit such inspections, observations, measurements, samplings, testing, or inspection of records upon the request, in writing, of the General Manager may result in a finding that permission is being denied to avoid discovery of a violation of these Rules and Regulations. Such finding may result in the disconnection of service or other remedies as allowed under these Rules and Regulations. Refer to Article III, Violator’s Liability.

1.13 Severability

In the event any of the terms or provisions of these Rules and Regulations shall be held invalid as to any person, property, or circumstance by any court having competent jurisdiction, the remainder of these Rules and Regulations and the application and effect of their terms and provisions to such persons, property, or circumstances shall not be affected thereby.
2.7 **Approved Backflow Prevention Device (Assembly)**

A device that meets the criteria outlined in Appendix G of these rules and regulations and that is approved in writing by the District, listed in the latest University of Southern California, Foundation for Cross-Connection Control and Hydraulic Research (FCCCHR) "List of Approved Backflow Prevention Assemblies", and Approved by the District.

2.8 **Attic**

"Attic" is that part of a structure that is immediately below and wholly or partly within the roof framing. An Attic that is less than five (5) feet in height shall be excluded from Floor Area calculations.

2.9 **Authorized Representative of the User**

An “Authorized Representative of the User” means:

If the User is a corporation:

(a) The president, secretary, treasurer, or a vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(b) The manager of one or more manufacturing, production, or operation facilities employing more than two hundred fifty (250) persons or having gross annual sales or expenditures exceeding twenty-five (25) million dollars (in second-quarter, 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

If the User is a partnership or sole proprietorship: a general partner or proprietor, respectively.

If the User is a federal, state, or local governmental facility: a director or highest official appointed or designated to oversee the operation and performance of the activities of the government facility, or their designee.

The individuals described above may designate another authorized representative if the authorization is in writing, the authorization specifies the individual or position responsible for the overall operation of the facility from which the discharge originates or having overall responsibility for environmental matters for the company, and the written authorization is submitted to the District.

2.10 **Auxiliary Water Supply**
2.51 Efficiency Unit or Studio Unit

"Efficiency Unit" or "Studio Unit" is a Residential Unit having one room with an integral Cooking Facility and one bathroom. An Efficiency Unit is equal to 0.50 SFE.

2.52 Electronic Drawing File

“Electronic Drawing File” shall be AutoCAD “.dwg” drawing format file, unless specified otherwise.

2.53 Employee Handbook

The “Employee Handbook” of the District is the document that contains the District’s policies and requirements for the conduct of District employees, which may be updated periodically with or without advanced notice.

2.54 Environmental Protection Agency or EPA

“EPA” refers to the U.S. Environmental Protection Agency or, where appropriate, the Regional Water Management Division Director, or other duly authorized official of said agency.

2.55 Final Acceptance Letter

A “Final Acceptance Letter” is evidence of the District’s acknowledgement that the Applicant has complied with all Final Acceptance requirements, including any repairs and/or replacements of faulty and/or defective materials and/or installation. Issuance of the Final Acceptance Letter ends the required Warranty Period.

2.56 Flood-Level Rim

The “Flood-Level Rim” is the edge of the receptacle from which liquid overflows.

2.57 Floor Area

For Connection Fee calculations, residential floor area is calculated on the gross square foot measurement to include the outside walls, unfinished areas, mechanical rooms, storage space, etc. and basements and attics over five (5’) feet high. In multi-unit or mixed use facilities, Circulation Space is excluded.

2.58 Garage

A “Garage” is an accessory building or an accessory portion of a main building for private, residential use designed for shelter or storage of motor vehicles which are owned, and operated by the occupant of the main building. Habitable spaces within garages such as, offices, bathrooms, storage, mechanical rooms or other similar uses will be counted towards the property’s floor area for Connection Fee calculation.
to the impact of 2.3 persons occupying a Residential Unit. An SFE multiplier is determined for each Customer account. Refer to Appendix A, Schedule of Fees and Rates.

2.95 Slug Load or Slug

A “Slug Load” is any discharge at a flow rate or concentration which could cause a violation of the Prohibited Discharge Standards in Section 2.1 of Appendix F, Pretreatment Program regulations.

2.96 Spring Line

“Spring Line” is the point of maximum horizontal dimension when looking at an end cross section of a pipe.

2.97 Stub Out

"Stub Out" is a service line for the benefit of the development of a vacant lot which is connected to the Water or Wastewater System and ends at the property line, with an intent to facilitate the Connection of a Customer’s service line to the Water or Wastewater System.

2.98 Submerged Inlet

A water pipe or extension thereof from a Potable Water supply terminating below the flood level rim of a tank, vessel, fixture or appliance which may contain Non-Potable Water.

2.99 Survey

A “Survey” is conducted to assess customer compliance with the district’s Backflow Prevention and Cross Connection Control Program and may consist of a physical inspection or a questionnaire that the customer is required to complete and submit to the District within the specified timeframe. This also includes tracking of Certifications of Backflow Technicians.

2.100 System Tampering

“System Tampering” is any Customer’s misuse of, or damage to, the District’s Water or Wastewater System, or any violation of these Rules and Regulations, whether intentional or unintentional. System Tampering may include, but is not limited to: operation of the Water or Wastewater System, including the operation of valves or fire hydrants or obtaining access to facilities without prior written authorization of the District; breaking, connecting to, damaging, defacing, destroying, covering, uncovering, or changing the elevation of the ground surface around any portion of the District's
to continuous static line pressure or backpressure or be installed where it would be under pressure for more than 12 continuous hours.

2.113 Vacuum Breaker, Pressure Type

A Vacuum Breaker, designed to prevent Back Siphonage only, consisting of a spring-loaded Check Valve, a spring-loaded air inlet opening, a tightly closing shut off valve on each side of the device and two (2) appropriately located test cocks. The device shall not be subjected to backpressure. The entire assembly shall be an Approved Backflow Prevention Device.

2.114 Variance

A “Variance” is the written authorization from the District to act in a manner not in strict compliance with the District’s Standard Specifications for Construction, Rules and Regulations, or policies. A Variance may be granted by the Construction Review Team on the basis of unusual conditions or unique circumstances based upon the following criteria:

- The granting of a Variance will not constitute a grant of special privilege;
- The granting of a Variance will not be detrimental to public health, safety, or welfare or injurious to other properties or improvements;
- There are exceptional or extraordinary conditions applicable to the site for which the variance is requested;
- There are pre-existing conditions causing undue hardship;
- Cost or inconvenience shall not be considered in granting a Variance; and
- The Applicant has exhausted all efforts to comply with the Specifications.

The Applicant shall accompany a connection application with a written letter stating the need for the Variance and how it meets the above listed criteria and the complete legal description of the property for which the Variance is requested. If granted, a copy of the Variance shall be recorded by the District in the records of the Clerk and Recorder of Eagle County, Colorado.

2.115 Warranty Period

“Warranty Period” is the period not less than two (2) years from the date of the Construction Acceptance Letter as issued by the District for any Work. The Warranty Period shall not start until Drawings of Record, recorded easement documents, project cost documents, and Bill of Sale, have been completed, and are received and approved by the District. The Applicant shall furnish to the District a warranty, secured by a surety bond, if requested by the district, for all Work, material, services and equipment, and the cost thereof, or for the satisfactory repair or replacement of faulty or improper installation, or improper handling of materials(s) and/or equipment provided by the Applicant. Any repair made on any component constructed and/or installed by the Applicant may, at the sole discretion of the District, extend the Warranty Period.
provisions as expansion of use discovered by the District and the Customer shall then be subject to the provisions of Article IV, Additional Assessment of Fees. Any Unauthorized Use, once discovered, shall be paid for at the same rate as if that use had been authorized.

4.5.19 Fire Suppression Systems

If a fire suppression system is to be used, a plan of the fire suppression system approved by the appropriate fire protection authority is to be submitted to the District with the New Account Application. The fire suppression service and domestic water service shall be designed as required by the local fire authority. All fire suppression systems shall meet National Fire Protection Association (NFPA) requirements and additionally shall meet the requirements of all applicable municipal, county, and state building and fire protection codes. All fire suppression systems shall be protected from fluctuating Water Main pressures by a pressure-reducing valve.

As dictated by the State of Colorado, all fire suppression systems shall be equipped with a backflow prevention device appropriate to the degree of hazard present on the site. Refer to Appendix G, Backflow Prevention and Cross Connection Control Program.

4.5.20 Landscape Irrigation Accounts

Landscape Irrigation Accounts are specific to outdoor water use metered separately from indoor use on the premises. Irrigation water use for residential developments is usually combined with the Customer’s total water use at the property unless a separate meter is requested to meter landscape irrigation at the property. There are two types of Landscape Irrigation Accounts:

(a) **Landscape Sprinkler Account** – is for outdoor metered water use associated with a structure. The District, upon approval of a New Account Application, will authorize a Water Service Connection without payment of a separate Tap Fee for the Landscape Sprinkler Account. All other Connection Fees and rates for the associated structure, however, must be paid, and requirements met prior to authorization of the Connection for the Landscape Sprinkler Account. For Landscape Sprinkler Accounts, the Tap Fee is paid as part of Tap Fees paid for the related structures.

(b) **Irrigation Account** – is for outdoor metered water use from a stand-alone irrigation system, not associated with a structure. The District, upon approval of a New Account Application, will authorize a Water Service Connection for the Irrigation Account. All other requirements shall be met prior to authorization of the Connection for the Irrigation Account. Water usage for the Irrigation Account is, however, subject to the Irrigation Water Usage Rate. See Appendix A Schedule of Fees and Rates.
6.5 Locating District Facilities

The District is a Tier 1 utility under Colorado’s One call Law (Section 1. Article 1.5 of title 9.CRS). The requestor shall utilize the 811 system for locate requests. Upon request of a customer, for private service lines within the Right-of-Way, the District will attempt to locate and mark all water (including curbstops) and sewer service lines within the Right-of-Way to the best of its ability by using available information. Basic line locations will be made free of charge, but the District will not accept financial liability to any party for any costs incurred as a result of an inaccurate location. The District, by providing such location services, does not waive or intend to waive the monetary limitations or any other rights, immunities, defenses and protections provided by the Colorado Governmental Immunity Act, § 24-10-101, et seq., C.R.S., as from time to time amended (the “CGIA”).

6.6 Scheduling Service or Inspections

Customers may be required to schedule District service or inspections from time to time. Appointments for inspections or services, such as Turn-On, Turn-Off, operation of Water Main valves, water meter, transceiver battery changes, flush or flow tests must be scheduled with the District a minimum of two (2) business days in advance. Appointments that have been rescheduled for the following reasons; not ready for inspection, failed, no shows, and not properly scheduled will be charged a re-inspection fee.

6.7 Use of Water System

6.7.1 All Water Use Metered

All water used by a Customer provided by the Water System shall be metered. Any unmetered use is considered to be Unauthorized Use, unless expressly approved by the District, refer to Article V, Fee for Non-Compliance and Article III, Violator’s Liability.

6.7.2 Water Meter

The Customer shall install the initial meter and the District shall have the right to test, remove, repair, or replace any and all Water Meters. Any meter installed not in accordance with District Specifications (Appendix B, Water and Wastewater Service Line Construction Specifications) shall be immediately re-installed or replaced so as to comply with these Rules and Regulations.

6.7.3 Operation of Meter Bypass

For Meter installations plumbed with a by-pass line, by-pass valves shall be installed and may only be operated by District personnel. However, if a failure of the meter occurs and the Customer determines that it is necessary to activate the by-pass line immediately to prevent interruption of Water Service, the District shall be notified within...
ARTICLE VII - HEARING, SETTLEMENT AND APPEAL PROCEDURES

7.1 Application

The Hearing, Settlement and Appeal Procedures established by this Article shall apply to all complaints concerning the interpretation, application, and enforcement of these Rules and Regulations of the District, as they now exist or may hereafter be amended. The Hearing, Settlement and Appeal Procedures established by this Article shall not apply to the following complaints:

(a) Complaints that arise with regard to personnel matters. These complaints shall be governed exclusively by the rules set forth in the District's Employee Handbook.

(b) Any other complaint which does not concern the interpretation, application, or enforcement of these Rules and Regulations of the District.

7.2 Variance

Where the strict and literal interpretation of these Rules and Regulations may cause undue difficulty or hardship to the Applicant, the Applicant may request a Variance. Existing utilities and road cuts do not constitute a hardship and variance requests found to be based solely upon a road cut or existing utilities will be denied. A Variance will be reviewed and granted by the Construction Review Team. The variance request shall be submitted to the Construction Review Team who shall have the authority to grant or deny the request. The Construction Review Team will review the Variance based upon the following criteria:

- The granting of a Variance will not constitute a grant of special privilege
- The granting of a Variance will not be detrimental to public health, safety, or welfare or injurious to other properties or improvements
- There are exceptional or extraordinary conditions applicable to the site
- There are pre-existing conditions causing undue hardship
- Cost or inconvenience shall not be considered in granting a Variance, such as road cuts and the existence of other subsurface utilities
- The Applicant has exhausted all efforts to comply with the Specifications

The Applicant shall accompany a connection application with a written letter stating the need for the variance and how it meets the above listed criteria.

7.3 Initial Complaint Resolution

Complaints concerning the interpretation, application, or enforcement of these Rules and Regulations of the District shall first be presented to the District staff with which the Customer has been communicating related to the complaint. If a resolution is not reached, the complainant may submit a written complaint. District staff will then respond...
iii. Show sufficient adjacent area to show the relation of new facilities to existing facilities. Existing Water and Wastewater System attributes shall be identified on the plans with District’s mapping specifications; and

iv. Show station numbers for Water and Wastewater services, valves and fittings, fire hydrants, thrust blocks, elbows, bends and deflections with the degree of angle, stream crossings, manholes, etc.

(d) Plan requirements may:

i. Include average daily and peak system demands that will be generated by the development to be served by the Work and calculations showing that proposed system capacity is adequate to serve the demand;

ii. Include any geotechnical reports or information including slope stability evaluations, used in the development or design of the Work.

iii. Include restoration and landscaping adequate to prevent erosion caused by surface run off. Landscaping and restoration construction shall be designed in such a manner that minimal future maintenance will be required.

If necessary, the CRT may require third party review by the District’s system modeling consultant to determine the effect of the proposed Work and/or demand on the District’s existing infrastructure and treatment plant capacity. The Applicant may be required to up-grade and/or modify the existing infrastructure to accommodate the development and its demand on the District’s system. Any required up-grades and/or modifications to the existing Water or Wastewater System may be at Applicant’s expense, as determined by the District. If the Applicant’s development necessitates the construction of Major Facilities, the Applicant will enter into an agreement with the District to provide funding for the design and construction of such facilities.

Once a submission item has been determined to be complete and acceptable to the CRT, a final copy shall be prepared, stamped and signed by a Registered Professional Engineer or Registered Land Surveyor, as appropriate, and submitted.

9.2.2 Determination of Corrosive Soils

The Applicant will be required to perform and provide to the District the results of a soil corrosivity test within the proposed project area, or confirmation from a licensed geotechnical engineer that corrosive soils are not known to exist in the project area. Soils shall be sampled at a frequency and locations recommended by the geotechnical engineer to adequately assess the risk of corrosive soils. Soils shall be sampled and scored based upon the methodology outlined in Appendix A of AWWA C105. If soils are determined to be corrosive, the Applicant must include an engineered mitigation plan as part of the construction plan submittal.

9.2.3 Determination of High Groundwater

The Applicant will be required to perform and provide to the District the results of a soils/geotechnical test within the proposed project area to confirm the absence or presence of high groundwater. Soils shall be sampled at a frequency and locations recommended by the
geotechnical engineer to adequately assess the presence of high groundwater. If high groundwater is proven to be present, the Applicant must include an engineered mitigation plan as part of the construction plan submittal.

9.2.4 Major Facilities

Early in the development approval process, the Applicant will present conceptual drawings and calculations to the CRT for a determination of the need for Major Facilities. Major Facilities will be determined and identified on a case-by-case basis by the District, but in general will include the following:

Table 9.1: Major Facilities

<table>
<thead>
<tr>
<th>Water</th>
<th>Wastewater</th>
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<tr>
<td>Treatment Facilities</td>
<td>Treatment Facilities</td>
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<td>Treatment Facility Expansions</td>
<td>Treatment Facility Expansions</td>
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<td>Mainline Lift Stations</td>
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<td>Supply Wells</td>
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<td>Pumping Facilities</td>
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<tr>
<td>Storage Facilities</td>
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<tr>
<td>PRVs and PRV Vaults</td>
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The Applicant will collaborate with the District to enter into an agreement for the design and construction of Major Facilities, or provision for the construction or upgrade of Major Facilities may be included in a Water Service Agreement or a Sewer Service Agreement between the District and the Applicant. The District shall provide all project management services for Major Facilities, including planning, design, and engineering of all Major Facilities; preparation of bid documents, preparation of construction cost estimates, bidding the project, awarding the contract, and managing construction to completion and throughout the warranty period. Developer shall be solely responsible for providing all of the funds necessary for planning, design, and construction of the Major Facility.

9.2.5 Special Conditions

When applying for a main extension, special conditions that involve another agency, such as crossing a railroad or highway, may exist. All conditions of the appropriate agency must be satisfied. All applicable designs, drawings and/or calculations or special conditions required by other reviewing agencies or entities of the Applicant’s project shall be incorporated into the Applicant’s submittal to the District. The District is not responsible for ensuring compliance with the requirements of other reviewing agencies. Should a conflict arise between the requirements of another reviewing agency and the District’s requirements the more stringent plans, requirements and/or specifications yielding a higher quality product, as determined in the sole discretion of the District, shall prevail.
Easement documentation shall demonstrate that the constructed Water or Wastewater Main has been field verified to be within and generally centered in, the proposed or platted easement, and that the proposed easement meets the minimum requirements set forth in Appendix C Standard Specifications for Water Mains and Appendix D, Standard Specifications for Wastewater Mains.

**Project Cost**
A copy of the contract(s) to construct and/or install all Work shall be submitted. This shall include all engineering, labor, and material costs.

**Bill of Sale**
The District’s standard Water or Wastewater Main Bill of Sale form shall be completed, notarized, and submitted to the District. An exhibit showing the Water or Wastewater Main shall be attached to the submittal. Refer to the document form in Appendix C Standard Specifications for Water Mains and/or Appendix D, Standard Specifications for Wastewater Mains.

**Operations and Maintenance Manuals**
Where applicable, the Applicant shall submit three (3) copies of the final hard cover bound Operation and Maintenance Manuals and one (1) electronic copy, incorporating any District review comments. Two (2) preliminary copies are to be submitted to the District for review and comments prior to equipment start up.

9.4.2 **Warranty Period**
The Applicant shall furnish to the District a warranty for a period of no less than two (2) years for the satisfactory repair or replacement, when required, or for the cost thereof, of all Work, material, services and equipment that may become defective as a result of faulty material(s) and/or equipment, faulty or improper installation, or improper handling of material(s) and/or equipment provided by the Applicant. For any main line extensions, the District reserves the right to, in its sole discretion, require Applicant to provide warranty and/or maintenance bonds or other appropriate security, in addition to the Applicant’s warranty ensuring repair or replacement of the Work during the Warranty Period. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced within the warranty period, the correction period with respect to such Work will be extended for an additional period of two (2) years after such correction or removal and replacement has been satisfactorily completed.

The Warranty Period shall not start until Drawings of Record, recorded easement documents, project cost documents, and Bill of Sale, have been completed, and are received and approved by the District then Construction Acceptance may be granted.

During the Warranty Period, the District will test the integrity of any telemetry and/or cathodic protection systems installed by the Applicant. Any remedial repair and subsequent testing will be completed by the Applicant and inspected by the District.
## Appendix A Other Fines and Fees

<table>
<thead>
<tr>
<th>Other Fines and Fees Description</th>
<th>Fee / Fine</th>
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<tr>
<td>Backflow Program Non-Compliance fine</td>
<td>$500.00 per violation / per month</td>
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<tr>
<td>Fire Hydrant Meter Relocation Fee</td>
<td>$84.00</td>
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<tr>
<td>Lien Fee for Unpaid Charges</td>
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<tr>
<td>Penalty Non-Compliance Fee</td>
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<td>Recording Fee</td>
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<td>Service Turn-Off Fee for Remodel or Construction</td>
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<td>System and/or Meter Tampering Fine</td>
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<td>Turn-Off and Turn-On Fee for Unpaid Charges</td>
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<tr>
<td>Unauthorized Use Fine</td>
<td>$2,000.00 per violation</td>
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<tr>
<td>Waste Hauler Discharge Annual Permit Fee</td>
<td>$200.00</td>
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<tr>
<td>Waste Hauler Discharge Fee</td>
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1.4 Purpose
These Water and Wastewater Service Construction Specifications are intended to insure 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.

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) and a Water and Wastewater Service construction plan to the District prior to any work to construct the Services.

1.6 Services and Meters
Each separately metered unit shall have a separate and independent Water and Wastewater Service Connection to the Main. Meter installation must be in strict conformance with the standard Meter installation details shown in Detail B-04. If requested by the District on a case-by-case basis, the customer shall submit a Meter Entry Diagram for review and approval along with the Connection Application prior to installation of meter. 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 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.

Joint service lines are discouraged, but if allowed, must have a recorded maintenance and ownership agreement with Eagle County or have language in the HOA Documents.
to the same effect. ERWSD is not responsible for the maintenance of private service lines.

1.9 Stub Outs

Stub outs are for the benefit of the property and are not guaranteed to exist; the location and depth 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.
2.1 Materials

2.1.1 General Requirements
The District follows, and all water service construction shall conform to, the CDPHE lead-free policy. The joining of dissimilar metals in water service lines is prohibited. No metals that may cause lead or lead leaching such as galvanized pipe are allowed.

2.1.2 Copper Tubing
Copper Water Services shall be 1", 1.5" or 2" diameter seamless Type K copper tubing in accordance with ASTM B88. Connections shall be compression in accordance with ANSI/AWWA C800 or silver soldered conforming to AMS 4773C. All shall be certified to comply with NSF/ANSI 61, NSF/ANSI 61 Annex G, and NSF/ANSI 372. No lead solder joints shall be allowed. All copper service lines must use full lengths of tubing (i.e. 100' for 1", 60' for 1.5" and 40' for 2") before a splice can be installed.

Installed Type K copper tubing shall be free of kinks, indentations, and damaged areas. Any damaged copper tubing or fittings may be rejected by the District Inspector.

An appropriate size gooseneck shall be made in the Water Service at the corporation valve to prevent the Service from being pulled from the Water Main during backfill and compaction operations.

2.1.3 Polyethylene Tubing (PE)
Polyethylene tubing used for water services shall meet the requirements of AWWA C901, shall be PE4710 high density resin material and conform to ASTM 2737 standards listed for water service pipe in the latest edition of the IPC. All joints shall be brass compression grip ring type with stainless steel inserts or fused. Polyethylene tubing shall have a pressure rating of 250 psi. All polyethylene service lines must use full lengths of tubing (i.e. 300' for 1", 250' for 1.5" and 200' for 2") before a splice can be installed. Pipe dimensions shall meet Copper Tubing Size (CTS) standards.

A tracer wire, 10-gauge, shall be taped to the Water Service at every two (2) feet from the corporation valve to the inside of the structure, that is brought up to the surface at the Curb Stop valve. Wire connections shall be wax taped for corrosion protection.

All Water Services between the corporation valve and the Curb Stop valve shall be constructed of Type K copper in accordance with 3.1.2.
2.1.4 Ductile Iron Pipe (DIP)
Water services greater than or equal to four (4) inches in diameter are to be constructed of ductile iron pipe, AWWA Class 52, with a pressure rating of 350 psi. Services to be constructed of ductile iron pipe must be designed by a licensed engineer and construction plans must be submitted to the District for approval.

A tracer wire, 10-gauge, shall be taped to the Water Service at every two (2) feet from the water main to the Curb Stop valve. Wire connections shall be wax taped for corrosion protection. Refer to detail B-02.

2.1.5 Corporation Stops
Corporation stops shall be constructed of all brass construction with threaded taper or IP thread inlet and grip compression connection out in accordance with ANSI/AWWA C800 and conform to ASTM B584, UNS C89833 (latest revision). Corporation stops shall be Mueller 300 Ball Type Corporation Valve, Catalog Number B-25008N or B25028N or approved equal.

2.1.6 Curb Stops
Curb stops shall be of all brass construction with compression connections for inlet and outlet in accordance with ANSI/AWWA C800 and conform to ASTM B584, UNS C89833 (latest revision). Curb stops shall be Mueller 300 Ball Curb Valve No. B25209N, or approved equal. For service lines buried at a depth greater than nine and a half (9.5) feet, an extension rod must be placed on the curb stop.

2.1.7 Curb Boxes
Curb boxes shall be cast iron in accordance with ASTM A 48, Class 35B. For curb stops up to 1", curb boxes shall be Mueller H10314 with 89982 lid and stationary rod, part number 828- series, depending on final bury depth. For curb stops larger than 1", the curb boxes shall be Mueller H10336 with 89982 lid.

2.1.8 Saddles
Tapping saddles shall be Mueller BR2S or BR2W, AWWA C800, brass body, 200 psi maximum working pressure, double strap design, with optional 304L stainless steel straps.

2.2 Service Line Design
The alignment of the Water Service shall take the shortest, most direct route from the Water Main to the Water Meter.
2.3 Separation of Services

2.3.1 Horizontal Separation Required
A horizontal separation of ten (10) feet must be maintained between parallel Water and Wastewater Services. Water and Wastewater Services shall not cross.

![Diagram of horizontal separation](image1)

2.3.2 Horizontal Separation Exception
In cases where it is not practical to maintain a ten foot (10’) separation, the District may allow installation of the sewer pipe closer to a water pipe utilizing encasement or pressure rated joints, provided that the water pipe is on a separate trench or on an undisturbed earth shelf located on one side of the pipe and at an elevation so the bottom of the water pipe is at least eighteen inches (18’) above the top of the sewer pipe.

![Diagram of horizontal separation exception](image2)
2.3.3 Vertical Separation Required - Sewer under Water
If the sewer service crosses under a water main but less than eighteen inches (18") of clear space will exist, the sewer service must be installed with secondary containment. Acceptable options include a pipe casing, concrete, or Controlled Low Strength Material (ex. Flowable fill) extending ten feet each side of the crossing. Crossings involving joint less pipe such as HDPE or copper do not require installation of secondary containment.

2.3.4 Vertical Separation Exception - Water under Sewer
If the sewer service must cross above or over a water main, the sewer service shall be installed with secondary containment unless the vertical distance exceeds five feet (5’). Acceptable options include a pipe casing, concrete, or Controlled Low Strength Material (ex. Flowable fill) extending ten feet each side of the crossing. Crossings involving joint less pipe such as HDPE or copper do not require installation of secondary containment.

2.4 Depth of Bury
Water Services shall be buried a minimum of seven (7) feet and a maximum of nine and a half (9.5) feet below the ground surface.

2.4.1 Service Insulation Requirements
For every foot of cover that is out of compliance with minimum cover requirements for mains, the District shall require the installation of 1-inch of insulation board, minimum 2’
insulation required. Insulation will be in accordance with ASTM C578-Type V Standard Specification for Rigid Cellular Polystyrene Thermal Insulation. Compressive Strength 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
Tracer wire shall be #10 AWG 0.1019” diameter copper conductor or copper clad steel insulated with a 30 mil, high-density, high molecular weight polyethylene (HDPE) insulation, blue in color, and rated for direct burial use at 30 volts. Tracer wire is required to be installed from the point of connection to the system to the inside of the structure served. In cases of a new tap installation at the main, the tracer wire is required to be connected to the mainline tracer wire or cad-welded to the main itself when no mainline tracer wire is present and the main is of DIP construction. Wire connections are required to use direct bury wire connectors – which include two and three way lockable connectors or a three way lug connector specifically manufactured for use in underground tracer wire installation. Connectors will be dielectric silicon-filled to seal out moisture and corrosion, and will be installed in a manner so as to prevent any uninsulated wire exposure. Locking friction fit, twist on or taped connectors are prohibited. Refer to detail B-01 and B-02.

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

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 larger than or equal to 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 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. 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 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-04 for a schematic of the approved meter assemblies.

**2.11.1 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.
2.11.2 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.

2.11.3 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-04.

2.11.4 Backflow Prevention Devices

Backflow prevention devices are required on all Water Services. Refer to Appendix G of these Rules and Regulations for Backflow Prevention regulations.

2.11.5 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 2.13. 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.
(c) Clean Outs should be installed every 100 feet, at every change of direction 45 degrees or greater, and a maximum of three (3) feet from the face of the building.

(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.

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 Connections, and Requirements for Inspection

3.7.1 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. 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.

3.7.2 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.

3.8 Stub Out Abandonment

If a Stub Out 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 exfiltration 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.

3.9 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.

3.10 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.
GENERAL NOTES

1. THE METER VAULT MUST BE 8' FEET IN DEPTH AND 4' FEET MINIMUM IN WIDTH. IT MUST HAVE 1' FOOT OF 3/4" SCREENED ROCK IN THE BOTTOM OF THE VAULT. MANHOLE AND APPURtenANCES SHALL MEET ALL REQUIREMENTS IN APPENDIX C, 3.7.

2. ALL COMPONENTS SHALL BE INSTALLED PER DISTRICT STANDARD SPECIFICATIONS. BACKFLOW PREVENTION DEVICE SHALL DRAIN TO DAIyGUT WHEN APPLICABLE.

3. THE METER MUST BE MOUNTED HORIZONTALLY. THE REMOTE WIRES MUST BE RUN FROM THE METER TO AN OBJECT OUTSIDE THE VAULT (IE: 4"X4" POST, BUILDING, POLE, ECT.).

4. VAULT SHALL BE PRECAST CONCRETE AND CAPABLE OF WITHSTANDING HS 20-44 TRAFFIC LOADING CONDITIONS, IF LOCATION WARRANTS.

5. WHERE PIPES PENERATE WALLS, USE LINK SEAL OR FILL ANNULAR SPACE WITH NON SHRINK GROUT.

6. CONTRACTOR SHALL SUBMIT VAULT PIPING SCHEMATIC WITH VAULT DIMENSIONS TO DISTRICT PRIOR TO ORDERING MATERIALS OR EQUIPMENT.

7. ALL INSTALLATIONS MUST BE INSPECTED AND APPROVED BY DISTRICT PERSONNEL PRIOR TO BACKFILLING.

8. THIS DETAIL IS APPLICABLE FOR SERVICE LINES SIZES 2" AND UNDER. METER VAULTS FOR 3" AND LARGER SERVICE LINES MUST BE APPROVED BY THE DISTRICT'S CONSTRUCTION REVIEW TEAM PRIOR TO CONSTRUCTION.

9. MULTI-FAMILY, MIXED USE, AND COMMERCIAL METER ASSEMBLIES GREATER THAN 1.5" REQUIRE THE INSTALLATION OF A BYPASS LINE. REFER TO SHEET B-04.
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 Requirements for Main Installations

All mains shall be installed in dedicated public street right-of-ways or dedicated water line easements. 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 horizontal 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, right-of-ways, 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.
2.6.3 Line Valves

Line valves are required at a minimum of every one thousand (1,000) feet. Additional valves, subject to District approval, are required to further isolate the system at all main branches, and at other locations as determined by the District for operation of the water system. A smaller diameter bypass line and valve may be required to facilitate large diameter valve opening in high pressure applications, as determined on a case-by-case basis. The applicant shall identify all locations on their submittal where line diameters exceed 12” and static pressures exceed 100psi. The District will then determine the appropriate desired solution (valve type and/or bypass).

2.6.4 Joint Restraint

Water mains require the use of joint restraints such as thrust blocks and mechanical joint restraints. Mechanical joint restraints shall be used in conjunction with all thrust block installations. Thrust blocks may be eliminated at the District’s discretion on a case-by-case basis if joint restraints and restrained pipe lengths have been calculated by a Registered Professional Engineer. When water mains are installed in a fill condition rather than in undisturbed earth, mechanical joint restraints shall be required at all pipe connections.

All thrust blocks shall be constructed per the District’s Concrete Thrust Block details C-03, C-04, and C-05 and Material Specification 3.6. Submitted construction drawings shall identify all thrust blocks with specific station numbers (at valves, fire hydrants, bends & where required). All thrust blocks shall be inspected and approved by the District Inspector prior to backfill.

2.6.5 Groundwater Barriers

Groundwater barriers may be required in areas where the groundwater table is encountered. The contractor shall notify the Engineer and District Inspector immediately if groundwater is encountered in an excavation.

2.6.6 Depth of Bury

The depth of cover for water lines shall be a minimum of seven feet (7’) and a maximum of nine feet six inches (9’-6”) from finish grade to the top of the water line. Any water main that is outside of the required depth of bury must have an approved variance. Under no circumstances may a water main be buried with less than five feet (5’) of cover.

Profiles of water lines shall be submitted in accordance with Article IX.

2.6.7 Location Tape

All lines connected to District mains in any way shall be marked with the appropriate locating tape per Section 3.5.
2.6.8 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, chlorinated, bacteria tested and accepted. Valve stacks on abandoned lines shall be completely removed and backfilled.

2.6.9 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 Table C-1, 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.

<table>
<thead>
<tr>
<th>Normal Pipe Size (in.)</th>
<th>Deflection Angle (deg.)</th>
<th>Max. Offset (inches)</th>
<th>Approximate Radius of Curve Produced by Succession of Joints (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>L = 18’</td>
<td>L = 20’</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>19</td>
<td>21</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
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<td>11</td>
<td>12</td>
</tr>
<tr>
<td>24</td>
<td>3</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

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

2.6.10 Tees/Crosses

All perpendicular main to main connections shall be made by cutting in a tee or cross. Tees and crosses shall be clearly indicated on the plans, and valves shall be installed on each leg. Wet taps shall not be permitted for mainline extensions. Refer to Appendix B for service line connection requirements.
2.6.11 Pressure Reducing Valve Vaults

All pressure reducing valve vaults shall be located out of the roadway, but within the right-of-way or an adjacent utility easement.

2.6.12 Main Insulation Requirements

For every foot of cover that is out of compliance with minimum cover requirements for mains, the District will require the installation of 1-inch of insulation board per Appendix E Section 1.14. In addition to maintaining cover from the ground surface, specified cover is required from storm sewer crossings and other cold air sources.

2.6.13 Air Vac Vaults

At all high points in the distribution system, a combination air vacuum and air release valve shall be installed on the main in a minimum five foot (5’) diameter manhole. A high point is considered to be one pipe diameter in grade differential.

2.6.14 Minimum Distance from Structures

All main extensions shall be installed at a minimum distance of ten feet (10’) from all structures or at a one foot horizontal to one foot vertical (1:1) ratio from the bottom of any structural element, whichever is greater. Encroachments of structures into easements are discouraged and shall only be allowed by written authorization from the District.

2.6.15 Encased Piping

If required by the District, CDPHE regulations, or other governing body, water mains may need to be installed in a casing pipe. Refer to Appendix D, 2.5.3 for pipe crossings. Materials and installation of water mains in casing pipes shall be in conformance with Section 3.8.

2.7 Operating Pressures

Water system materials shall be specified for an operating pressure of 250 psi. The distribution system shall be designed such that the minimum operating pressure at any tap shall be 60 psi and the maximum operating pressure shall not exceed 190 psi.

2.8 Protection of Potable Water Supplies

Please refer to Appendix D, Section 2.5 for design criteria relative to water main installation in proximity to sanitary sewer infrastructure.
SECTION III – MATERIAL SPECIFICATIONS

3.1 General Requirements

All materials shall conform to the District's Specifications. Material substitutions may be considered on a case-by-case basis. Written approval is required prior to furnishing. Applicant must submit shop drawings and specifications for substituted materials considered ‘or equal’ for review and approval prior to the preconstruction conference. A bill of materials shall be furnished to the District Inspector at the preconstruction conference.

All materials utilized shall be new and undamaged. Everything necessary to complete all installations shall be in accordance with the Specifications and all installations shall be completed as fully operable functioning parts of the District's system. Acceptance of materials, or the waiving of inspection thereof, shall in no way relieve the Applicant of the responsibility for furnishing materials meeting the requirements of the Specifications.

3.2 Pipe and Fittings

All pipe and fittings used in the District's System shall meet or exceed the latest AWWA Specifications and follow the guideline lines set forth below. All pipes shall have factory-applied end caps during transportation and storage.

3.2.1 Ductile Iron Pipe

AWWA C151, class 52, working pressure 350 psi, with bituminous outside coating (one-mil thick) and cement-mortar lining per AWWA C104. Pipe joints shall be push-on type utilizing rubber ring gasket in accordance with AWWA C111. Pipe shall be supplied with copper bonding straps and mechanical attachment. A Number 4 conductor and Cad-Welds (charge size CA 45) or the manufacturers' supplied strap shall be used to bond each joint and fitting. Certain conditions may require the use of restrained joint systems. Restrainted joint systems will be reviewed on a case-by-case basis and must conform to Section 3.2.6, Joint Restraint Devices.

3.2.2 Steel Pipe

With recommendation from an engineer, and approved by the District, this pipe may be used as an alternative in high pressure applications. All steel pipe and fittings shall be fabricated in accordance with AWWA C200 Standard for Steel Water Pipe-eight inches (8") and larger; and AWWA Manual M-11 Steel Pipe- A Guide for Design & Installation. Working pressure shall be 350 psi.

All material used shall be acceptable under ASTM A283 Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates of Structural Quality, or ASTM A36 Standard Specifications for Carbon Structural Steel.
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-2360, Waterous AFC-2500, or AVK Series 45. Valves shall have 2-inch operating nut with stem seal consisting of two O-rings.

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 6850 or 6860, D&L M-9042 (with an M-9071-73 Extension), or East Jordan 8560. All buried valves shall be provided with a six-inch (6") cast iron (ASTM A48, Class 35B) valve box, 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 five (5’) foot diameter manhole is required for this installation. High Groundwater Manholes are required in all areas of high groundwater. (See Combination Air Valve/Vac and Manhole Details C-01 and C-02).

### 3.3.4 Butterfly Valves

Butterfly valves may be permitted on line sizes 12” or larger on a case by case basis with approval from the District. All butterfly valves shall comply with AWWA C504 class 250B. Valve bodies shall be constructed of ductile iron in accordance with ASTM A126, Class B
(d) Water: Water used in mixing or curing concrete shall be potable water, clean and free from deleterious substances, and free of oils, acids and organic matter.

(e) Concrete reinforcement: Steel reinforcing bars shall be in accordance with ASTM A 615, Grade 60.

3.6.3 Concrete Mix

Ready-mixed concrete shall be CDOT Class B or D, proportioned, mixed, and transported in accordance with ASTM C94. Any concrete not plastic and workable when it reaches the project shall be rejected.

Job mixed concrete shall be thoroughly mixed to combine aggregates, cement, and water into a uniform mass. and shall contain approximately 5 ½ sacks of Type II Portland cement per cubic yard and have a 28-day compressive strength of not less than 4000 psi when molded and cured in accordance with ASTM C 31. Maximum water/cement ratio 0.45-0.48. Maximum aggregate size ¾", air content 5-7%, maximum 4" slump.

3.6.4 Form material

Forms may be made of wood (3/8" plywood) or other acceptable materials approved by the District. Wooden forms shall be thoroughly wetted except in freezing weather or a form release agent applied.

3.7 Precast Concrete Manholes and Vaults

3.7.1 General Requirements

Concrete: Minimum 28 day strength of 4,500 psi with a minimum of 560 pounds of Type II Portland Cement (ASTM C150) per cubic yard of concrete, 3/4 inch maximum size aggregate #67 (ASTM C33) and a water cement ratio not to exceed 0.48. Water in accordance with the requirements of ASTM C 94. Admixtures that do not contain calcium chloride and are in accordance with ASTM C 494 for concrete may be used. Admixtures shall be compatible with cement and other admixtures.

Concrete reinforcement: Steel reinforcing bars in accordance with ASTM A 615, Grade 60.

3.7.2 Manholes

Concrete, base, riser, conical top sections, flat slab tops, grade rings, and joint sealants between manhole sections shall all be in accordance with ASTM C 478. All concrete manhole components shall be precast, unless approved by the District. The minimum wall thickness shall be 5 inches. High Groundwater Manholes are required in all areas of high groundwater. (See Combination Air Valve/Vac and Manhole Details C-01 and C-02). In saturated or “wet areas” a bitumastic coating, or approved equal waterproofing material, shall be applied to the exterior of the manhole.
SECTION V – TESTING AND ACCEPTANCE

5.1 General Requirements

The following procedures shall apply to all main extensions within the District service area. Pipe extensions shall be chlorinated in accordance with AWWA C600 and C651 Standard for Disinfecting Water Mains, most recent version.

Immediately after main line installation, the Contractor, in the presence of a District inspector, shall conduct a High Chlorine Test, a Low Chlorine Test, two Bacteriological Tests twenty four (24) hours apart, and then a pressure test of the main line to ensure that the line is not leaking. No more than 1,000 feet of line shall be tested at one time. If it is discovered that the main line is leaking, it shall be the responsibility of the Applicant to make all necessary repairs and retest the main line. No tap shall be made on to the main line until Construction Acceptance has been granted for the main.

The specific tests required by the District are listed on the "Water System Acceptance Procedure Form". The form is available in Section VII.

Before the end of the TWO-YEAR (2) warranty period, the District will sound, an acoustical method of leak detection, the main line at working pressure to ensure that the main line is not leaking. The cost of this testing will be borne by the District. If it is discovered that the main line is leaking, it will be the responsibility of the Applicant to make all necessary repairs and retest the main line and services to the curb stops in the presence of a District Inspector.

5.2 Tracer Wire Testing

All new trace wire installations shall be located using typical low frequency (512Hz) line tracing equipment, witnessed by the contractor, engineer and facility owner as applicable, prior to acceptance of ownership. This verification shall be performed upon completion of rough grading and again prior to final acceptance of the project. Continuity testing in lieu of actual line tracing shall not be accepted.

5.3 Disinfection

Disinfecting by chlorination of the pipe shall be performed prior to acceptance by the District. Before beginning the disinfection process, the pipe shall be clean and free of debris to the satisfaction of the District. The chlorinating agent, and method of application, shall be in accordance with AWWA C651. The Contractor shall provide all material for disinfecting of water mains.

Calcium hypochlorite granules shall be placed at the upstream end of the first section of pipe, at the upstream end of each branch main, and at 500-foot intervals. The quantity of granules shall be as shown in the table below.

The District does not allow the use of calcium hypochlorite tablets due to the cold water and the time it takes to completely dissolve the tablets.
5.5 Acceptance of Mains and Release for Taps

A new main shall be accepted by the District and released for taps when Construction Acceptance has been achieved. Construction Acceptance procedures and requirements are detailed in the Rules and Regulations, Article IX.

5.6 Vacuum Testing of High Groundwater Air Vac Vaults

Manhole vacuum testing shall be required on all high groundwater air vac vaults. Refer to Appendix D, Section 5.3.1
the flow at a depth of flow no greater than 3/4 of the inside diameter of the pipe (depth/Diameter not to exceed 0.75).

Hydraulic design shall be based upon a Manning’s Formula, using a Roughness Coefficient or ‘n’ value of 0.013. All mains shall be designed to give mean velocities, when flowing full, 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).

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 Requirements for Main Installations

All mains shall be installed in dedicated public street right-of-ways or dedicated sewer line easements. 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.

2.4.2 Minimum Size

All mains shall be a minimum of eight inches (8") in diameter. All sewer service lines shall be a minimum of four inches (4") in diameter, Refer to Appendix B for Wastewater Service Line Construction Specifications.

2.4.3 Depth of Bury

In general, mains are to be sufficiently deep to receive wastewater from basements and to prevent freezing. The minimum cover above a main shall be four feet six inches (4’-6"). For every foot of cover that is out of compliance with minimum cover requirements, the District will require the installation of 1-inch of insulation board per Appendix E Section 1.14. In addition to maintaining cover from the ground surface, specified cover is required from storm sewer crossings and other cold air sources. Additional depth may be required to allow for adequate cover on service lines. The Applicant shall demonstrate that the pipe materials are suitable for the proposed depth of installation. Any main installation greater than ten feet (10’) shall require an increased wall thickness. Any proposed main installation greater than 14 feet (14’) shall require an alternatives analysis submittal and District approval.

The maximum depth for a sewer manhole is fourteen feet (14’) and shall be measured from the top of rim to the downstream invert. Any proposed applications with manholes
2.4.4 Main Insulation Requirements
For every foot of cover that is out of compliance with minimum cover requirements, the District will require the installation of 1-inch of insulation board per Appendix E Section 1.14. In addition to maintaining cover from the ground surface, specified cover is required from storm sewer crossings and other cold air sources.

2.4.5 Minimum Distance from Structures
All main extensions shall be installed at a minimum distance of ten feet (10') from all structures or at a one foot horizontal to one foot vertical (1:1) ratio from the bottom of any structural element, whichever is greater. Encroachments of structures into easements are discouraged and shall only be allowed by written authorization from the District.

2.4.6 Installations in High Groundwater
Installations in areas of high groundwater, as determined in the soils/geotechnical report, may require the following special provisions and evaluated on a case-by-case basis:
   (a) Groundwater barriers, in order to prevent transmission of groundwater along the pipe bedding (See Standard Detail D-07).
   (b) Use of C-900 or Yelomine pressure rated piping and joints
   (c) Engineered design to prevent floatation of the main due to buoyant forces
   (d) High groundwater manholes as identified in 3.3.2

2.5 Slope of Sewer Mains

2.5.1 Minimum Slopes
All sewer shall be designed and constructed to give mean velocities, when flowing full, of 2.0 feet per second or greater, based on Manning's formula using an “n” value of 0.013. The following are the required minimum slopes for sewer mains 42 inches or less. However, slopes greater than these are desirable. If proposed slopes that are at or near the specified minimum, the District may require an increased slope to control sewer gases and/or to maintain self-cleaning velocities. See Table D-1 Minimum and Maximum Sewer Main Slopes.

2.5.2 Maximum Slopes
The maximum slope allowable in pipeline design will be based upon 10 feet per second maximum velocity. Lined pipes may be able to resist scour at high velocities, however, undue turbulence can become an over-riding design consideration as unacceptable
levels of odors may be produced from hydrogen sulfide generation. See Table D-1 Minimum and Maximum Sewer Main Slopes.

<table>
<thead>
<tr>
<th>Pipe Diameter (Inches)</th>
<th>Minimum Slope (Feet per 100 linear feet)</th>
<th>Maximum Slope (Feet per 100 linear feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 inches</td>
<td>0.70</td>
<td>6.48</td>
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<td>42 inches</td>
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### 2.5.3 Slope between Manholes

A continuous slope shall be maintained on main installations between manholes. Manholes are required at every slope change of the main.

### 2.5.4 Steep Slope Applications

Steep slope applications with mains longer than 100 feet (100') are required to install a bar screen manhole at the top of the slope per Detail D-03. Grade breaks shall not be permitted in manholes in excess of ten percent (10%) at the bottom of steep slope applications. Mains shall be anchored securely to the manhole and installed with restrained joint connections per Detail D-04. Sewer mains with slopes of twenty percent (20%) or greater shall require restrained joints to be designed by the Engineer.
3.2.3  **Ductile Iron Pipe (DIP)**

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

3.2.4  **Service Line Taps**

Factory wyes shall be used for all service line connections with new main installations. See Appendix B for requirements for new service line connections to existing mains.

3.2.5  **Transition Adapter**

If permitted on a case-by-case basis, Harco transition adapters or Shear Guard couplers may be used for pipe material transitions with prior approval. Fernco couplers shall not be permitted.

3.3  **Manholes**

3.3.1  **Manhole**

Manhole sections, base, riser, conical top sections, flat slab tops, and joint sealants between manhole sections shall be in accordance with ASTM C 478. Concrete used in cast in place-manhole bases shall be per Section 3.3.10. All cone sections shall be the eccentric type. Openings through manhole risers shall be cored or cast-in, and access opening shall be twenty four-inch (24") diameter. Flat lid slabs are required on manholes with a depth of less than five feet (5’) and must be eccentric.

3.3.2  **Water Tightness**

Manholes shall be watertight and constructed of precast concrete. Barrel sections, cones and frame joints shall all be sealed with a double Rub R Nek, or other equivalent material approved by the District. In areas of high groundwater or otherwise required by the District, a bituminous coating, or approved equal waterproofing material, shall be applied to the exterior of the manhole. Manhole vacuum testing shall be required by the District on all manholes in all areas of high groundwater.

3.3.3  **Rings and Covers**

Manhole rings and covers shall be heavy duty castings ASTM A 536 or gray cast iron per ASTM A 48 and all components shall be traffic rated to AASHTO HS-20. Ring and cover combined weight shall be greater than 245 pounds and machined to fit securely with a non-rocking cover. Manhole covers shall be twenty-four inch (24”) in diameter and have a minimum of twenty-two and one-eighth inches (22-1/8") diameter clearance, have a waffle pattern with a flat lid and the lettering "SEWER" cast on the cover. Covers
For installations in cast-in-place bases (upon approval and on existing mains only), all pipe-to-manhole connections shall use two elastomeric Kor-N-Seal, or approved equal, “O”-ring water stops minimum per ASTM F477.

### 3.3.8 Flow Channel
The flow channel straight through a manhole should be made to conform as closely as possible in shape and slope to that of the connecting mains and shall have two tenths of a foot (0.2’) minimum fall through the channel for a standard manhole. Channel depth and width shall equal the largest pipe diameter. The channel walls should be formed or shaped to the full height of the crown of the outlet main in such a manner as to not obstruct maintenance, inspection or flow in the sewers.

### 3.3.9 Bench
All manholes shall be constructed with a full bench configuration, in which the top of the invert channel walls shall match the crown of pipe elevation. The horizontal bench surface shall be sloped at a minimum of one-half inch (½”) per foot, maximum of one inch (1”) per foot with a medium broomed finish, perpendicular to the main direction of flow.

### 3.3.10 Manhole Base
The foundation for each manhole base shall be prepared by replacing unsuitable material with sub grade stabilization material in accordance with Appendix E-Earthwork.

The manhole base shall be precast (in accordance with ASTM C478) unless the manhole ties into an existing main, in which case a cast-in-place base may be used. The invert shall be formed and smoothly finished to match the shape and elevation of all pipes connected to the manhole. Where the sewer line is designed with a continuous grade through the manhole, the pipe shall be laid through the manhole location, the top half of the pipe cut out and the manhole base formed around the bottom half of the pipe.

All concrete used in construction of cast-in-place manholes and bases shall be CDOT Class D. Concrete reinforcement shall be epoxy-coated steel reinforcing bars in accordance with ASTM A-615, Grade 60. In instances where a manhole ties into an existing main and a cast-in-place base is used, the first pre-cast manhole section shall be placed on the concrete base structure before the base has taken initial set, or the section shall be grouted into a suitable groove formed in the top of the manhole base. The first section shall be adjusted to the proper grade and alignment so that it is uniformly supported by the base concrete and not bearing on any of the pipes. The manhole steps shall be located one-foot left or right of the main inflow pipe.
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.

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 stubouts. 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:
5.3 Manhole Testing – General Requirements

Manhole vacuum testing shall be required by the District on all manholes in all areas of high groundwater. Manholes shall be tested via the vacuum test per ASTM C1244, “Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) prior to backfill.

5.3.1 Manhole Testing Procedure

(a) Plug all inlets and outlets.

(b) Install the vacuum tester head assembly on the manhole.

(c) Attach the vacuum pump assembly to the proper connection on the test head assembly. Make sure the vacuum inlet/outlet valve is in the closed position.

(d) Inflate the sealing element to twice the test pressure to be used. Do not over inflate.

(e) Start the vacuum pump assembly engine and allow preset RPMs to stabilize.

(f) Open the inlet/outlet ball valve and evacuate the manhole to ten-inch (10") Hg (mercury) that is equivalent to approximately 5 PSIG (0.3 bar) backpressure.

(g) Close the vacuum inlet/outlet ball valve, disconnect the vacuum pump and monitor the vacuum for one (1) minute.

(h) Allowable leakage - less than one-inch (1") Mercury (Hg) in one (1) minute.

(i) All manholes that do not meet the minimum amount for the leakage rests must be repaired and re-tested.
constructed main line from entering the District's system. The plug shall be normally set on the downstream outlet of the manhole. Plugs shall be installed per the direction of the District's Inspector. The plug shall be a mechanical-type device and is to be secured to the existing manhole to prevent loss of plug. The plug shall not be removed until Construction Acceptance has occurred.

The Contractor shall be required to make routine inspections of the mechanical plug to insure that no leaking is occurring. If a leak is found, the Contractor shall immediately notify the District and take corrective action.

The District may perform a video inspection of existing sewer mains that could potentially be impacted by construction activities prior to the start of construction and after the completion of construction. Any damage to existing facilities caused by the Contractor shall be repaired at the Contractor's expense.

5.7 Manhole Abandonment

Manholes to be abandoned in place shall have all pipes entering or exiting the structure plugged with lean concrete or controlled low strength material backfill (Flo-Fill). For manholes with existing pipes too large to plug with fill, a bulkhead shall be constructed on the inside of the manhole to prevent the fill from entering the pipes.

Manhole tops or cone section shall be removed to the top of the full barrel diameter section or to a point not less than eighteen (18) inches below final grade. The structure shall then be backfilled with lean concrete or Flo-Fill. Surface restoration shall be completed to match the surrounding areas.
import. In areas where groundwater may be present, the use of screened rock for bedding is prohibited.

Flow-fill, as specified by CDOT 2011 Standard Specifications, Section 206.02 & 206.03, may be used as bedding with District approval. Compressive strength at 28 days: 50 to 150 psi when molded and cured in accordance with ASTM D 4832.

The maximum particle size of pipe bedding should generally not exceed 1-1/2 (one & a half) inches or 10 percent of the nominal pipe diameter, whichever is less. Bedding for small pipe such as service lines should generally have a maximum particle size not exceeding 3/8 inch.

Additional Requirements:
(a) All bedding materials shall be free of topsoil, organic materials, asphalt, frozen matter, debris, or other deleterious materials.
(b) Backfilling shall be conducted in a continuous manner to prevent damage to the pipe and its coating and kept as close to the pipe laying operation as possible.
(c) Materials not meeting these requirements shall be used only with prior written approval of the District.

In specific areas, such as where access is extremely limited, the use of on-site materials may be allowed, and, when used, must be on-site 1 1/2 inches minus well-graded screened material, free from organic materials, chunks of soil, frozen material, debris, or other suitable materials. Use of on-site bedding material must have prior written District approval.

1.14 Insulation Board

Insulation shall, where required, be in accordance with ASTM C578-Type V Standard Specification for Rigid Cellular Polystyrene Thermal Insulation. Compressive Strength shall be 100 psi minimum per ASTM D1621. Water Absorption, ASTM C272, 0.3% by volume, maximum. DOW STYROFOAM™ HIGHLOAD 100, OWENS CORNING FOAMULAR 1000 or approved equal. 1” of insulation board may be substituted for each 1’ of soil cover required to meet the minimum cover requirement, minimum 2” insulation required.

1.15 Pipe Zone Backfill and Compaction

After completion of the trench excavation and proper preparation of the foundation, six inches (6”) of bedding material (per Section E 1.12) shall be placed on the trench.
February 22, 2019

Slopeside Construction Inc
2121 N Frontage Rd W, PMB 206
Vail, CO 81657
970-476-5444
mike.dantas67@gmail.com

Eagle River Water & Sanitation District

RE: Future "Y" Connections

Dear Linn Brooks,

Currently, local towns in Eagle County, require all utilities to be stubbed to the lot in order to meet subdivision requirements. In many cases, in Vail particularly, these subdivisions have happened without utilities being run to the property. As Eagle River Water & Sanitation District (ERWSD) oversees the water & sewer connections, the easiest, least costly solutions should be considered first. A "Y" connection has been used as long as ERWSD has been in operation. In my opinion there is no need to make new regulations outlawing the "Y" connections for future development.

In the past, poor installations were performed and then approved by ERWSD, and also approved by other water departments that ERWSD has acquired/represent. The one major installation that comes to mind is 5080 Wildridge Rd E, Avon, CO. It was built in the early 90's (I believe 1991) and the Town of Avon Water Department performed the water & sewer installation inspection and then approved these installations. There was an existing water tap that was utilized for 5080 Wildridge Rd E. Sometime after 2004 the duplex to the west of 5080 Wildridge Rd E was built, 5070 Wildridge Rd E A&B. I'm not sure how, but the new property was allowed to dig up 5080 Wildridge Rd water tap and cut off service to that property. At that point in time, the 5080 tap was used for 5070 A&B, with a "Y" connection. To this day 5080 Wildridge Rd E does not have water service. The owner pays his water & sewer bill monthly. What was done was wrong and is unacceptable. The new duplex at 5070 Wildridge Rd E should have dug to the main water line providing water service to this new duplex. ERWSD states that they are not responsible to provide taps.

ERWSD is trying to fix what has happened in the past. The past should be handled in a case by case situation. The future should be handled by ERWSD keeping better records. In order to do this here are some suggestions:

1. I believe that the field drawings should be more professional. After the field person has done the drawings, that person should coordinate with someone else at ERWSD to produce a final, legible, clear, correct drawing. The more information on these drawings, the better reference for the future. This information should be available to all. Making this information available to those in the field, doing the digging, will allow them to know what is in the ground.
2. Since Global Positioning System (GPS) is available and ERWSD has this capability, all new lines should use GPS upon installation.
3. All new sewer & water lines should have tracer wires installed.
4. Per ERWSD 7.2 Variance - “Cost or inconvenience should not be considered in granting a variance.” This variance requirement should be removed from ERWSD variance criteria. Cost and inconvenience are always factors. For example, if a main line is on the other side of the street from a project, the choice would be to either dig up the entire street, or dig on either side of the street and shoot a hydraulic missile underground between the two holes. The cost and inconvenience are both factors in this example. **Cost and inconvenience always matter.**

5. Construction Review Committee (CRT) at ERWSD needs to be a more welcoming group. The contractors and outside people should be welcomed at the meetings. What I see is that only two people drive the results of CRT.

6. CRT needs to remember that the people on the other side of the table are the customers.

Also, in speaking of water & sewer lines, I'd like to point out the following:

1. Usually when there are 3 or more units, there is only one water & sewer tap.
2. Four Seasons Hotel in Vail, while having multiple units, only has one water & sewer tap.
3. The Ritz in Vail, while having multiple units, only has one water & sewer tap.

I point this out as I wonder how a building with more than 50 units can be allowed to have just one tap. I understand that it would be ridiculous to have 50+ taps, but how do they get away with only one, when ERWSD is possibly requiring that a duplex has 2 taps?

In conclusion, “Y” connections should be allowed to continue.

Please let me know when I need to be present for the next “Y” connection meeting.

Thank you for your time,

Mike Dantas  
Slopeside Construction Inc

Enclosures: 3 field drawings dating from 2001 to 11/2018.
WORK ORDER REQUEST

DATE ISSUED: 6-7-00

DESCRIPTION OF WORK TO BE PERFORMED: 1" Water Tap & 1" Sewer Taps

REQUESTED BY: Rex Boss

ISSUED TO: Alpine

ISSUED BY: Sean

DISTRICT: Vail

1870 Alpine Dr. W

June 7, 2001
No Foundation was installed
At time of inspection
Entry Points into home were given by Contractor

3 M Marker Exists

Edge of Road

Saddle Ridge Loop

Water Was
2019 Rules and Regulations Revisions Justification

It has been recommended by staff for 2019 that joint water and sewer service lines be disallowed. In the past joint service lines have been allowed with a recorded joint service line document at Eagle County, but the decision to make changes to the joint service line language was based upon problems that customers have had, research into other districts and municipality practices and what staff considers to be best management practices. With joint service lines, the liability shifts from the Developer or Builder to the District or the property owner. The revision can be found in Appendix B 1.8 Joint Service Lines and is outlined below.

Current Language: Joint service lines are discouraged, but if allowed, must have a recorded maintenance and ownership agreement with Eagle County or have language in the HOA Documents to the same effect. ERWSD is not responsible for the maintenance of private service lines.

Proposed Language: Joint water or wastewater service lines are prohibited.

Although the District believes that there are numerous instances of joint service lines throughout the system, below are some examples of recent and known properties with joint sewer service lines that have created problems for one or more customers due to backups:

- 2516 Arosa Drive Vail
- 1992 Chamonix Ln Vail
- 187 Old County Lane Edwards

Staff conducted a review of requirements in other areas including the Western Slope and the Front Range and found a broad range of approaches for dealing with joint service lines including the requirement to have a recorded agreement to denying them altogether.

Concerns related to joint water services include very high velocities between the main and the Wye in the line. This section of the service line is District owned and the high velocities may promote excessive wear and tear on the line and increased maintenance, repair and replacement costs. Joint water service lines put future liability on the District.

Joint sewer service lines shift the liability from the builder or developer to the owner of the property. The marginal cost savings achieved by joining two sewer service lines into one should not be just cause to put future property owners in jeopardy of backups and blockages caused by a neighbor.

To protect the District and Customers, staff recommends disallowing joint service lines as a standard to which all builders and developers should be held.
BOARD ACTION REQUEST

TO:       Board of Directors
FROM:     Jeffrey Schneider, P.E.
DATE:     3/19/2019
RE:       Easement Request on the Avon Wastewater Treatment Facility Property

Summary of Subject: The Town of Avon is leading the effort to replace the overhead power lines running along the northern property line of the Avon Wastewater Treatment Facility with buried, underground lines in conduits. To accomplish this, ERWSD must grant a new easement for a portion of new underground primary electric line. The easement and exhibit are attached as Exhibit A.

Discussion and Background: The Town of Avon is utilizing Holy Cross Energy Community Enhancement Fund grant monies with to bury overhead power lines throughout the town. This is a common practice in Avon, Vail, and Eagle County, as it removes visual obstructions such as poles and lines and puts the infrastructure at less risk. The undergrounding will facilitate relocation of the Hahnewald Barn, although conversations with Avon indicate that this line will be undergrounded regardless of the barn’s fate.

To bury the power lines, Holy Cross Energy will install a vault on existing buried conduit near the fleet maintenance area at the Avon Wastewater Treatment Facility (AWWTF). New conduit will run to the east of the Heat Pump Building and utilize buried conduits installed during the Heat Recovery Project to cross the Union Pacific Railroad right of way. Conduit will then run along the northern railroad right of way near the former town hall. Once the new underground route is established, the overhead power lines will be removed. The easement will be ten (10) feet wide and pass through Tract N (the main WWTF property) and Tract H (the eastern portion of the property).

Removal of the overhead power lines benefits the District by removing a possible obstruction and safety concern during construction of the planned AWWTF Nutrient Upgrade project. This also removes the visual obstruction and overhead power easement along the northern property line.

Legal Issues: Legal counsel reviewed the attached easement documentation. Numerous other underground primary power lines exist on the property, all of which follow the same easement and exhibit format.

Budget Implication: Town of Avon is the lead agency for this work and as such, no costs are anticipated to be incurred by ERWSD. There is a budget line item for undergrounding power lines in the AWWTF Nutrient Upgrades 30% cost estimate; such funds can be used for other scope items.

Recommendation: Staff recommends approval of the Holy Cross Energy Underground Right of Way Easement on Tracts H and N, Benchmark at Beaver Creek Subdivision.

Suggested Resolution and Motion: I move to approve the Holy Cross Energy Underground Right of Way Easement on Tracts H and N, Benchmark at Beaver Creek Subdivision.
Attached Supporting Documentation:

Exhibit A – Holy Cross Energy Underground Right of Way Easement

Please let me know if you have any questions or would like additional information. Thank you for your attention to this matter.
HOLY CROSS ENERGY
UNDERGROUND RIGHT-OF-WAY EASEMENT

KNOW ALL MEN BY THESE PRESENTS, that the undersigned,

EAGLE RIVER WATER AND SANITATION DISTRICT, a quasi-municipal corporation

(hereinafter called "Grantor"), for a good and valuable consideration, the receipt whereof is hereby acknowledged, does hereby grant unto Holy Cross Energy, a Colorado corporation whose post office address is P. O. Box 2150, Glenwood Springs, Colorado (hereinafter called "Grantee") and to its successors and assigns, the right of ingress and egress across lands of Grantor, situate in the County of Eagle, State of Colorado, described as follows:

Tract H, Benchmark at Beaver Creek Amendment no. 4, according to the Final Subdivision Plat thereof
AND a Parcel of land known as Tract N, an exception to the Final Subdivision Plat of Benchmark at Beaver Creek Amendment no. 4, both situate in Section 12, Township 05 South, Range 82 West of the 6th P.M., as more fully described at Reception Numbers 171107 and 604193 and 653988 in the records of the Eagle County Clerk and Recorder’s Office, Eagle, Colorado.

And, to construct, reconstruct, repair, change, enlarge, re-phase, operate, and maintain an underground electric transmission or distribution line, or both, with the underground vaults, conduit, fixtures and equipment used or useable in connection therewith, together with associated equipment required above ground, within the above mentioned lands, upon an easement described as follows:

An easement ten (10) feet in width, the centerline for said easement being an underground power line as constructed, the approximate location of which upon the above described property is shown on Exhibit A attached hereto and made a part hereof by reference.

The rights herein granted specifically allow Grantee to install additional underground and/or pad-mounted facilities within the easement described herein.

It shall be the Grantor’s responsibility to ensure that splice vaults, switchgear vaults and transformer vaults installed hereunder on said real property are accessible by Grantee’s boom trucks and other necessary equipment and personnel at all times. The use of such access by Grantee shall not require removal or alteration of any improvements, landscaping, or other obstructions. The ground surface grade shall not be altered within ten (10) feet of said splice, switchgear and transformer vaults, nor along the power line route between the vaults. The ground surface grade at said transformer and switchgear vaults shall be six (6) inches below the top of the pad. The ground surface grade at said splice vaults shall be even with the top of the pad. The manhole opening of said splice vaults shall be uncovered (excluding snow) and accessible at all times. Improvements, landscaping or any other objects placed in the vicinity of said transformers and switchgear shall be located so as not to hinder complete opening of the equipment doors. The ground surface within ten (10) feet of said transformer and switchgear doors shall be flat, level and free of improvements, landscaping, and other obstructions. Improvements, landscaping and other objects will be kept a minimum of four (4) feet from non-opening sides and backs of said transformers and switchgear. Grantor hereby agrees to maintain the requirements of this paragraph and further agrees to correct any violations which may occur as soon as notified by Grantee. Said corrections will be made at the sole cost and expense of Grantor.

Together with the right to remove any and all trees, brush, vegetation and obstructions within said easement and the right to pile spoils outside said easement during construction and maintenance, when such is reasonably necessary for the implementation and use of the rights hereinabove granted. In areas where vegetation is disturbed by the above described use of the easement, the ground surface shall be seeded using a standard native mix by Grantee. Grantor agrees that landscaping or other surface improvements added on said easement after the date of execution hereof will be minimized and that Grantee will not be responsible for damage to said additional landscaping or surface improvements caused by exercise of its rights granted by this easement.

Grantor agrees that all facilities installed by Grantee on the above described lands, shall remain the property of Grantee, and shall be removable at the option of Grantee.

Grantor covenants that they are the owner of the above described lands and that the said lands are free and clear of encumbrances and liens of whatsoever character, except those held by the following: All those of Record.
TO HAVE AND TO HOLD, said right-of-way and easement, together with all and singular, the rights and privileges appertaining thereto, unto Grantee, its successors and assigns, forever.

IN WITNESS WHEREOF, Grantor has caused these presents to be duly executed on this ______ day of __________________________, 20______.

The individuals signing this Holy Cross Energy Underground Right-of-Way Easement hereby represents that they have full power and authority to sign, execute, and deliver this instrument.

EAGLE RIVER WATER AND SANITATION DISTRICT, 
a quasi-municipal corporation

By:__________________________________________

Manager

STATE OF __________________________

COUNTY OF __________________________

The foregoing instrument was acknowledged before me this ______ day of __________________________, 20______, by __________________________ as Manager of EAGLE RIVER WATER AND SANITATION DISTRICT, a quasi-municipal corporation.

WITNESS my hand and official seal.
My commission expires:

________________________________________
Notary Public

Address: ____________________________________

W/O#19-23298:50-63,64,67 Avon – Town Railroad OH to UG Conversion 3/18/19  19-23298JV  Page 2 of 2 Revised 12/18/15
ERWSD PARCEL, TRACT N RECEPTION NOS 171107 AND 604193

APPROXIMATE LOCATION OF EXISTING HOLY CROSS ENERGY UNDERGROUND RIGHT-OF-WAY EASEMENT RECEPTION NO 581607

APPROXIMATE LOCATION OF NEW HOLY CROSS ENERGY UNDERGROUND RIGHT-OF-WAY EASEMENT

ERWSD PARCEL, TRACT H RECEPTION NOS 171107 AND 653988

PROPERTY LINE (TYPICAL)
<table>
<thead>
<tr>
<th>Contract Number</th>
<th>Date Executed</th>
<th>Change Order signed on</th>
<th>Project Name</th>
<th>Contractor</th>
<th>Amount</th>
<th>Manager</th>
<th>Account Number</th>
<th>Notes</th>
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<tbody>
<tr>
<td>19.15.024</td>
<td>Pending</td>
<td></td>
<td>Pest Control for Employee Housing Units</td>
<td>Mountain Pest Control, Inc.</td>
<td>$7,000.00</td>
<td>C. Nunley</td>
<td>10.1.9.10.80.105</td>
<td>Open/Contract NTE $7000.00</td>
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<tr>
<td>19.15.025</td>
<td>03/12/19</td>
<td></td>
<td>2019 Lawn &amp; Yard Maintenance Avon and Edwards WWTFs</td>
<td>SHC Landscape Co.</td>
<td>$22,185.00</td>
<td>M. McClintock</td>
<td>10.3.9.10.20.500</td>
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<tr>
<td>19.15.026</td>
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<td></td>
<td>Talk Like Ted</td>
<td>Employer’s Council</td>
<td>$2,300.00</td>
<td>K. Shanley</td>
<td>10.3.9.00.80.552</td>
<td>Open/Contract Expires 5/9/19</td>
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<tr>
<td>19.15.027</td>
<td>Pending</td>
<td></td>
<td>Manager and Supervisor Retread 2019</td>
<td>Reality-Based Leadership</td>
<td>$9,000.00</td>
<td>K. Shanley</td>
<td>10.3.9.00.80.760</td>
<td>Open/Contract Expires 4/23/19</td>
</tr>
</tbody>
</table>
MEMORANDUM

TO: Boards of Directors
FROM: Linn Brooks, General Manager
DATE: March 20, 2019
RE: GM Report

Solar Array Project Exploration

In January, staff hosted a site visit at the District’s Biosolids Containment Facility in Wolcott. The purpose of the visit was to determine whether the 25-acre parcel was suitable for a solar array, in addition to its current use of biosolids storage. Attendees included representatives from the town of Vail, Holy Cross Energy, Eagle County, and Active Energies solar company. The group determined that the site was suitable for a solar array. The District owns this land via a patent from the Bureau of Land Management. Solar is not currently an approved use for the land, so the District could apply for a change of use (estimated timeframe of 3 – 4 months) or could request to purchase the land outright (estimated timeframe of 12 months). Staff is working with Bart Miller of Jim Collins’ office to determine next steps as well as cost estimates.

Hahnewald Barn

After the uproar of last month, the Avon town council decided to issue a survey of the town electorate to understand the level of support for moving the barn. The surveys are out now, and the vote count is scheduled for April 2. District staff is obtaining quotes for barn demo and salvage of barn wood in case the town decides to not take possession of it. We are also working to determine if there is interest in contractors willing to salvage the barn wood for repurpose.
# OPERATIONS MONTHLY REPORT
## March 2019

## WATER SUPPLY
### RESERVOIR UPDATES: 3/18/19

<table>
<thead>
<tr>
<th>Reservoir</th>
<th>Physical Capacity (AF)</th>
<th>Current Storage (AF)</th>
<th>Discharge (cfs)</th>
<th>Previous Month Change in Storage (AF)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagle Park</td>
<td>3,301</td>
<td>2,127</td>
<td>0</td>
<td>-1</td>
<td>Minimum pool</td>
</tr>
<tr>
<td>Black Lake 1</td>
<td>527</td>
<td>176.7</td>
<td>0</td>
<td>-52.2</td>
<td>Minimum pool</td>
</tr>
<tr>
<td>Black Lake 2</td>
<td>98.3</td>
<td>31</td>
<td>0</td>
<td>-67.3</td>
<td>Minimum pool</td>
</tr>
<tr>
<td>Homestake</td>
<td>42,881</td>
<td>42881</td>
<td>4.14</td>
<td>+1645</td>
<td>releasing</td>
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<tr>
<td>Green Mountain</td>
<td>153,639</td>
<td>50946</td>
<td></td>
<td>-2678</td>
<td>releasing</td>
</tr>
<tr>
<td>Wolford</td>
<td>65,993</td>
<td>33500</td>
<td></td>
<td>-300</td>
<td>releasing</td>
</tr>
</tbody>
</table>

Black lakes #1 is minimum pool as of Feb. 27 at 176.7 acre-feet and release is stopped. Black lakes #2 was releasing 2.5 cfs from Feb. 27 to March 15, when it reached minimum pool at 33.2 acre-feet. Both Black lakes reservoirs are only releasing 0.3 cfs to match inflow. Eagle Park reservoir is at 2127.6 acre-feet and only releasing 0.3 cfs to match inflow.

### STREAMFLOWS:03/19/19

<table>
<thead>
<tr>
<th>Gage Location</th>
<th>Daily Mean Discharge (cfs) 3/19/19</th>
<th>In-stream Flow Water Right Level (cfs)</th>
<th>ISF Season</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gore Creek above Red Sandstone</td>
<td>17.4</td>
<td>6</td>
<td>Oct - April</td>
</tr>
<tr>
<td>Eagle River below AWWTP</td>
<td>70.6</td>
<td>35</td>
<td>Oct - April</td>
</tr>
<tr>
<td>Eagle River below Gypsum</td>
<td>165</td>
<td>50</td>
<td>Oct - April</td>
</tr>
</tbody>
</table>

### SNOW WATER EQUIVALENT (SWE)

<table>
<thead>
<tr>
<th>SNOTEL Site</th>
<th>SWE (inches) 3/19/19</th>
<th>Normal SWE (in inches) 3/19/19</th>
<th>% of normal</th>
<th>Normal Peak SWE (inches)</th>
<th>Date of Normal Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vail Mountain</td>
<td>20.7</td>
<td>17.0</td>
<td>122%</td>
<td>22.6</td>
<td>April 25</td>
</tr>
<tr>
<td>Copper Mountain</td>
<td>18.4</td>
<td>12.5</td>
<td>147%</td>
<td>15.4</td>
<td>April 28</td>
</tr>
<tr>
<td>Fremont Pass</td>
<td>21.1</td>
<td>13.8</td>
<td>153%</td>
<td>18.6</td>
<td>May 6</td>
</tr>
</tbody>
</table>
COLORADO RIVER DATA

The Lake Powell water level is at 3,570 feet elevation as of March 19, and is at 37% of its storage capacity. Lake Mead water level is at 1089 feet as of March 19, and is at 40% of its storage capacity.
On Jan. 16, the District submitted a letter to the Colorado Department of Transportation (CDOT) regarding the Dec. 14, 2018, Open House for the West Vail Pass Auxiliary Lane Project. The comments in the letter included a lack of information on water resources and water quality provided to the public (included in January Board packets). CDOT’s Region 3 Resident Engineer, Karen Berdoulay, and the Region 3 Planning and Environmental Manager, Dave Cesaek, have responded to the District’s letter (see attached).

On Feb. 11, the District and its consultants attended the Stream and Wetland Ecological Enhancement Program (SWEEP) meeting. District staff, consultants, the Eagle River Watershed Council consultants and Town of Vail staff worked together to develop a comment letter regarding the materials presented at the SWEEP Meeting. The letter requested specific metrics that are measurable, trackable and necessary to support the project’s stated value of enhanced environment.

**WATER**

Staff is preparing to adjust to spring runoff conditions, including downloading and reviewing tank set-points in advance of lower demand periods. The District’s spring runoff plan is driven by the Disinfection Byproduct Rule, which allows the District and Authority to utilize more treated groundwater when the Eagle River experiences runoff conditions. Spring runoff water quality on the Eagle River is generally poor and less efficient to treat, so groundwater is preferred.

We are preparing for 2018 Consumer Confidence Reporting for June delivery to customers, and we are working on lead and copper sampling efforts with Customer Service and Community Relations.

Staff continues to work on items recommended by the state, including operator and operator in responsible charge (ORC) delegation of duties, source water protection implementation planning, and adding sites to the Total Coliform Rule sample locations.

**WASTEWATER & LABORATORY**

The Colorado Department of Public Health and Environment (CDPHE) will complete a compliance evaluation inspection, or sanitary survey, of the wastewater treatment facilities, water quality laboratory and collection system this summer. In preparation for this inspection, Siri Roman and Leah Cribari developed a two-hour training session for the wastewater and laboratory staff entitled *Compliance Evaluation Inspection 101*. The intent was to prepare for the inspection by aligning the team on all regulatory requirements, past inspection results, and required recordkeeping. The wastewater department is also updating all of its standard operating procedures and the Operator Responsible in Charge (ORC) Operating Plan.

The District has monitored stream and effluent temperature since 2007. At the beginning of this monitoring period, ten sites were monitored. The District Laboratory now manages 39 temperature loggers at 27 sites. Upstream of the Vail wastewater treatment outfall, Vail wastewater effluent, Avon
wastewater effluent and Edwards wastewater effluent sites are monitored monthly for the wastewater treatment facility discharge monitoring reports. All other sites are used for regulatory rulemaking hearings involving stream temperature standards. These standards have the potential to affect our wastewater treatment permit limits. In March, the laboratory replaced 23 temperature loggers with new Bluetooth technology. This upgrade will save the lab time when collecting the data in the field and when performing annual accuracy checks on the loggers.

**FIELD OPERATIONS**

Field Ops and Engineering staff attended onsite training provided by the National Association of Sewer Service Companies (NASSCO) for the Pipeline Assessment Certification Program. Eligible participants received certifications in pipeline, manhole and lateral assessments; helping project sewer main and lateral line replacements and relevant video documentation.

The Colorado State Patrol presented Operational Safety Training for Motor Carriers to all Commercial Driver’s License Operators (CDL). This training provided stronger practical knowledge of the rules and regulations for motor carriers to make educated decisions while operating the equipment/vehicles in our diverse fleet.

Effective March 11, Customer Service began to transition all 811 Call Before You Dig responsibilities to Field Ops. Staff will utilize this opportunity to upgrade policies and procedures for the newly updated 811 Law (Senate Bill 18-167). Staff will also begin using new software that will integrate into the CityWorks Asset Management Program, streamlining the current process.

Heavy snow continues to require fire hydrant clearing by staff, presenting challenges. Highest density and highest risk areas are being prioritized.

Field Ops staff responded to an emergency leak on Vail Road on March 8. Crews worked with a contractor throughout the night to restore water service to affected customers.

**ENGINEERING**

**WATER PROJECTS**

**Edwards Spur Road Waterline Phase IIA**

Mark Mantua

**General Project Scope**: The purpose of this project is to install a new water main, as identified in the Water Master Plan and the hydraulic modeling efforts. The system requires improvements to increase capacity and redundancy along the Edwards Spur Road. This project includes approximately 2,500 linear feet of new water main, bridge and river crossings, pressure reducing valve (PRV) vaults and water main blow-offs. The project also includes a sewer interceptor stub-out for future work. A cost-sharing agreement with the Colorado Department of Transportation (CDOT) is in place to substantially reduce the overall cost of the water main installation. CDOT roadway improvements and water main improvements will occur concurrently.

**Project Update**: Water main installation work is underway and 250 linear feet of water main, fittings, valves and associated corrosion prevention anodes are installed. Staff is collaborating with CDOT on completing submittal reviews. Long lead items are under fabrication. CDOT anticipates mid-summer completion of the water main portion of the work. On March 14, a contractor installing bridge piers struck
and ruptured an underground low pressure gas line. In response, CDOT issued a “stop work” order, which is affecting waterline work. CDOT anticipates work will resume by March 21.

**Berry Creek Booster Pump Station 1 Replacement**

**General Project Scope:** The Berry Creek Booster Pump station pumps water from the main Edwards CVC pressure zone (Berry Creek Tank 1) up to the larger Berry Creek Tank 2. This project will replace the station from an in-ground vault to a bunker-style, at-grade access vault. The replacement will increase reliability and address electrical safety issues that were identified, including inadequate access, ventilation, code compliance, and tank hatch improvements. Other items to be addressed include landscaping improvements and electrical, instrumentation, and controls upgrades, as well as emergency backup power and pumping connections.

**Project Update:** Staff is reviewing the preliminary design report, which outlines the project requirements and is the basis for plans and specifications. Winter weather delayed the geotechnical investigation work, originally scheduled for early February. Design engineer Tetra Tech and ERWSD met with Singletree Homeowners Association on Feb. 28 to talk about site setbacks, appearance of the new station, and any other concerns the committee might have. The meeting was positive, with another scheduled for April 4. That meeting will include presentation of architectural renderings of the pump station and discussion of landscaping and fencing. The project will bid this summer for fall construction.

**Village Hall Water Main**

**General Project Scope:** A water main currently runs underneath the tunnel accessing Village Hall and the Park Hyatt in Beaver Creek. Corrosive soils and high groundwater have led to mainline breaks. The project will replace the main with a non-corrosive PVC or HDPE pipeline material, reestablish the service to Village Hall, install a dry fire standpipe, and abandon the existing hydrant, making the new line a private service line.

**Project Update:** A stakeholders meeting was held with representatives from Beaver Creek Resort Company, One Beaver Creek, and the Park Hyatt; all parties agreed that the project is necessary to reduce future risk of water main breaks in the tunnel. The project will disrupt the main loading dock, so it must be tightly coordinated with resort operations. Implementation will occur in two phases: dry stand pipe installation and mainline replacement. Bidding for the dry stand pipe is anticipated for early April, with mid to late April construction start. Staff is exploring the possibility of slip lining 10” HDPE pipe through the existing 14” water main, thereby reducing excavation and disruption in an extremely tight construction window. Slip lining new HDPE pipe through existing has been discussed with two companies interested in project, rather than the original approach of installing a new buried PVC water main. Potholing necessary for the water line replacement is scheduled for May.

**Vail Wells R2/R6 Electrical Improvements**

**General Project Scope:** The project includes replacement of all existing, outdated electrical equipment, which does not meet current industry standards. The project also includes some minor hydraulic improvements. The Inline Booster Pump Station is now available to provide system redundancy while the wells are offline, allowing the project to move forward.

**Project Update:** The project started on Feb. 5 as planned. The contractor is rebuilding the main electrical equipment that serves the well facility. The project is proceeding on schedule and within budget, with
substantial completion scheduled for April 5. The project must be online once spring runoff begins for operational reasons related to downloading water from Vail to Avon.

**Arrowhead WST-1 Coating and Misc Improvements**  
**Nikola Nemcanin**

**General Project Scope:** The Arrowhead 1 Water Storage tank is a 1.0 MG steel tank in need of recoating and a few miscellaneous improvements, including a new vent, structural center column, and overflow improvements. The project was originally scheduled for implementation in fall 2018 but was postponed due to drought conditions. The project is split into spring and fall phases for interior and exterior portions of the coating work, respectively. The project was bid in December for improved contractor interest and awarded to Riley Industrial of Farmington, NM. The design engineer is SGM, Inc.

**Project Update:** Field operations crews began tank draining on March 19 in anticipation of contractor mobilization on March 25. The project begins with floor scanning to determine the amount of patch material that needs to be welded on the tank floor. The contractor will then install a new center column, vent, and appurtenances. Completion of interior coating is anticipated by May 28, and exterior coating is scheduled to begin on Sept. 15. Staff is in frequent communication with Arrowhead Metropolitan District personnel throughout the ramp up to mobilization.

**Solar Vail Water Main Improvements**  
**Nikola Nemcanin**

**General Project Scope:** During relocation of the water main at Red Sandstone Elementary School (RSES), it was discovered that the 12” mainline was at extreme depths, greater than twenty feet. Work continues to raise the 12” water main to a depth of 7 – 8 feet.

**Project Update:** Bid documents are being prepared, and staff is scheduling the project timeline with the Contractor, R.A. Nelson. Construction is expected to be from mid-May to mid-July.

**WASTEWATER PROJECTS**

**Avon WWTF Nutrient Upgrades**  
**Melissa Marts**

**General Project Scope:** As identified in the Wastewater Master Plan Update, the Avon WWTF requires upgrades in order to meet Regulation 85 to reduce the concentrations of nitrogen and phosphorus in the effluent. These improvements will also allow staff to bypass flows from VWWTF to AWWTF during the peak winter season. This project also includes improvements identified in a 2017 condition assessment in other process areas throughout the facility. Scope 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.

**Project Update:** Since receiving the preliminary cost estimates from the Contractor and Engineer, the project team is working on value engineering. A workshop was held on March 11 to review schedule, constructability, and value engineering options. A second, focused workshop was held to review value engineering options related to electrical, instrumentation, and controls. The cost estimates were considerably higher than the conceptual estimates on which the budget was based. The scope was reduced and the design team is estimating the potential cost savings, as well as working towards the 60% design milestone. In addition, outreach to local stakeholders (e.g., town of Avon, Liftview condos) continues in anticipation of the 1041 permit submittal to the town of Avon.
OTHER PROJECTS

Bighorn Terrace Water/Sewer Mains  
Nikola Nemcanin

**General Project Scope:** The Bighorn Terrace Condominium Association approached the District in 2017 about replacing its private sewer main, which is severely deteriorated. A subdistrict was formed in early 2018 to provide a mechanism for repayment of the costs to design and construct the sewer main. The project also includes water main replacement. The District is financing the cost of the water main project and will be reimbursed for the sewer main work.

**Project Update:** A meeting with Bighorn Terrace residents was held on March 15 to discuss project design, legal requirements and schedule. Final design changes will be made on the 75% drawings. Staff must obtain temporary construction and permanent easement agreements. The residents have requested the project be scheduled for fall 2019 or spring 2020. Bidding will occur accordingly, depending on the construction timeline.

Overall Facilities Master Plan  
Jeffrey Schneider

**General Project Scope:** This project is a long-anticipated master planning effort to study the current and future space needs for the District and Authority, including the existing office spaces, staffing needs, and other support functions such as vehicle fueling, equipment staging, maintenance, and materials storage. An internal steering committee was formed to guide the project and consists of the General Manager and managers from Human Resources, IT, and Field Operations, along with a board subcommittee (Brian Sipes and George Gregory). This study will assess the current real estate portfolio and identify future real estate needs.

**Project Update:** Staff is working with the design team to narrow down the list of properties to be studied. An add service was issued to the design team to take a deeper dive into the structural layouts of the Vail Administration building and perform a code review. These additional tasks will be utilized for many future efforts including expansion/renovation of the Vail Administration office.

Vail Administrative Building HVAC System  
Mark Mantua

**General Project Scope:** The south portion of the Vail administrative building is served by a variable air volume system, baseboard heat and two air handler units (AHUs). This portion of the building also contains eight different temperature zones, each controlled by a Trane system controller that can only heat or cool at one time. The AHUs are over 25 years old and well past their service life. Certain zones within AHU-1s service area consistently fail to cool efficiently. The District intends to install a new Variable Refrigerant Flow (VRF) system with the ability to simultaneously heat and cool zones in the south portion of the Vail administrative building.

**Project Update:** BG Building Works was selected as the design engineer to reconfigure the problematic HVAC system at the Vail Administration office. A kickoff meeting was completed Feb. 21 to introduce the project team and kick off design efforts. As-builts were reviewed and existing conditions of boilers, controls and HVAC units were examined. The existing HVAC units and controls were slated for replacement, while the exiting boilers will be incorporated into the new HVAC system. We anticipate bidding work for late summer/fall HVAC improvements dependent on the outcome of the assessment/design efforts.
MEMORANDUM

TO: District and Authority Board Members
FROM: Siri Roman, Wastewater Manager
DATE: March 20, 2019
RE: Eagle Mine Superfund Site Consent Decree Stakeholder Comments

The Environmental Protection Agency (EPA) and the Colorado Department of Public Health and the Environment (CDPHE) Hazardous Materials and Waste Management Division are preparing a new Consent Decree for the Eagle Mine Superfund Site. District Staff worked closely with our consultants and the Eagle River Watershed Council consultants and board members to develop a comment letter for the EPA and CDPHE. The intent of this letter is to help CDPHE and EPA understand local concerns and priorities prior to entering into negotiations with the Potential Responsible Party, CBS Inc.

Attachments:
- ERWSD, UERWA, ERWC Eagle Mine Superfund Site Consent Decree Stakeholder Comment Letter (dated March 4, 2019)
- Eagle County Commissioners Consent Decree Comment Letter (dated March 18, 2019)
March 4, 2019

Jamie Miller
Remedial Project Manager
Environmental Protection Agency, Region 8
1595 Wynkoop Street
Denver, CO 80202-1129
Via Email: Miller.Jamie@epa.gov

Re: Eagle Mine Superfund Site
Consent Decree Stakeholder Comments

Dear Ms. Miller:

Please accept this letter on behalf of the Eagle River Watershed Council (ERWC), the Eagle River Water and Sanitation District (District), and the Upper Eagle Regional Water Authority (Authority) regarding ongoing negotiations over a new Consent Decree (CD) for the Eagle Mine Superfund Site. We understand that U.S. Environmental Protection Agency (EPA) and the Colorado Department of Health and Environment (CDPHE) Hazardous Materials and Waste Management Division are negotiating with the Potentially Responsible Party (PRP) on behalf of local residents to improve conditions at the Eagle Mine and enhance the effectiveness and the reliability of cleanup measures (Remedy). Although the formal public comment period for a CD follows the filing of the CD with the district court, at our meeting in Avon, Colorado on December 6, 2018, we were informed that EPA and CDPHE would informally review and consider any comments provided by local stakeholders earlier in the process to help EPA and CDPHE understand local concerns and priorities for the new CD. We appreciate the opportunity to provide you with such comments.

ERWC, the District, and the Authority have identified four ongoing issues of concern that should be addressed in the new CD, based on feedback from local stakeholders and residents of the Eagle River Watershed downstream from the Eagle Mine Site:

1. Timeliness of cleanup measures implemented to meet remedial goals;
2. Selection of robust operations, maintenance, inspections, and safety procedures for the Remedy;
3. Sufficient monitoring to verify attainment of remedial goals or identify inadequacies in the selected Remedy; and
4. Emergency response notification procedures and enhanced agency enforcement authority.

Stakeholders brought these issues to the attention of EPA and CDPHE during previous 5-Year Review processes (Exhibit A), in several emails and letters (Exhibit B), and during various stakeholder meetings hosted in Eagle County (Exhibit C). We feel strongly that these issues should be contemplated and effectively addressed in the CD negotiations. Not only have these issues been raised repeatedly by stakeholders in past formal and informal public comments, but EPA and CDPHE have also frequently cited the CD currently in effect as a barrier to addressing these issues. Including effective and enforceable measures in the new CD will go a long way towards providing downstream stakeholders with assurances regarding water quality associated with the Eagle Mine. We hope EPA and CDPHE agree. Each of the four issues is discussed below.
**Issue #1:**

Cleanup at the Eagle Mine site since the late 1980s and early 1990s greatly improved water quality conditions in the Eagle River. However, water quality has yet to meet cleanup targets and applicable stream standards at all locations and all times of the year. The stakeholders hope the additional cleanup measures contemplated in the Proposed Plan will meet water quality standards (with an adequate safety margin) in a timely fashion (i.e., not another 10 years). It is apparent that CDPHE, EPA, and the PRP are preparing to implement the additional measures using a phased approach where some initial action (e.g., operating the existing extraction trench at the base of Rock Creek) will be followed by some period of monitoring to determine effectiveness. In the event that cleanup targets are not met, additional action(s) will be taken and a new period of effectiveness monitoring begun.

We remain concerned that this incremental approach, while likely representing a cost savings to the PRP, may greatly delay the eventual cleanup of the Eagle River. Under WQCC Regulation 31, compliance with the applicable water quality standards for dissolved metals requires that the concentration associated with the 85th percentile of the data must be at or below the standard and that exceedances of the standard cannot occur more frequently than once every three years, on average. 31.5(7). Based upon these regulatory criteria, up to five years of monitoring would be required to determine whether the first phase of cleanup is meeting the water quality standards. If, at that time, the standards are not being met, then presumably additional cleanup would be required and up to another 5 years of monitoring would be needed to assess compliance. This process could easily delay completion of the cleanup for another decade.

Delays in meeting remedial goals at the Eagle Mine extend the period of exposure and degradation for downstream aquatic ecosystems, anglers, and water providers. This is of particular concern to local stakeholders because tourism and outdoor recreation are cornerstones of the economy for Eagle County and the State of Colorado. We appreciate any efforts made by EPA and CDPHE to require implementation of as many of the additional cleanup measures as possible in the period immediately following approval of the new CD. If a phased implementation approach is adopted, we request that EPA and CDPHE include language in the CD requiring thorough analysis of available data to develop detailed design criteria and performance standards for the proposed cleanup measures. This will provide the engineering basis for assurance that the cleanup measures are designed to sufficiently reduce metals loading to meet water quality standards. It will also provide a sound basis for evaluation of the individual cleanup measures to evaluate their operational performance.

We request that the PRP be required to 1) quantitatively demonstrate that the first phase of work effectively reduces an agreed-upon amount of zinc loading per day, and 2) demonstrates through collection of instream water chemistry data that no exceedances of any downstream water chemistry targets or stream standards occur at any time following implementation. Following implementation of the first phase of work, any exceedance of any water chemistry target or stream standard, as measured by the PRP, USGS, or local water quality data collection entities should trigger immediate implementation of the second phase of work. To advance successive phases of work in a timely manner, the implementation of the first phase of additional cleanup measures should be concurrent with the 100% design planning effort for the second phase of work, etc.
Issue #2:
Operation/maintenance, inspections, and safety procedures implemented for the existing Remedy at the Eagle Mine site have improved over the previous 10 years. However, episodic spills and seeps of mine water have frequently occurred from the conveyance pipeline, the water treatment plant, and the Consolidated Tailings Pile. These failures are due to aging infrastructure, inadequate or nonexistent real-time monitoring and inspections, poor personnel training and/or human error. Many of the spill events that occurred over the last few years were alarming to the local community and present legitimate concerns to local water providers. For example, the high concentrations of manganese and iron in spilled water can affect drinking water treatability and require increased chemical addition to remove manganese and iron. As a result, even episodic discharges of mine water at the Eagle Mine site can increase the water treatment costs and reliability for downstream communities. We hope that EPA and CDPHE include language in the CD that requires an annual review process for operations, maintenance, inspections, and personnel training procedures at the Eagle Mine site. Furthermore, the stakeholders would prefer language in the CD that requires the PRP to make demonstrable enhancements to all these procedures in any year that an uncontrolled discharge occurs.

The ability of the PRP to prevent and/or identify issues that may cause uncontrolled discharges of mine water at the site — or address in a timely manner those discharges when they do occur — is directly related to the monitoring system(s) in place for the current Remedy. There are a relatively small number of individuals working at the site at any given time, and little time is spent in monitoring and inspecting the pipeline and the collection system, especially during the winter months. This is evidenced by the fact that a significant number of the uncontrolled releases of mine water to the Eagle River that occurred over the past 5 years were reported by local residents or District employees, not the PRP and its consultants. It is unreasonable that the burden of site monitoring for the Eagle Mine should fall to the local community. Sophisticated hydraulic Supervisory Control and Data Acquisition (SCADA) systems are implemented by a wide variety of industries. We would like the new Remedy to accommodate monitoring of pressure and flow rates at multiple locations in the conveyance system. This will help the PRP with real-time identification of flow constriction, pressure reductions, or leaks. This is a pragmatic approach to monitoring that recognizes the limited number of personnel available to conduct field monitoring at any given time. We are unaware of any automated pressure or flow rate monitoring systems in place outside of the water treatment plant at this time. We believe this type of monitoring is essential at the Eagle Mine, and its requirement as a part of the new remedy should be explicit in the new CD. Further, coupling SCADA systems with a more rigorous inspection and maintenance protocol in the CD should make the PRP more proactive in addressing the problems at the Eagle Mine that have caused the releases and spills, rather than being reactive to such problems after they occur.

Issue #3:
Continuing water chemistry monitoring at the Eagle Mine site must be sufficient to verify attainment of water quality standards in all stream segments where water quality standards were relaxed, including Eagle River Segments 5a, 5b, 5c, and 7b. Monitoring should also characterize loading sources and guide selection of additional remedial measures if inadequacies are identified. In addition to continued historical monitoring at groundwater wells, the new CD should require regular weekly monitoring of surface water chemistry from March through May and monthly monitoring for the rest of the year at the following locations:
The new CD should state that water chemistry sample collection, sample analysis, and reporting should adhere to EPA chain-of-custody, quality assurance, and quality control protocols, and that all data should be uploaded to the EPA’s STOrage and RETreival (STORET) database. Streamflow data is needed to supplement metals concentration data collected at locations along the Eagle River and its tributaries to be useful for understanding loading sources and load reductions following implementation of cleanup measures. Recognizing this, the previous Record of Decision (ROD) for the Eagle Mine site stated the following:

“A stream gage installed at a location along the Eagle River north of Rex Flats (Figure 3) by the PRP, which met all applicable requirements of the U.S. Geological Survey for such gages. The cleanup agreement requires that the PRP 'provide for operation and maintenance of the stream gage until such time as the water quality objectives for the Eagle River' are achieved;”

Instead of supporting this streamflow gauge in full as stipulated in the language above, the PRP reimbursed Eagle County for 50% of costs incurred through contracts between the County and the USGS for operation of the gauge. We believe the PRP should support the operation and maintenance costs of the referenced USGS gauge below. This aligns with the language in the ROD and accounts for the critical importance of streamflow data for computing metals loading through the Eagle Mine site:

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Site ID</th>
<th>Entity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagle River near Minturn</td>
<td>09064600</td>
<td>USGS</td>
</tr>
</tbody>
</table>

**Issue #4:**

One of the most confounding issues at the Eagle Mine site is the claimed lack of enforcement authority that EPA and CDPHE hold over the PRP given the current CD. We believe this issue is the root of many recent misunderstandings between EPA, CDPHE and the local community. In recent conversations, you indicated EPA intends to include language in the new CD to provide improved enforcement authority that the existing CD lacks. Stakeholders want to ensure the new CD provides broad authority to EPA and/or CDPHE to levy fines or require
additional cleanup measures in response to inadequate maintenance and operation of the selected Remedy, or in the event of uncontrolled discharges of mine water to the Eagle River.

Stakeholders also prefer the new CD include enhanced notification procedures. In the past, local water providers and public health agencies (i.e., the District and Eagle County Public Health) were not consistently notified of events at the Eagle Mine site involving uncontrolled discharges of mine water. The current notification procedures specify that the PRP must contact local stakeholders only if uncontrolled discharges exceed 30 gallons per minute. To the best of our knowledge, no quantification of flow rate is made at discharge sites. Instead, flow rates are estimated visually by field personnel who lack specific training for performing that task consistently or accurately. We prefer the new CD include language requiring the PRP to notify the District and Eagle County Public Health in the event of any uncontrolled mine water discharges that occur in the collection system, the conveyance system, or at the treatment plant. This more conservative approach to spill notification will allow local authorities to select the best response(s) for protecting downstream water treatment infrastructure and public health.

We would greatly appreciate your feedback and/or that of representatives from CDPHE regarding each of the above issues. It will be extremely beneficial to us to have verbal or written accounting of how our concerns are considered, incorporated, or disregarded in the negotiation of the new CD. This would allow us to brief our respective Boards of Directors on how this letter was received and the effectiveness of our ongoing collaboration with EPA and CDPHE on Eagle Mine issues. We also mentioned in recent conversations that there were times over the last few years when local stakeholders did not feel their voices were being heard during Eagle Mine regulatory and decision-making processes. Although the Attorney General’s office has publicly stated its disagreement with this perspective, we continue to believe it is a legitimate perspective based on our many interactions and our history in dealing with the Eagle Mine. Some response to this letter would help reinforce the notion that EPA and CDPHE are strong and reliable partners to local stakeholders on the Eagle Mine cleanup effort.

Thank you for your willingness to receive and review this letter. We look forward to your response and to working closely with you and other members of your team on Eagle Mine issues in the future. In the meantime, if you have any additional questions for us, please do not hesitate to reach out in writing or over the phone.

Best Regards,

Holly Loff
Executive Director
Eagle River Watershed Council
(970) 827-5406

Linn Brooks
General Manager
Eagle River Water and Sanitation District
Upper Eagle Regional Water Authority
(970) 476-7480

cc:
Jill H. Ryan, CDPHE Executive Director
Dustin McNeil, CDPHE Project Manager
Kathy Chandler-Henry, Eagle County Commissioner
Jeanne McQueeney, Eagle County Commissioner
Matt Scherr, Eagle County Commissioner
March 18, 2019

Jamie Miller
Remedial Project Manager
Environmental Protection Agency, Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

Dear Mrs. Miller,

Please accept this letter on behalf of the Eagle County Board of Commissioners (BOCC) regarding ongoing negotiations over a new Consent Decree (CD) at the Eagle Mine Superfund Site. We appreciate the opportunity to add our support to comments you recently received from Eagle River Watershed Council (ERWC), Upper Eagle Regional Water Authority (UERWA) and Eagle River Water and Sanitation District (ERWSD) about those negotiations.

The letter submitted by ERWC, UERWA, and ERWSD on March 4, 2019 articulates important community perspectives and concerns about the cleanup efforts at the Eagle Mine, including how that cleanup has progressed over the previous 25 years and the ways that future remedies can improve conditions on the site to reduce risks to human health and the environment. ERWC, UERWA, and ERWSD identified four ongoing issues of concern among local stakeholders and residents of Eagle County:

1. Timeliness of cleanup measures implemented to meet remedial goals;
2. Selection of robust operation, maintenance, and safety procedures for the Remedy;
3. Sufficient monitoring to verify attainment of remedial goals or identify inadequacies in the selected Remedy;
4. Emergency response notification procedures and enhanced agency enforcement authority.

The BOCC concurs that these issues should be prioritized in the negotiations for a new CD. Of particular importance to our tax payers is how the on-going cost of operation and maintenance (O&M) of USGS stream gage (Site ID 09064600, Eagle River near Minturn) will be financed. As you are aware, a 1989 agreement made between Eagle County and the party responsible for cleanup stipulated that O&M cost be split between the two parties. The escalating cost of USGS stream gage O&M continues to place an unfair burden on our taxpayers. We believe the entire cost of O&M should be borne by the responsible party and clearly articulated in the final CD, as was the intention of the previous Record of Decision.
We are also fully supportive of the request made by ERWC, UERWA, and ERWSD for Colorado Department of Public Health and Environment and U.S. Environmental Protection Agency to provide some feedback regarding how the issues raised in this letter and in the one submitted on March 4th are considered, incorporated, or disregarded in the negotiation of the new CD. This type of communication is vital for maintaining positive, trusting, working relationships between local entities and state and federal agencies tasked with directing cleanup at the Eagle Mine.

Thank you very much for your willingness to review these issues. We look forward to your response and to working closely with you and other members of your team on Eagle Mine issues in the future. In the meantime, if you have any additional questions for us, please do not hesitate to reach out to the BOCC in writing or over the phone.

Sincerely,

Jeanne McQueeney   Kathy Chandler-Henry   Matt Scherr
Chair    Commissioner    Commissioner
MEMORANDUM

TO: Boards of Directors
FROM: Jason Cowles, Engineering Manager
DATE: March 20, 2019
RE: Engineering Manager Report

Vines at Vail Final Plat Fourth Extension
The Final Plat for the Vines at Vail Planned Unit Development (PUD) in Wolcott was originally approved by Eagle County on November 6, 2007 with a five-year vesting period. The Project is located within the District’s Wolcott Service area for water and wastewater service. The Project has failed to move forward due to the economic recession and financing issues but has been granted several 2-year extensions by Eagle County. On March 12, 2019 the Eagle County Board of County Commissioners approved a fourth two-year extension for the project retroactive to November 6, 2018, which includes a condition that the Developer has 180 days to enter into a revised Subdivision Improvement Agreement with Eagle County that provides a construction schedule for public improvements as well as a letter of credit sufficient to cover 100% of the public improvements. The PUDs entitlements will expire in 180 days if this condition is not satisfied.

East Vail Employee Housing Project
I’ve attached an article from the Vail Daily regarding the East Vail Employee Housing Project currently being proposed by Triumph Development. Triumph is seeking a public private partnership with the Town of Vail to finance the purchase of the land for the Project. In exchange, Triumph will propose to build 130 to 140 deed-restricted employee housing units (EHUs) on a 5.4-acre portion of a larger 23.3-acre parcel owned by Vail Resorts that was rezoned by the Town last year. Vail Resorts will be dedicating the water rights for the Project as a condition of their agreement with Triumph.

Lionshead Zoning Amendment
The Vail Town Council held their first reading on a proposed ordinance to amend zoning in the Lionshead Commercial Mixed Use 1 Zone District on March 5, 2019 that would allow for unlimited residential density within current standards for building setbacks, heights, and gross residential floor areas (GRFA). Some Council members expressed concerns about the use of the term “unlimited” along with concerns about the carrying capacity of roads and water and wastewater infrastructure, but the Council ultimately voted 5-2 in favor of the ordinance allowing it to move on to a second reading. Our primary concern is that the zoning change could accelerate the rate of development in Lionshead, which may trigger the need for improvements at the Vail Wastewater Treatment Plant sooner than anticipated by the 2017 Wastewater Master Plan. This could have the effect of compounding future rate increases that we had attempted to spread out over time with our planning. District staff will be working with Town of Vail staff to respond to the concerns of the Town Council at the second reading, which is tentatively scheduled for April 16, 2019.
Pair of Lawsuits Challenges Need for More Colorado River Water
Aspen Journalism recently published an article on a pair of federal lawsuits brought by Save the Colorado, an environment non-profit organization, that challenge the legality of federal environmental permitting decisions on the Northern Colorado Water Conservancy District’s Windy Gap Firming Project and Denver Water’s Moffat Collection System Project. The lawsuits allege that water demand projections used by the projects were flawed and that water conservation and efficiency was not considered as a reasonable alternative to expensive water development projects by the federal permitting agencies. It is anticipated that the projects could be held up for several years while the cases are decided. I’ve attached the article for your information.

Attachments:
- “Vail Council, Triumph Development Agree on East Vail Housing Proposal”, March 6, 2019, Scott Miller, Vail Daily.
- “Vail Ponders Ordinance to Ease Redevelopment of Lionshead Condos”, March 18, 2019, Scott Miller, Vail Daily.
Vail Council, Triumph Development agree on East Vail housing proposal

Proposal calls for between 130 and 140 deed-restricted units on East Vail parcel

March 6, 2019

VAIL — After hours of negotiations, there’s a framework of a plan for workforce housing at a 23.3-acre parcel in East Vail. Part of the proposal is for the town to buy the land.

The framework of a proposed deal between the town and Vail-based Triumph Development was announced Tuesday during the Vail Town Council's evening meeting. Details were released Wednesday. The proposal will have its first public hearing at the council's March 19 evening meeting. Public comment will be taken during the hearing.

Here are some key features of the agreement:

- The town will buy the entire parcel for $4 million. That includes the 5.4 acres dedicated to workforce housing as well as the 17.9 acres zoned "natural area preservation," one of the town's most restrictive designations.
- The town will lease the housing property back to Triumph for 10 years. At the end of that decade, Triumph will buy the housing parcel for $2.5 million.
- All the units will be deed-restricted. Short-term rentals will be prohibited.
- Leasing preference will be, in order: town of Vail employees; people working an average of 30 hours per week in Vail; people working an average of 30 hours per week in Eagle County. People who don't qualify under those categories will be limited to a six-month lease.
- Triumph will fund a $5,000 annual matching grant for bighorn sheep awareness and habitat restoration in partnership with the town and/or other conservation organizations.
- The proposal calls for between 130 and 140 one- and two-bedroom units on the property.

That's a bit more density than the Lion’s Ridge apartments between the main Vail and West Vail Interstate 70 interchanges. That project, the western half of the Timber Ridge apartment property, puts 113 units on roughly five acres, just more than 2.15 units per acre. If the East Vail parcel is eventually approved for 135 units, that's an even 25 units per acre.

The history

Tuesday's announcement marks another chapter in the story of the parcel.

In the 1960s, Vail Associates, the precursor to Vail Resorts, bought the parcel, which eventually was forgotten about. In fact, town of Vail zoning maps listed the Colorado Department of Transportation as the property owner.

When ownership of the property was clarified, Vail Resorts in 2017 came to the town to propose rezoning the parcel. The original zoning would have allowed roughly a dozen duplex units on the parcel.

The rezoning was vigorously opposed by neighbors and others concerned about the fate of a small
herd of bighorn sheep that winters on the property.

During the rezoning hearings, Vail Town Council member Kim Langmaid more than once expressed concerns (https://www.vaildaily.com/news/east-vail-zoning-proposal-puts-housing-needs-and-wildlife-issues-at-odds/) that any development on the parcel could doom the herd. After the parcel was rezoned, Vail Resorts and Triumph in October 2018 forged a deal (https://www.vaildaily.com/news/vail-resorts-triumph-development-strike-deal-for-23-3-acre-east-vail-parcel/) for Triumph to buy the land and pursue a workforce housing project.

That deal led to long discussions with the town.

**What's next?**

While the framework of a deal is in place, that's far from the end of the process.

The town and Triumph are now working on plans for sheep habitat restoration on both town-owned and private property in the area.

Vail Housing Director George Ruther noted that beyond the March 19 council meeting, any development at the site will have to go through the town's full approval process, with opportunities for public comment. That includes hearings with the Vail Planning and Environmental Commission and the Vail Design Review Board. While the Planning and Environmental Commission can have the final say in most development applications, the town council has the option of final review of that board's decisions.

_Vail Daily Business Editor Scott Miller can be reached at smiller@vaildaily.com (mailto:smiller@vaildaily.com) and 970-748-2930._
Vail ponders ordinance to ease redevelopment of Lionshead condos

March 10, 2019

VAIL — During the "billion dollar renewal" that changed the face of Vail in the early years of the century, town officials had to adjust some rules. Vail policymakers are now pondering a similar request for a condo building in Lionshead.

The Vail Town Council on Tuesday passed on first reading an ordinance that will allow buildings in part of Lionshead to add more units as they redevelop. The ordinance passed on a 5-2 vote, with council members Kim Langmaid and Kevin Foley opposed.

The second and final reading of the ordinance will be scheduled for an April meeting, to give town staff time to do some research and make adjustments.

The ordinance came at the request of the Treetop Condominium Association in Lionshead. Owners there want to essentially replace the nearly 50-year-old building. To do that, the association needs to add units.

Adding units to an existing building to pay for improvements is a common tactic in Vail. Residential units were added to Ski and Snowboard Club Vail's new clubhouse (https://www.vaildaily.com/news/ski-snowboard-club-vails-golden-peak-clubhouse-topped-off-with-tree-flag/) to help pay for that project.

The ordinance requested by the Treetops association applies only within the Lionshead Mixed Use 1 zone district. It also doesn't allow the applicants to exceed current limits on gross residential floor area, building heights, setbacks, site coverage and landscaping. All new proposed development would also still be subject to the town's approval process.

Under current rules, Treetops could add only nine new units in addition to the 28 existing units. Land planner Dominic Mauriello, who's representing the owners, said that isn't enough to make the renovation possible.

But some council members were hung up on the ordinance's provision for "unlimited" new units to be added.

"What's our carrying capacity?" Langmaid asked. "There's only so much room to park, there's only so much water... we want to end up in 50 years with a place we all want to live."

While the Treetops association asked for the ordinance, the new rules could apply to other older buildings.

Mauriello said buildings like Treetops are the next in Vail to redevelop, but need help to get that work done.
"The only realistic tool is adding more units," Mauriello said.

Time to answer questions including current water supplies, parking and pedestrian circulation will be answered when the measure comes back to the council for final approval.
Pair of lawsuits challenges need for more Colorado River water

By Lindsay Fendt, Aspen Journalism March 9, 2019

DENVER — Two lawsuits making their way through the federal court system are challenging two significant water projects in Colorado designed to divert more water from the Colorado, Fraser and Williams Fork river basins in Grand County.

The projects — Northern Colorado Water Conservancy District’s Windy Gap Firming project and Denver Water’s Moffat Collection System Project — would provide a combined firm yield of 48,000 acre-feet of water for the sprawling Front Range.

But environmental groups say government agencies violated the law in the environmental permitting processes of both projects.

“Our biggest claim is that (the agencies) claim they looked at reasonable alternatives (to the projects),” said Gary Wockner, director of Save the Colorado, the lead plaintiff on both cases. “But they didn’t look at conservation or efficiency. Water providers are trying to go to big water projects first and not the cheaper option of conservation.”
Both Northern and Denver Water say they factored in conservation efforts when they calculated water demand and that even aggressive conservation efforts won’t be enough to meet water demand in the future.

“There are only a few answers for water supply in the future, and Windy Gap Firming is one of those options,” said Brad Wind, general manager at Northern. “Without that project, I can’t fathom where we will end up.”

But some water experts say the state’s use of population growth as one of the major drivers of water demand was flawed.

“As population goes up, water demand continues to go down, and it’s been that way for decades,” said Mark Squillace, a water-law expert at the University of Colorado Law School.

A detail of a map from Denver Water that shows the headwaters of the Fraser, Williams Fork and Colorado rivers, and associated tunnels, as well as the location of Gross Reservoir.

**Decoupled demand**

The phenomenon of increasing populations with declining water use is known as “decoupling,” and it has been happening in nearly every part of Colorado since the 1990s.

Higher efficiency appliances, utility-driven conservation programs and greater citizen awareness of water shortages have all driven the change.

But water managers say the state’s growing urban areas are reaching the point of “demand hardening,” where the additional water that can be conserved will not outweigh the amount needed in the future.

“We have been hearing those kind of stories for a long time, and it never happens,” Squillace said. “There are a lot of things that we could still do on the conservation end that would be a lot cheaper (than new infrastructure) and a lot more consistent with the environment that we live in.”

While they differ, the two lawsuits, spearheaded by Save the Colorado, could each hinge on demand and conservation estimates, as well as the assumption that additional conservation won’t be sufficient in the future.

Both lawsuits were filed in federal district court and are now awaiting action by a judge to move forward.

The Windy Gap Firming case was filed in October 2017 against the U.S. Bureau of Reclamation and the U.S. Army Corps of Engineers.

The Moffat Collection System case was filed in December against the Army Corps, the U.S. Interior Department and the U.S. Fish and Wildlife Service.
An aerial view of Windy Gap Reservoir, near Granby. The reservoir is on the main stem of the Colorado River, below where the Fraser River flows into the Colorado. Water from Windy Gap is pumped up to Lake Granby and Grand Lake, and then sent to the northern Front Range through the Adams Tunnel.

**The projects**

Both the Windy Gap and Moffat projects were conceived decades ago to address projected water shortages on Colorado’s Front Range and to add resilience to both Northern’s and Denver Water’s supplies.

Now estimated to cost about $600 million, the Windy Gap project will include Chimney Hollow Reservoir, a new 90,000-acre-foot reservoir in western Larimer County.

The reservoir is designed to store water from the Colorado and Fraser rivers transported from the Western Slope through the existing infrastructure of the Colorado-Big Thompson project. Windy Gap Reservoir, built in 1985, is created by a low, river-wide dam across the main stem of the Colorado River, just downstream from where the Fraser River flows in.

The reservoir is relatively small, holding 445 acre-feet, but it’s well situated to gather water from the Fraser, pump it up to Lake Granby and Grand Lake, and then send it through the Adams Tunnel under the Continental Divide.

With the Moffat project, Denver Water plans to spend an estimated $464 million in order to expand Gross Reservoir in Boulder County, by raising the height of the dam by 131 feet, in order to store an additional 77,000 acre-feet of water.

Gross Reservoir, which is part of the utility’s existing northern collection system, is filled with water from the headwaters of the Fraser and Williams Fork river basins. The water is moved through a pipeline in the Moffat Tunnel, which runs east through the mountains from the base of the Winter Park ski area.

The upper South Platte River, above its confluence with the North Fork of the South Platte, and the location of the proposed Two Forks dam and reservoir.

**The fork not taken**

The plans to expand Gross Reservoir started in 1990 after the Environmental Protection Agency rejected Denver Water’s plan to build Two Forks Reservoir on the South Platte River.

The EPA's rejection of Two Forks signaled the end of an era of large dams and forced groups planning large water infrastructure projects to give more consideration to the environmental impacts of their plans.
After this rebuke, Denver Water turned to the environmental groups that had opposed their project and solicited advice.

Throughout the 1990s, the utility implemented water conservation and recycling programs and started making plans to expand an existing reservoir instead of building a new dam.

“We embarked on the path that the environmental groups suggested. We implemented a conservation program and reduced our demands,” said Jim Lochhead, CEO and manager of Denver Water. “But you can’t get to zero. We continue to be committed to conservation, but at the end of the day, we still need more water.”

In partnership with environmental groups such as Western Resource Advocates and Trout Unlimited, Denver Water has agreed to spend $20 million on environmental improvements in watersheds on the Western Slope as part of the Gross Reservoir expansion.

Denver Water has also agreed to a monitoring program that will require them to mitigate any unforeseen environmental problems caused by the project, a compromise between environmental groups and the largest water utility in the state.

“In some sense, this project was the development of an alternative from a number of groups,” said Bart Miller, director of the Healthy Rivers Program at Western Resource Advocates. “In some respect, you are putting this in context next to what could happen or could have happened.”

Concerned about having their own projects fail, as Two Forks did, other water managers emulated Denver Water’s strategy.

When Northern started planning for the Windy Gap Firming project, it also reached out to environmental groups and ended up committing $23 million to mitigate problems caused by past projects and to make other improvements in the upper Colorado River watershed.

Even though there will be impacts from taking more water from the river, Northern says these “environmental enhancements” will leave the river better off than it would be without the project.

And environmental groups working on the project agree.

“There is a lot of damage on the river that will continue to go on without an intervention,” said Mely Whiting, legal counsel for Trout Unlimited. “This is probably the best shot.”

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Gross Reservoir in the mountains to the southwest of Boulder. Denver Water hopes to increase the height of the dam by 131 feet — to 471 feet — to store three times as much water. Denver Water says the expansion will help it meet increasing demands and better weather severe droughts.

**The lawsuits**

Although some environmental groups have seen compromise as the best step forward, Save the Colorado and the other plaintiffs in the two lawsuits take a harder stance.

Save the Colorado, in particular, is against any new dams or diversions.
“The river has already been drained enough,” Wockner said. “The mitigation, in our mind, is not consequential.”

Colorado and the six other states that use Colorado River water are now negotiating a plan to better manage Lake Powell and Lake Mead in response to drought and aridification.

Last week, an engineer from Northern told the Loveland City Council that the district may have to decrease by 10 percent the amount of water it draws from the headwaters of the Colorado River, sending the water instead to Lake Powell, where water is held before being moved through the Grand Canyon and into Lake Mead for use in California, Arizona and Nevada.

And Northern’s statement did not go unnoticed by the plaintiffs in the Windy Gap and Moffat lawsuits.

“The old guard in water have the default setting that we need to build more reservoirs and we need to find more ways to bring water from the Western Slope,” said Kevin Lynch, the lawyer representing the environmental groups in the Windy Gap Firming case. “The argument my clients are hoping to make with this case is that that may have made sense in the past, but it doesn’t now. We are definitely trying to buck the status quo and change the historical way of doing things.”

Lynch and his team are arguing that the Bureau of Reclamation and the Army Corps of Engineers — the two government agencies being sued in the Windy Gap Firming case — failed to update and independently verify the water-demand data used to justify the project.

To back up this allegation, the plaintiffs petitioned the court to include a statistics report in the administrative record.

The report, which looks at water-use statistics in communities with stakes in Windy Gap Firming water, showed that their demand projections made back when the agencies conducted their environmental assessments were between 9 and 97 percent higher than the actual water-use rates in those areas.

The lawyers in the Moffat Project lawsuit also found that Denver Water used old data — specifically, from 2002 — to project their demands future demands.

The complaint filed by the plaintiffs says that the Army Corps and the Department of the Interior — which are the two agencies being sued in the Moffat case, along with the Fish and Wildlife Service — ignored more-recent data that was available when they conducted their assessments.

“If they were to use today’s data, they would no way be able to justify that they need the water,” said Bill Eubanks, the lawyer for the plaintiffs in the Moffat Project case. “Here, we are talking about almost two decades. Two decades where we have seen the most-transformative uses of water in a century.”

Both legal teams say that even if the data did reveal a demand for more water, the agencies failed to analyze the alternatives to two large infrastructure projects, including conservation.

Specifically, Wockner and Eubanks both spoke about how a “cash for grass” program — where the government pays people to dry up their lawns — was never analyzed as an alternative. Looking at similar programs in California, they say the same amount of water could be saved, but for less money than either of the two infrastructure projects.

To this claim, both Northern and Denver Water say that additional conservation measures are already planned for the future, but that they are not enough.

“The state has done a lot of studies for need for water on the Front Range,” said Jeff Drager, Northern’s director of engineering and the project manager for the Windy Gap Firming project. “We agree that there can be more conservation, but it won’t be enough to meet our participants’ needs.”
This pipeline, at the base of the Winter Park ski area, moves water as part of the existing Moffat Collection System Project. The portal of the railroad tunnel, from this view, sits behind the pipeline.

Looking forward

Due to a long backlog in the court, both lawsuits are unlikely to see their day in court anytime soon. According to both lawyers, it could be months or years until the cases are decided. The court’s slow pace could impact the construction of both projects.

Citing the lawsuit, Northern in August delayed bonds to build the project.

Executives at Northern say they are using the time to hammer out the last of the details of the project’s design, but that if the project is delayed, it may cause costs to rise or endanger the water supplies of the project’s participants.

Denver Water, still waiting on several permits before they can begin planning construction, is less concerned about a delay. Both Lochhead and Wind say they believe that the projects will go forward once the lawsuits are resolved.

“We feel confident that our permitting processes are on solid ground,” Wind said. “I don’t think there is anyone in this organization at all that has thought this lawsuit would be effective.”

Although both Northern and Denver Water are confident that their projects will move forward, the plaintiffs in the cases are hoping for an upset that could topple the entire water system in Colorado.

“If we win this case, using this particularly egregious example of inaccurate water-demand projections, we think we can set a precedent that would force the state to look at more-recent data for different types of projects,” Eubanks said.
TO: Boards of Directors
FROM: Diane Johnson, Communications & Public Affairs Manager
DATE: March 28, 2019
RE: Communications and Public Affairs Report

2019 Colorado Legislative Session
The Senate State, Veterans, & Military Affairs committee voted March 6 to postpone indefinitely HB19-1108 (Nonresident Electors and Special Districts). The District was opposed. This bill sought to "expand the ability of nonresident electors to participate in the governance of special districts, and, in connection therewith, allowing nonresident electors who own taxable property within the special district to vote in special district elections and allowing such electors to serve on special district boards in a nonvoting capacity." Former Governor John Hickenlooper vetoed a similar bill (HB18-1181) in June 2018. Kristin Moseley and I worked with Colorado Water Congress state affairs committee to oppose the bill, so Kristin testified on behalf of the District and the CWC. The Special District Association was opposed and also testified. I also worked with the Northwest Colorado Council of Governments ("Northwest COG") Water Quality/Quantity Committee ("QQ"), which also agreed to oppose the bill and emailed the Senate committee members (attached).

Governor Jared Polis signed House Bill 19-1050 on March 7. As we have discussed, this bill extends to special districts a policy from 2013 legislation that said any homeowner association (HOA) rules that require homeowners to have turf grass are unenforceable.

Town of Vail community meeting
The Vail Town Council held their annual community meeting March 12 at Donovan Pavilion. District staff hosted a table and provided attendees with information about water and wastewater issues, preventing sewer backups and reducing FOG (fats, oils, and grease) in the sanitary sewer collection system, and the year round water use regulations. We also joined in celebrating Glenn Porzak as the fourth recipient of the Vail Trailblazer Award! A Vail Daily story is attached to this report.

Attachments:
1. QQ email re HB19-1108.
2. March 15 Vail Daily story: Vail honors water attorney with Trailblazer Award.
Hello all,

Below is the email we sent to the State Affairs Committee. We also shared this with Kerry and let her know about our opposition.

Keep up the good work! Hopefully done after tomorrow.

Torie

Begin forwarded message:

From: Torie Jarvis <qqwater@nwccog.org>
Subject: opposition to HB 1108 in State Affairs
Date: March 5, 2019 at 10:01:48 AM MST
To: mike.foote.senate@state.co.us

Dear Senator Foote,

I write in opposition to HB 19-1108 behalf of the Northwest Colorado Council of Governments Water Quality/Quantity Committee (QQ). We ask for your “nay” vote in State Affairs Wednesday afternoon.

This bill, which would allow for out-of-state voters in special district board elections, is bad policy in general, but more importantly could significantly burden water and sanitation districts in the QQ region.

QQ comprises water and sanitation districts, municipalities, and counties in the headwaters region of Colorado, located in Grand, Summit, Eagle, Pitkin, and Gunnison counties. QQ’s purpose is to protect and enhance the region’s water quality while encouraging its responsible use for the good of Colorado citizens and the environment.

A central policy of QQ is to protect local government’s ability to regulate for water quality protection. Our water and sanitation districts are leaders in water conservation, water quality protection, river restoration, and partnership building. However, this bill could potentially grind that good work to a halt. These elections would be costly, burdensome, and misguided.

Out of state voters also don’t understand the challenges that water districts in Colorado face—given our high desert climate, interstate compact obligations, and trans mountain diversions. Allowing out-of-state voters could create conflict between reality and perception of water from other parts of the country (or world).
Please vote no on this bill.

Thank you,

Torie Jarvis

******************************
Torie Jarvis
NWCCOG Water Quality/ Quantity Committee
P.O. Box 2308
Silverthorne, CO 80498

Cell: 970.596.5039
Fax: 970.468.1208
qwater@nwccog.org
www.nwccog-qq.org
Vail honors water attorney with Trailblazer Award

Glenn Porzak instrumental in ensuring water supplies for Vail Valley

By Scott N. Miller
smiller@vaildaily.com

VAIL — Snow, also known as this year's water supply, kept Glenn Porzak from accepting the Vail Trailblazer Award last week. Tuesday evening, he was on hand to hear kind words and take home a plaque.

The award was presented to Porzak, a Boulder-based water attorney, at Tuesday's annual state of the town meeting at Donovan Pavilion. A handful of people spoke about the decades Porzak has spent helping create the legal framework that has allowed the resort and the valley to flourish.

Vail Town Council member Kim Langmaid told the mostly-full room she first got to know Porzak when she was on the board of the instrument in ensuring water supplies for Vail Valley.
Eagle River Water & Sanitation District.

Langmaid said the district, and the valley, are “fortunate” to have had Porzak’s legal leadership over the years. Porzak helped put together the portfolio of water rights that helped both the growing town of Vail and allowed snow-making on Vail Mountain.

Langmaid added that Porzak was instrumental in forging an agreement to keep water rights in the valley instead of sending the resource to the Front Range.

CONSOLIDATING AND CREATING

Vail Mayor Dave Chapin noted that Vail in the early days had eight separate water districts ranging from East Vail to Intermountain. Porzak’s work helped consolidate those districts into one entity.

Accepting his award, Porzak credited his clients in the area for leading the way to change the state’s water law to accommodate recreation and other uses.

For instance, in the early 1970s, Bob Parker, of Vail Associates — the precursor to Vail Resorts — called Porzak, asking him to find a way to get rights to about 50 acre-feet of water for snowmaking at the bottom of Vail Mountain.

There was no applicable water law for that, so Porzak created a deal for water to “irrigate the lower slopes of Vail Mountain.”

Later, the district had what Porzak called the “audacious” idea to create a recreational water right for Gore Creek.

That right would help create water parks on the creek and other streams in Colorado.

Like virtually every water law case, it took years to settle the issue, with the Colorado Supreme Court finally ruling in favor of the request.

Porzak also credited the water district and the Upper Eagle River Water Authority — a separate but associated entity — with having the foresight to stave off Front Range appropriation of local water rights.

“They looked over at Grand County and saw 80 percent of that water had been diverted,” Porzak said. “They looked at Summit County and saw Denver Water had taken over 100,000 acre feet per year.”

LITIGATING, NEGOTIATING

Local water officials negotiated deals with Colorado Springs and Aurora regarding water rights associated with the Homestake Reservoir. Those officials also took on Denver Water, which had acquired senior water rights on the Eagle River. At one point, the Denver-based water authority had plans for a large reservoir just north of Wolcott and plans to pump that water over Vail Pass into Dillon Reservoir.

Years of litigation and negotiation resulted in the unprecedented step of Denver Water actually abandoning water rights on the Eagle.

Porzak noted that in final settlement negotiations, Denver Water’s lead attorney said, “It’s not in Denver Water’s DNA to abandon water rights.” Porzak recalled, “I said, ‘Why don’t you donate them to the (Colorado River District) and they’ll abandon them?’ He said, ‘That’ll work.’”

Pozak said he’s been “honored” to have been connected with local water officials.

The result of those decades of work, he said has created, “in my mind, the greatest recreation-based community in the United States, and maybe, the world.”

Vail Daily Business Editor Scott Miller can be reached at smiller@vaildaily.com and 970-748-2930.
Wet winter likely to keep Colorado River out of shortage next year

Hoover Dam and the Mike O’Callaghan-Pat Tillman Memorial Bridge are seen from the Colorado River’s Black Canyon at Lake Mead National Recreation Area outside of Las Vegas on Wednesday, Oct. 17, 2018. (Las Vegas Review-Journal)

By Henry Brean
Las Vegas Review-Journal
March 15, 2019 - 6:13 pm

Updated March 15, 2019 - 7:23 pm

For the moment, Mother Nature is smiling on the Colorado River.

Enough snow has piled up in the mountains that feed the river to stave off a dreaded shortage declaration for one more year, according to federal projections released Friday afternoon.

Just a month ago, forecasters expected Lake Mead to start 2020 about 17 feet lower than it is now, below the trigger point for a first-ever federal shortage declaration on the drought-stricken river.
But several weeks of winter storms across the Mountain States have cut the lake’s expected decline by Jan. 1 roughly in half, leaving the reservoir east of Las Vegas safely above the shortage line, according to the new figures from the U.S. Bureau of Reclamation.

“Pretty much from the middle of January until today, we’ve been on an upward trend,” said Paul Miller, service coordination hydrologist with the National Weather Service’s Colorado Basin River Forecast Center in Salt Lake City. “In terms of snowpack, we’re consistently above average across the entire basin.”

And the promising percentages are expected to climb.

Less than halfway through the month, some snow survey sites near the river’s headwaters are already reporting their wettest March on record, Miller said. “The month of March has just been exceptionally wet, especially in Colorado and parts of northern New Mexico.”

**Drought unbroken**

Even before the recent storms, federal forecasters had significantly upgraded their outlook for the Colorado.

In January, they were predicting another dry year, with just 64 percent of the average flow during the river’s peak April through July snowmelt period. By mid-February, that runoff forecast had increased to 74 percent. It hit 102 percent in the Bureau of Reclamation’s latest batch of monthly projections, and Miller said it could climb as high as 130 percent a month from now.
If the latest forecast holds, it would mark just the sixth year of above average flows since 2000 for the river system that supplies 90 percent of the Las Vegas Valley’s drinking water.

“It’s been a much better year than last year. It’s still not enough to break the drought, but it’s certainly a step in the right direction,” Miller said. “My guess is it will get even better. I’m not sure if it will be enough to keep Lake Mead out of shortage.”

**Skirting the line**

Federal regulators will declare the first-ever shortage on the Colorado if the water level in Lake Mead starts the year at less than 1,075 feet above sea level, roughly 15 feet lower than it is now. That would force Nevada and Arizona to reduce their river use by 4 percent and 11 percent, respectively.

As recently as February, such a shortage declaration seemed almost guaranteed. Now that seems unlikely.

Miller said there is two to three times more snow on the ground than there was a year ago throughout much of the Colorado River Basin, though not all of that accumulation will translate into water for the river and its tributaries. He said some of the above-average moisture will be absorbed by high-country soil left parched by 20 years of record drought. If there is enough left over to boost the level of Lake Powell and send more water downstream to Lake Mead, the river could skirt shortage once again.

Water managers will know for sure in August, when Reclamation officials issue their river operations plan for the coming year and decide whether to impose the mandatory shortage cuts based on the projected Jan. 1 water level in Lake Mead.
In the meantime, the seven Western states that share the Colorado are scrambling to finish an emergency drought plan that outlines voluntary water deductions — on top of the mandatory ones — by Nevada and others through 2026.

**Drought plan drama**

Reclamation Commissioner Brenda Burman has given the states until Tuesday, the last day of winter, to either finish the agreement or submit other ideas they might have before the federal government takes action on its own to keep the Colorado’s two largest reservoirs from crashing.

Right now, the so-called Drought Contingency Plan is tied up in California, where the Colorado’s largest water user, the Imperial Irrigation District, is refusing to sign the final deal unless it includes funding to address a growing environmental threat posed by the shrinking Salton Sea.

Board members for the Metropolitan Water District of Southern California, that state’s largest municipal water agency, responded Tuesday with a unanimous vote to absorb Imperial’s share of any cuts California might face under the drought plan — a move that effectively cuts the massive agricultural district out of the interstate deal.

“This agreement is far too important to give up now,” Metropolitan General Manager Jeffrey Kightlinger said in a written statement after Tuesday’s vote. “Seven states have worked together for years to reach this compromise and ensure a reliable water supply for the 40 million people and 5 million acres of farmland that rely on the Colorado River.”

If the drought deal gets done, the voluntary cuts are expected to kick in early next year, regardless of how wet this winter turns out to be.

Contact Henry Brean at hbrean@reviewjournal.com or 702-383-0350. Follow @RefriedBrean on Twitter.
# New Development Report
## March 2019

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MEMORANDUM

TO: Board of Directors
FROM: Catherine Hayes, Board Secretary
DATE: Feb. 28, 2019
RE: Summary of Authority’s Feb. 28, 2019, Board Meeting

The following is a summary of items discussed at the Feb. 28, 2019, Authority Board Meeting:

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

Rules and Regulations Updates: The board unanimously approved updates to Appendix G of the Rules and Regulations. Maureen Mulcahy summarized the need for the updates, to ensure compliance with the state-issued Backflow Program and Cross Connection Control (BPCCC) requirements.

Composting at the Vail office: Linn Brooks said the District is receiving compost service at the Vail office to promote its sustainable initiatives and keep organics out of local landfills, reducing greenhouse gas emissions. Employees are encouraged to bring in compost from home, and Linn offered this service to interested board members as well.

West Slope Charge Fund: Linn Brooks explained this charge and resulting fund, which was a requirement of the Colorado River Cooperative Agreement. Denver Water charges a fee to customers outside of its 2010 service area. The West Slope signatories of the CRCA are the beneficiaries of the fund, which is a compensatory payment to offset water that is transmountain diverted to the front range; the fund is to be used for West Slope water projects.

Quarterly Financial Report: James Wilkins reported that Authority water sales were above budget projections, with May and July sales much higher than anticipated. Authority impact fee revenues were in line with projections, and many developers paid at the end of December, prior to annual increases.

ADWF Capital Improvements Update: Brian Tracy presented an overview of recent capital improvements at the Avon Drinking Water Facility. State requirements have required many of the upgrades, including a project to reduce disinfection byproducts to meet new Colorado Department of Public Health and Environment (CDPHE) regulations. Other highlights at the facility included being the first water provider to receive credits for ozone disinfection, as well as having 24/7 automated operations.

AWWTF Nutrient Project Partnering Update: Jeff Schneider and Melissa Marts gave an overview of upcoming Avon Wastewater Treatment Facility capital improvements to meet the state’s nutrient regulations. A construction manager at risk method is being used, and Melissa noted a partnering session with the staff, and engineering and contractor representatives to kick the project off in a collaborative spirit and to minimize construction cost risk. Construction is expected to kick off this fall and be completed in 2022.

6 West Project Issues: Jason Cowles reported a subcontractor at the 6 West project did not properly install the water and sewer mains for the development. The District’s field inspector identified numerous issues, which the subcontractor has since remedied. To protect the Authority and District if these fixes are not sufficient, an extended three-year warranty for the work will be procured by the developer; warranty bonds will also be
assigned to the Authority and District by the contractor to back the extended warranty. Further, the District will record a perpetual lien against the property, which will be memorialized via an agreement with the subcontractor’s company.

**Legislative Update**

Diane Johnson updated the board on two bills of interest: HB19-1050, which would extend to special districts the same policy that came from 2013 legislation, which said any homeowner association (HOA) rules that require homeowners to have turf grass are unenforceable. This is ready for the governor’s signature. The other bill, HB19-1108, is an iteration of a similar 2018 bill to allow nonresident property owners to vote in special district elections for board members. The District opposes this legislation; Diane is working with others to get a “no” vote in a March 6 Senate committee hearing.

**Drought Contingency Planning**

Diane Johnson updated the board on drought contingency planning, particularly issues that the lower basin states are having. March 4, is the latest deadline for the lower basin states to come to agreement regarding their drought contingency plan, although the Bureau of Reclamation will allow time for states to agree while it takes input from each of the seven basin states per the notice in the federal register.

**Colorado Outdoor Recreation and Economy Act**

Glenn Porzak discussed this legislation, which will be introduced in Congress and, among other issues, deals with wildfire coordination efforts in wilderness areas. Of particular interest to the Authority and District are the inclusion of Camp Hale as a National Treasured Landscape, as water released from Eagle Park Reservoir must traverse this area. Glenn also pointed out that the current legislation does not require a clean up of unexploded ordnances in the area. He will continue to monitor this.

**Pando Feeder Canal Absolute/Diligence Application**

Glenn Porzak reported there were no opposers to the Pando Feeder canal filing to make absolute a portion of these important water rights. He filed the motion for entry of final decree and is awaiting the referee’s signature.

**Approval of Settlement with TCRP and other parties**

The board unanimously approved the terms of settlement with Traer Creek Resort Properties and other parties involved in the litigation, per the agreed upon settlement terms.
# COMMITTEES

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