



Water Engineering: Studies and Masterplans

- Water Supply
- Distribution
- Facilities Planning

WEI has performed studies involving evaluation of water rights, availability, current and projected usage, raw water supply lines and storage, treatment facilities, finished water storage tanks, distribution, water system network modeling and calibration for multiple pressure zones for domestic, fire flow, and combined flow, groundwater pumping systems, and wells.

Selected Projects



Blackhawk Subdivision, Bonneville, Cnty, ID
Evaluated water, irrigation, and fire flow for 3500 acre foothills community, modeled proposed distribution system, wells with 14000 gpm pumping capacity, 8000 gpm booster station, and upper and mid-level storage tanks. System included 9 pressure zones and 42 PRVs. Performed subsequent update planning studies.

City of Tetonia, Tetonia, ID
Performed facility planning study for town's water system, including recommendations for tanks, wells, and distribution system upgrades.

City Water Supply Upgrade Masterplan, Central, CO
Performed water system study analyzing water rights, water availability, current and projected water usage, raw water supply lines, raw water storage, treatment facilities, and finished water storage and distribution. Proposed improvements were phased, with phase I consisting of over \$3,800,000.00 worth of improvements (2020 dollars).

CSU Extension, Grand Junction, CO
Analyzed water system for fire flow, designed water main extension and looping as needed to obtain required fire flow.

Water Master Plan, Red Cliff, CO
Modeled water supply, usage, and leakage, with recommendations for improvements.

Grand Vista Subdivision, Grand Jct., CO
Modeled proposed water system expansion for domestic and fire flow in an elevated area.

Starlight Pines, Water System Analysis, AZ
Evaluated 800-acre mountain resort water system with several pressure zones, wells, and storage tanks. Used computer modeling.

Water & Fire Flow Modeling, Minturn, CO
Modeled City water system expansion involving booster station and fire flow analysis.

Magnus Court Subd., Mesa County, CO
Analyzed water system for hillside 74 lot subdivision with 190 feet elevation change, fire and domestic flows, with booster station and relocation of PRV.

Water System Modeling, Payson, AZ
Modeled mountain subdivision and regional water system, including use of proposed booster station. Used computer modeling.

Water Tank Feasibility Study, Delta, CO
Evaluated various tank sites for North Delta with respect to land ownership, geotechnical, aesthetic, hydraulic, and pumping, and steel versus concrete tanks.

Groundwater Discharge Line Analysis, Yuma County, AZ
Project Engineer on study involving stormwater and groundwater for an 80 square mile area. The U.S. Bureau of Reclamation had 14.6 miles of pressure pipeline for conveying and discharging pumped groundwater to control high conditions. Through the years more pumps were added without evaluation. Prepared first computer model on the system for pipe and 36 pumps and evaluated system capacities and ideal operation.

Spyglass Hill, Grand Junction, CO
Modeled and evaluated water system pressure for domestic and fire flow in an elevated area with two pressure zones.

Water Master Plan, Norwood, CO
Performed comprehensive water system Master Plan and Feasibility Study, consisting of research of water rights, water availability, raw water supply and storage, treatment, and distribution, including computer modeling.

Redlands Mesa Subd., Mesa County, CO
Performed computer model analyses for a golf course community water distribution system that has 4 pressure zones and a booster station.





Water Engineering:

Booster Stations, Tanks, Wells, and Intakes

- **Variable Frequency Drives**
- **Harmonic Distortion Filters**
- **Backup Power**
- **Radio & Telemetry SCADA Systems**

WEI has designed booster and pump stations, storage and hydropneumatic tanks, wells, and water supply intake and filtration facilities. Booster stations designs have included variable frequency drives with harmonic distortion filters, backup power with automatic transfer switches, automatic louvre opening and closing for intake and exhaust air, cranes, and SCADA systems. Systems designed were for domestic culinary, fire, and combined flows. Wells supplied water to mountain communities and resort subdivisions.

Selected Projects



Blackhawk Subd., Bonneville Cnty, ID

Designed booster station with 8,000 gpm capacity, and wells and well house for Well Site #1 with 4 wells and 4600 gpm capacity. VFDs, harmonic filtering, and remote monitoring with limited control were involved.

Old Staley Springs Resort, Island Park, ID

Designed well system and well house for a 17-cabin commercial development and two private lots

Redlands Mesa Golf Course Community, Mesa County, CO

Designed water distribution system and a 4-pump booster station with auto transfer to backup power generation and variable frequency drives. Enclosed in a building, system had automatically opening louvres for the generator intake and exhaust air, plus overhead crane.

Water Booster Station, Payson, AZ

Designed mountain subdivision water system. Elevated locale was ideal for regional town facility. Coordinated between developer and town and designed a 500,000-gallon water storage tank and 5 pump booster station facility. Used computer modeling.

City Water Supply Upgrade Masterplan, Central City, CO

Designed water intake improvements to towns only supply.

Water System Master Plan, Norwood, CO

Designed improvements to the water supply intake facility for the entire town and surrounding agricultural region.

City of Ucon, Ucon, ID

Evaluation of well #1 and recommendations.

Falcon Ridge, Bonneville County, ID

Designed wells, well house, and distribution system for a 28 large lot subdivision.

Lazy Triple Creek Ranch, Madison, County, ID

Designed wells, 400,000-gallon concrete storage tank, booster station, and distribution system with two pressure zones to supply domestic, irrigation, and fire flow water.

Water System Fire Flow Booster Station, Minturn, CO

Designed booster station facility for domestic and fire flow.

Water Supply Improvements, Red Cliff, CO

Designed infiltration gallery, pump station, and water filtration facility for the entire water town supply

Magnus Court Subd., Mesa County, CO

Analyzed water system for hillside 74 lot subdivision with 190 feet elevation change, fire and domestic flows, with booster station and relocation of PRV.

North Delta Water Tank Feasibility Study, Delta, CO

Evaluated various tank sites with respect to land ownership, geotechnical, aesthetic, hydraulic, and pumping, and steel versus concrete tanks.

Starlight Pines Water System Modeling, AZ

Designed water system for 800-acre mountain resort having several pressure zones, wells, and storage tanks.

Elusive Acres Water System, AZ

Designed water system for mountain subdivision water system design including wells, storage tank, and booster station.





Water Engineering: Distribution and Conveyance

- Large Dia. Lines
- Aerial Waterlines
- Open Cut and Pipe Bursting
- Directional Bores
- Appurtenances

WEI has designed many capital improvement water line extensions. Projects have included pressure water mains and gravity flow lines up to 30" in diameter, aerial lines over drainageways and rivers, directional bores both with and without casing pipe under highways, canals, and congested utility corridors. Designs include new and replacement lines and connections, temporary surface lines, open trench and pipe bursting, meters, system interconnections, PRVs and PSVs, air release valves, and associated facilities such as tanks and booster stations.

Selected Projects

32 Road Waterline: Phase 2 Design, Mesa County, CO

Involved approximately 9000 LF of 12" waterline, two directional bores with steel casing, one under a CDOT Hwy and another under a canal, combination air valves, and miscellaneous work. Project is in CDOT ROW.

1998, 1999, & 2000 Waterline Replacement Projects, Grand Jct., CO

In three projects, each consisting of many upgrade locations, designed over 46,500 lineal feet of both open trench and pipe bursting waterline. Involved design and coordination of over 800 service switchovers and many main reconnections. Part of the project was in interstate business loop I-70B.

Raw Water Supply, Central City, CO

Design of over six mile raw water supply line for the mountain community of Central City in an old 15' easement that the Forest Service would not allow to be expanded for waterline reconstruction, even temporarily for construction except at only a few locations for staging and turn-around. Special design considerations were track mounted rock trenchers, fusion bonded HDPE pipeline, and other special provisions for environmental protection.

Lazy Triple Creek Ranch, Madison, County, ID

Designed 21,542 lineal feet of waterline for domestic, irrigation, and fire flow system. System involved two pressure zones.

CSU Extension, Grand Junction, CO

Designed water main looping for fire flow.

City Waterline Upgrades, Ucon, ID

Designed waterline upgrades at 8 locations.

32 Road Waterline: Phase 1 Segments A, B, and C Design & Segment B Construction Services, Mesa County, CO

Provided design and construction engineering and inspection services on project involving 11,263 LF 10" through 12" waterline, 759 LF directional bore, 297 LF pipe suspended on CDOT bridge, combination air valves, an interconnection between two water purveyors, and miscellaneous work in CDOT ROW.

Peach Street Reconstruction: Phase II, Fruita, CO

As part of designing road reconstruction, designed 2116' of waterline with 8 services, and provided construction oversight.

South Avenue Reconstruction 5th St. to 9th St., Grand Junction, CO

As part of roadway redesign, designed new waterline with fire hydrants. Special challenges were other utilities in the same street - two active waterlines, 24", 21", & 15" parallel combined sewers with design of combined sewer separation using existing lines plus a new 48" storm drain, medium pressure 10" and high pressure 12" gas lines, two banks of underground electric, overhead high voltage lines, irrigation pipeline, and underground telephone, all in 80' of R.O.W.

Falcon Ridge, Bonneville County, ID

Designed domestic water system for a hillside development.

Old Staley Springs Resort, Island Park, ID

Designed combined domestic and irrigation water system and a separate fire suppression water system.

5th Street Waterline, Tetonia, ID

Designed waterline extension.

