City of Boulder

Main Sewer Improvements, Phase II

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After identifying vulnerabilities in the existing wastewater collection system, the City of Boulder began addressing capacity limitations, aging infrastructure, and long-term system resilience. The overall program includes installing 2.4 miles of new 42-inch and 54-inch interceptor, adding a three-shaft, 1,900-foot tunneled section, replacing the inverted siphon beneath Boulder Creek, improving the WRRF's influent pipeline, reconstructing a spillway, enhancing stability along Boulder Creek, and rehabilitating 2.6 miles of interceptor (Phases I and III).

The project required designing and permitting through environmentally sensitive and constrained areas, congested utility areas, and crossing and replacement of a spillway. The team performed detailed constructability assessments to identify construction methods and design refinements. This included installing a deep tunnel with a 1,500-foot continuous section to mitigate traffic impacts to a major arterial roadway and to avoid construction dewatering impacts to nearby domestic wells, a strategy confirmed with hydrogeologic modeling. Meetings with stakeholders and phased construction reduced community impacts.

The team performed extensive hydraulic modeling to define the new pipeline's capacity, establish the strategy to rehabilitate the interceptor, and design the replacement WRRF intake. This modeling effort guided design for a replacement three-barrel inverted siphon to allow an aerial creek crossing to be retired in the future. The team paired rehabilitating the interceptor with right-sizing a new parallel interceptor. This accommodated new pipeline diameter constraints and increased redundancy in a critical section of the system that conveys 80% of the city's flow.

Completing this project strengthened system resiliency and improved the system's hydraulic capacity to the WRRF.

Title: City of Boulder Main Sewer Improvements, Phase II | Boulder, Colorado

Client/Owner: City of Boulder | Boulder, Colorado

Entrant: HDR | Denver, Colorado