

Mainline 3 Replacement Project Environmental and Construction Mitigation

Questar Pipeline Company



Project Overview

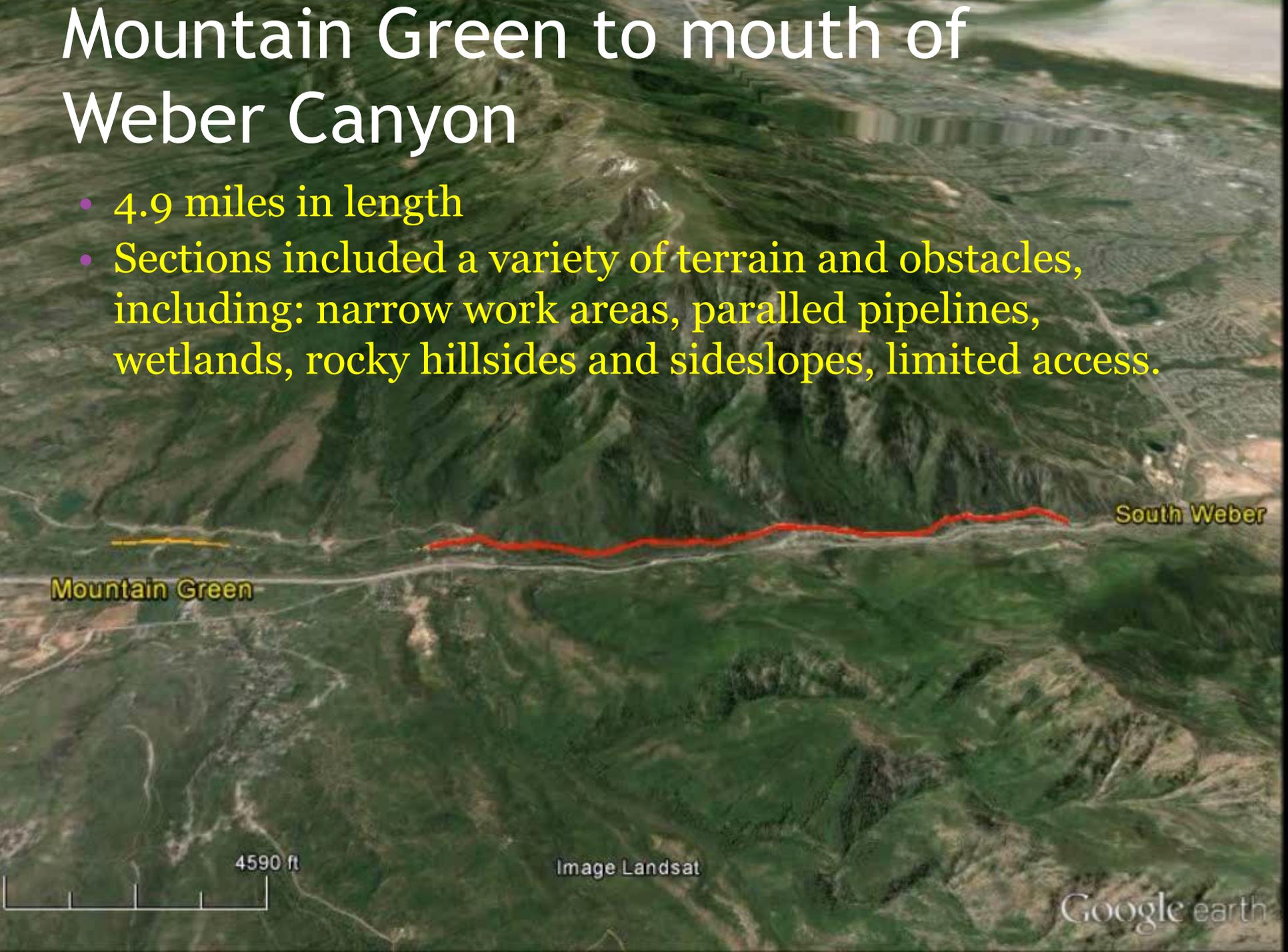
- Multi-year replacement of Questar Pipeline Company's Mainline 3 (ML 3) natural gas pipeline.
- In total, from 2009-2015 Questar replaced approximately 38 miles of older 16-inch-diameter steel pipe.
- Extended from Coalville, Summit County to South Weber in Davis County.
- Project conducted to ensure continued safe and reliable service for years to come.

Brief History



Mountain Green to mouth of Weber Canyon

- 4.9 miles in length
- Sections included a variety of terrain and obstacles, including: narrow work areas, parallel pipelines, wetlands, rocky hillsides and sideslopes, limited access.

A satellite map showing a rugged, mountainous landscape. A red line traces a path across the terrain, starting from a point labeled 'Mountain Green' on the left and ending at a point labeled 'South Weber' on the right. The terrain is characterized by steep, rocky hillsides and deep canyons. A yellow line is visible in the lower-left quadrant, and a scale bar is located in the bottom-left corner.

Mountain Green

South Weber

4590 ft

Image Landsat

Google earth

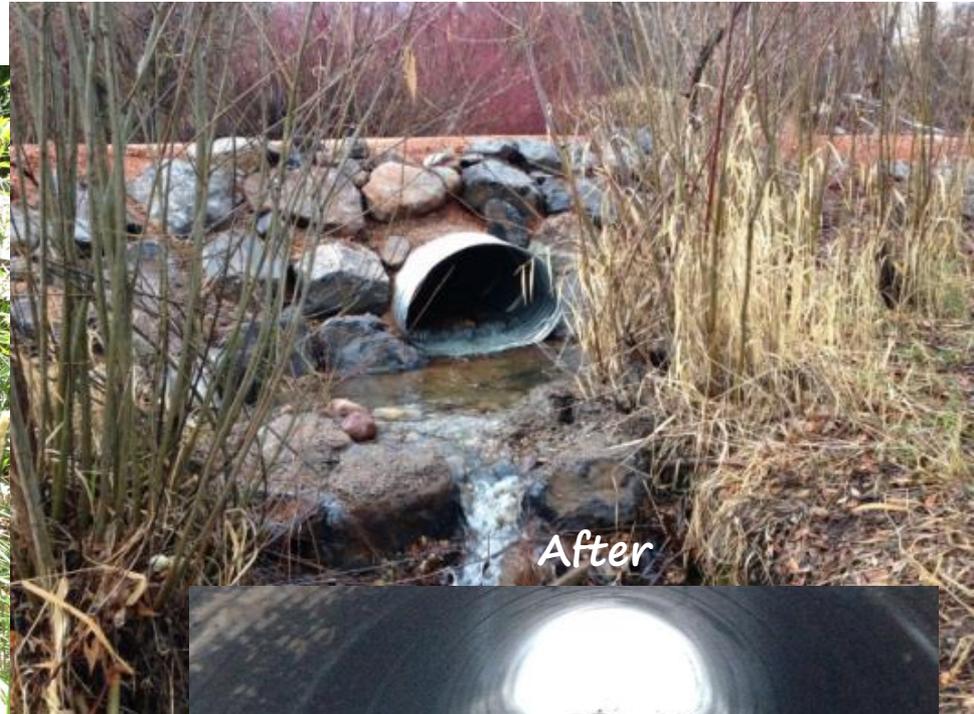
Improvements to Jacob's Creek

- Perennial waterbody historically used as a spawning area for cutthroat trout.
- Two small diameter culvert pipes in project area were not allowing fish passage.
- Working with the Utah Div. of Wildlife Resources and Trout Unlimited (with financial support of Plains and Pioneer pipelines), Questar redesigned and constructed the new culvert system.

Improvements to Jacob's Creek

- New design included:
 - New single, large diameter culvert conforming to natural grade
 - Improved pools and channels on both sides of culvert
 - Creation of artificial ripples within culvert to somewhat mimic natural stream-bottom conditions.
- Additional care on replacement of pipeline in the creek:
 - Minimized construction time
 - Native rock placement and stream contouring to near natural conditions
 - Reseeded with riparian vegetation
 - Stabilized the banks with erosion control matting

Improvements to Jacob's Creek



Ben Nadolski, Aquatic Habitat Restoration Biologist with the UDWR "We are very thankful for Questar Pipeline's contribution to our efforts to conserve, protect and reconnect the habitats and fisheries that are valuable to all the people of Utah."

Innovative Construction Techniques



Innovative Construction Techniques



Innovative Construction Techniques

- Safety! – #1 priority
 - No accidents occurred
- Reinforced metal fences to reduce chance of debris/rocks rolling downhill
- Temporary chain link fences along jersey barriers and periodic single-lane closures along I-84
- Communication with landowners, Forest Service, & paralleled pipeline representatives
- Narrow work area (though challenging from a construction standpoint) is much less noticeable visually and has reclaimed very quickly.

Advanced Site Dewatering/Wetland Protection

- Existing, 50-year-old pipe was within saturated wetland area.
- Questar and the construction contractor, with approval from regulatory agencies, implemented extensive timber mat placement and groundwater dewatering program.
 - 800, 18-ft long by 4-ft wide timber mats installed – all equipment required to work on mats
 - Up to 9 electric centrifugal pumps operated at any one time to disperse water from right-of-way.
 - Hoses with screened inlets were placed in trench boxes and discharge was pumped through hay bale sediment barriers.
- Allowed for faster and more stable trenching.
- Anticipate quick return to near pre-construction conditions.

Advanced Site Dewatering/Wetland Protection



Careful Reclamation

- Topsoil and subsoil segregation
- Slope breaker and/or erosion control matting on hillsides
- Slope stabilization measures, as specified by geotechnical consultant
- Boulder replacement and contouring of ROW.
- Revegetation with native seed and slow-release fertilizer.



Careful Reclamation





Thank You