

Downtown and North Greeley Comprehensive Drainage Plan Greeley, Colorado

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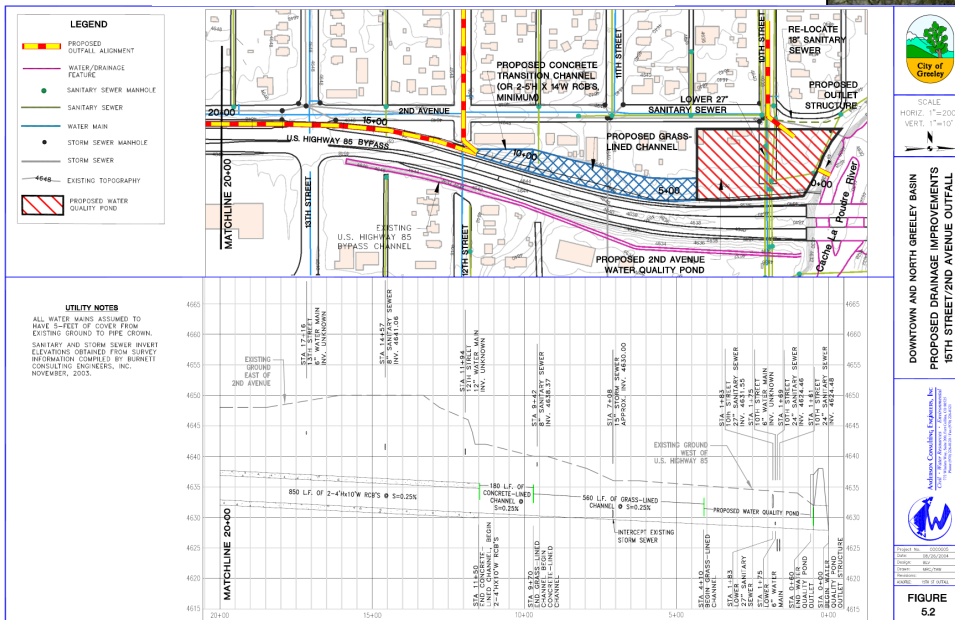
ANDERSON CONSULTING ENGINEERS, INC.
Civil • Water Resources • Environmental

Anderson Consulting Engineers, Inc. (ACE) was contracted by the City of Greeley to update the **Comprehensive Drainage Plan for the Downtown and North Greeley Basin**. The primary purposes of the project were to: (1) finalize and consolidate baseline hydrology to include improvements associated with an existing storm drainage outfall as well as controlled spills and bank improvements along the Greeley No. 3 Ditch; (2) hydraulically evaluate the capacity of the Greeley No. 3 Ditch in an unsteady flow mode to determine spill locations from upstream basin inflow hydrographs; and (3) formulate a drainage improvement plan to control ditch spills that would include major storm sewer outfalls and water quality features including regional water quality ponds and on-line storm sewer treatment vaults. In order to accomplish these goals, the following general tasks were completed by ACE:

- (a) a new **hydrologic model for the over five square mile basin** was prepared and utilized to estimate runoff response to a range of rainfall events for both existing development and fully developed conditions;
- (b) baseline **hydraulic analyses were conducted along the Greeley No. 3 Ditch using HEC-RAS in an unsteady flow mode**, allowing for the determination and location of peak spill hydrographs into the lower portion of the basin;
- (c) **conceptual alternatives for drainage improvements** within the basin were developed, including **floodproofing of structures, regional detention facilities, structural conveyance improvements, water quality treatment vaults, and water quality detention facilities**, with the latter being located at the end of major storm sewer outfalls discharging to the Poudre River;
- (d) a **recommended plan of drainage improvements** was prepared, comprised of seven identified projects which included a combination of water quality ponds and structural conveyance improvements, with approximately 400 storm sewer inlets and 7 miles of storm sewers, each at a preliminary level of design;
- (e) engineering and **construction cost estimates** for the recommended plan of improvements **totaling over \$37 million**; and
- (f) hydrologic models were modified to reflect the recommended plan of drainage improvements.

Four of the projects (all major storm sewer outfalls) are proposed to pass beneath the Union Pacific Railroad, while two of the outfalls are proposed to pass beneath the Greeley No. 3 Ditch. Water quality treatment includes five water quality ponds and thirteen water quality treatment vaults.

**Plan and Profile of the Proposed 15th
Street/2nd Avenue Outfall.**



**Intersection of 9th Avenue and
10th Street, Downtown and
North Greeley Basin.**