

I-25 Corridor Master Drainage Plan Weld County, Colorado

Client: Mr. Frank Hempen
Weld County Colorado
Public Works Department
933 N. 11th Avenue
Greeley, Colorado 80632-0758
970-356-4000 (work)

Engineering Budget: \$94,990
Completion Date: 2/2000



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

Anderson Consulting Engineers, Inc. (ACE) was contracted by Weld County to develop Master Drainage Plans for the Tri-Town Basin and the Godding Hollow Basin in southwest Weld County. The two basins covered 12,420 acres and five jurisdictional entities (Weld County, Town of Frederick, Town of Firestone, City of Dacono, and Town of Erie). The primary purpose of the project was the development of a stormwater drainage plan that could be utilized as a tool for making decisions related to stormwater management. The planning document accomplished the following goals: (1) identified long-term capital improvements and rehabilitation measures for the existing drainage system; (2) be a tool for implementation of future improvements associated with new development within the basin boundaries; (3) provided a basis for prioritizing and scheduling required improvements; (4) provided flexibility to implement improvements that afford flood protection while being cost effective; (5) identified uniform criteria for the planning and design of major drainageway facilities and on-site detention requirements; (6) addressed stormwater management policy issues; and (7) provided a recommendation related to a management, financing and funding mechanisms. In order to accomplish these goals, the following general tasks were completed by ACE:

- (a) Provided coordination with the five governing bodies, the Tri-Area Sanitation District, Colorado Water Conservation Board, several irrigation companies, and various other entities;
- (b) Collected previous data and reports documenting flooding within the basins. Performed field reconnaissance and field surveying to define existing drainage problems and formulate plans for conceptual improvement at these locations;
- (c) Developed two base maps composed of USGS quadrangles and aerial photography;
- (d) Inventoried and hydraulically evaluated the capacity of existing drainage facilities such as detention ponds, culverts, bridges, road crossings, drainage channels, irrigation ditches, and major storm sewers;
- (e) Developed a detailed hydrologic model to simulate stormwater runoff for three scenarios: (1) existing or “as is” condition; (2) future development conditions with existing facilities; and (3) future development conditions with on-site detention and proposed improvements;
- (f) Identified storm drainage improvements to mitigate the existing and potential future flood hazard problems;
- (g) Performed hydraulic analysis and modeling to evaluate the structures identified during: (1) the inventory of existing structures and (2) the development of proposed improvements;
- (h) Developed criteria for planning and design of drainage facilities based on input from the local jurisdictions and entities;
- (i) Prepared a stormwater management policy;
- (j) Investigated various funding and financing alternative and presented them to the governing bodies;
- (k) Summarized the results in a report and technical appendices/project notebook. The summary included preliminary design drawings, detailed cost estimates, and an implementation plan. The documentation provided allowed for the replication of the steps take to : (1) generate the design flows; (2) estimate the capacity of the existing and future facilities; (3) develop and evaluate the alternative plans; and (4) generate the cost estimates.
- (l) Engineering and construction cost estimates for the selected plan of improvements totaled over \$39 million.



**Tri-Area Drainageway Culverts
in Dacono, Colorado**