



# Stormwater Engineering: Reservoirs and Regional Detention

- Dams & Spillways
- Multi-Use Detention & Retention Basins
  - Parks & Irrigation
  - Lakes & Fish Ponds
  - Water Quality
- Interconnected Ponds

WEI has designed small earth dams, spillways, and outlet works facilities that are state dam engineer regulated. WEI has designed many regional and retrofit detention facilities for cities and counties, including multi-use facilities for parks, irrigation, recreational lakes and ponds with and without fish, and water quality. Detention facilities have included up to 75 acres of lake where stormwater replaced evaporation losses. WEI has modeled and designed several interconnected pond and basin systems where flow reversal and backwater effects influence inflow and outflow.

## Selected Projects



**Fruita Reservoir #1, Fruita, CO**  
Feasibility study and design for dam remediation and repair for State Dam Engr.

**Fruita Reservoir #3, Fruita, CO**  
Performed probable maximum flood hydrologic runoff and hydraulic flow routing analyses through City-owned reservoir and prepared Engineering Basis of Design for and designed reservoir dam improvements and new spillway and outlet works. All work was subject to approval by the State Dam Engineer.

**32 1/2 Road Regional Watershed Study, Mesa County, CO**  
Perform regional basin-wide stormwater masterplan and evaluate detention basin feasibility and requirements.

**Grand Mesa Center, Grand Junction, CO**  
Analyzed three proposed interconnected detention basins. Each pond is affected by other pond "tailwater" conditions with bi-directional flows between ponds depending upon the time period in the runoff event.

**Intermountain Veterans Memorial Park, Mesa County, CO**  
Performed regional hydrological and hydraulic study for the park and surrounding areas, and designed regional County-owned detention facilities.

**Matchett Drainage, Grand Junction, CO**  
Analyzed and designed regional City-owned detention facility.

**Purdy Mesa Reservoir, Grand Jct., CO**  
Performed probable maximum flood hydrologic runoff and hydraulic flow routing analyses through two inter-connected reservoirs of the City of Grand Junction's municipal water system. Designed spillway down steep hillside that required approval by the state dam engr.

**25 Rd. Drainage System, Grand Jct, CO**  
Analyze 100 year storm conditions for the 25 Road area at the bottom of the Ranchman, Buthorn & Ligrani drainage watersheds. Designed collection system and a detention basin.

**West Lake Detention & Water Quality, Grand Junction Drainage District, CO**  
Analyzed and redesigned West Lake pond to be a 16 acre foot water quality and 13 acre feet detention basin, with automated controls to allow available pond volume to function as one or the other. Designed outlet works, controls, and backup power systems.

**Val Vista Lakes, Gilbert, AZ**  
Designed several detention facilities for an 800-acre master planned community with 4 lakes covering 75 acres. Design provided lake recharge with stormwater for a total water management approach.

**Monument Glen 1 & 2 Home Owners Association, Fruita, CO**  
Designed retrofit of failing detention basin.

