



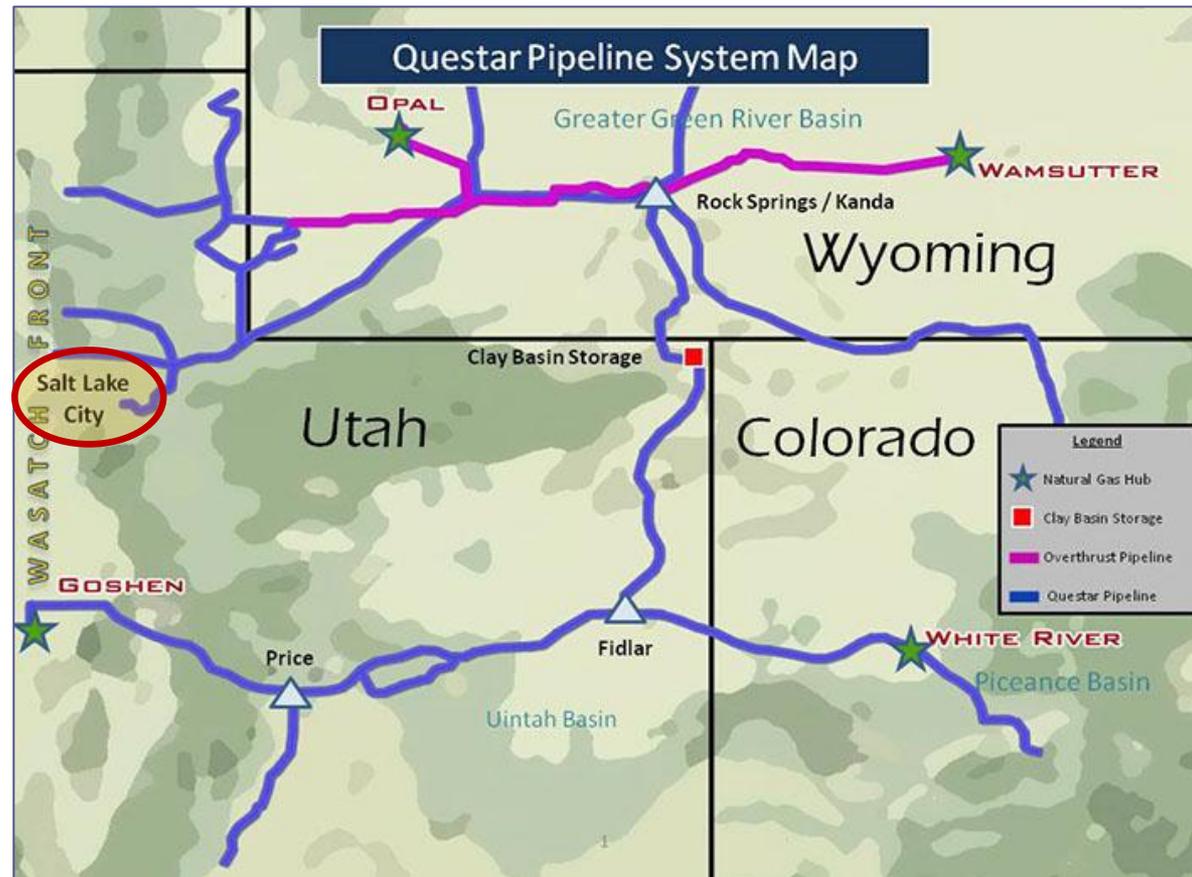
Mainline 104 Extension to Fidler Project Visual Resource Mitigation

Recognitions for Questar's ML104

- 2008 Earth Day Award from the Utah Board of Oil, Gas and Mining
- 2012 Earth Day Award from the Utah Board of Oil, Gas and Mining. Recognized by Utah's Governor Gary Herbert.
- **Interstate Oil and Gas Compact Commission's Stewardship Award** Subcommittee as the winner in the Major/ Large Company category.
 - Amy Childers asked us to speak at the Public Lands Committee session at the IOGCC Annual Meeting

Questar Pipeline Company

- Interstate natural gas pipeline company that provides transportation and underground storage services.
- Own and operate about 2,500 miles of pipeline with total daily capacity of 2,530 Mdth.
 - Greater Green River
 - Uinta
 - Piceance



Things to Do and See in Utah

DELICATE ARCH

TEMPLE SQUARE IN SALT LAKE CITY

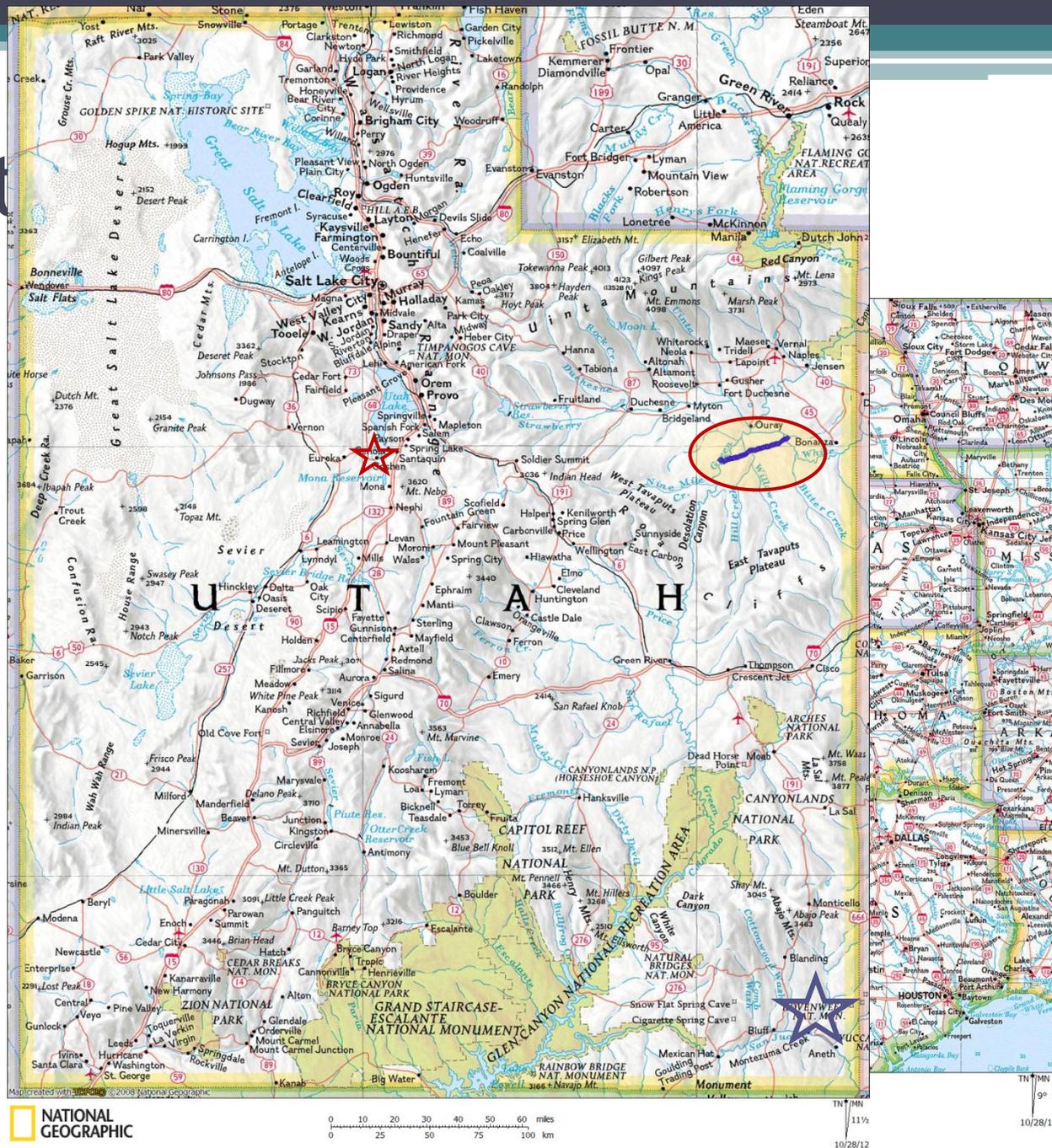
POWDER

GREAT SALT LAKE

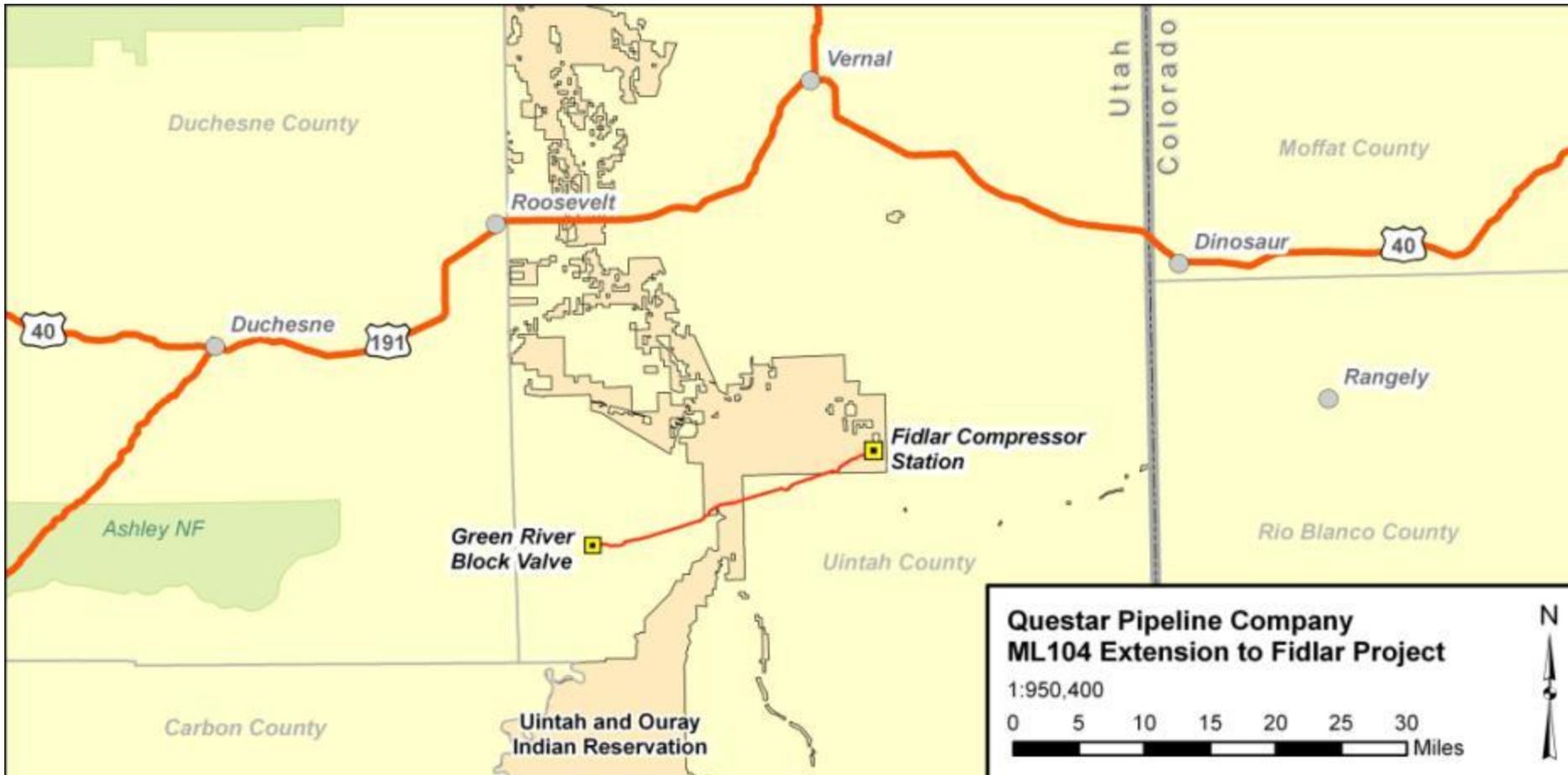
GAS & OIL



Project



Uintah County, Utah



24" diameter pipe, 24.7 miles in length

Project Planning (PreConstruction)

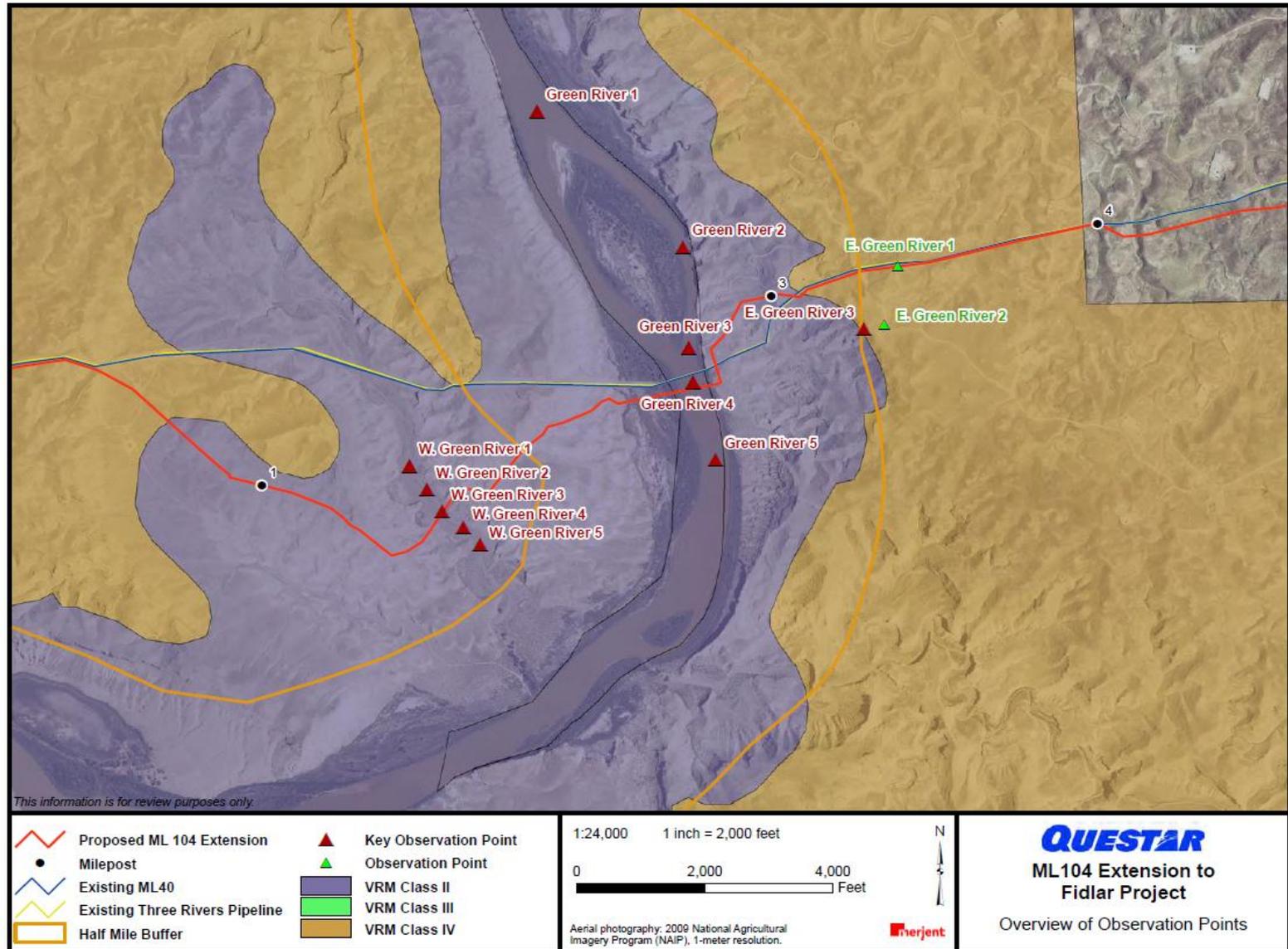
Over 18 months (2010 -2011):

- Route selection
- Meetings with Agencies
- Field Surveys
- Reroutes
- Mitigation Planning
- Permit Applications
- Environmental Reviews
- Project Approvals

Key Environmental Issues

- **Green River Crossing**
 - **Area of Critical Environmental Concern**
 - This stretch recommended as Wild and Scenic River
 - **Visually sensitive area**
 - **Endangered Plant Species/Dust Control**
 - **Endangered Fish Species**
 - **Critical Fish Habitat**
 - **Riparian Vegetation**
 - **Floodplain and Wetland Habitat**
 - **Noxious Weeds**

Viewshed Analysis



Viewshed Analysis



▲ Observation Point
● Milepost
— Proposed ML 104 Extension

— Existing ML40
— Existing Three Rivers Pipeline
■ Visible Viewshed

1:24,000 1 inch = 2,000 feet
 0 2,000 4,000 Feet

QUI
 ML104 E
 Fidler
 Viewshed
 Green River

Aerial photography, 2009 National Agricultural Imagery Program (NAIP), 1-meter resolution.



▲ Observation Point
● Milepost
— Proposed ML 104 Extension

— Existing ML40
— Existing Three Rivers Pipeline
■ Visible Viewshed

1:24,000 1 inch = 2,000 feet
 0 2,000 4,000 Feet

QUESTAR
 ML104 Extension to
 Fidler Project
 Viewshed Analysis
 Green River 3 - Tree Canopy

Aerial photography, 2009 National Agricultural Imagery Program (NAIP), 1-meter resolution.



▲ Observation Point
● Milepost
— Proposed ML 104 Extension

— Existing ML40
— Existing Three Rivers Pipeline
■ Visible Viewshed

1:24,000 1 inch = 2,000 feet
 0 2,000 4,000 Feet

ML
 Green

Aerial photography, 2009 National Agricultural Imagery Program (NAIP), 1-meter resolution.



▲ Observation Point
● Milepost
— Proposed ML 104 Extension

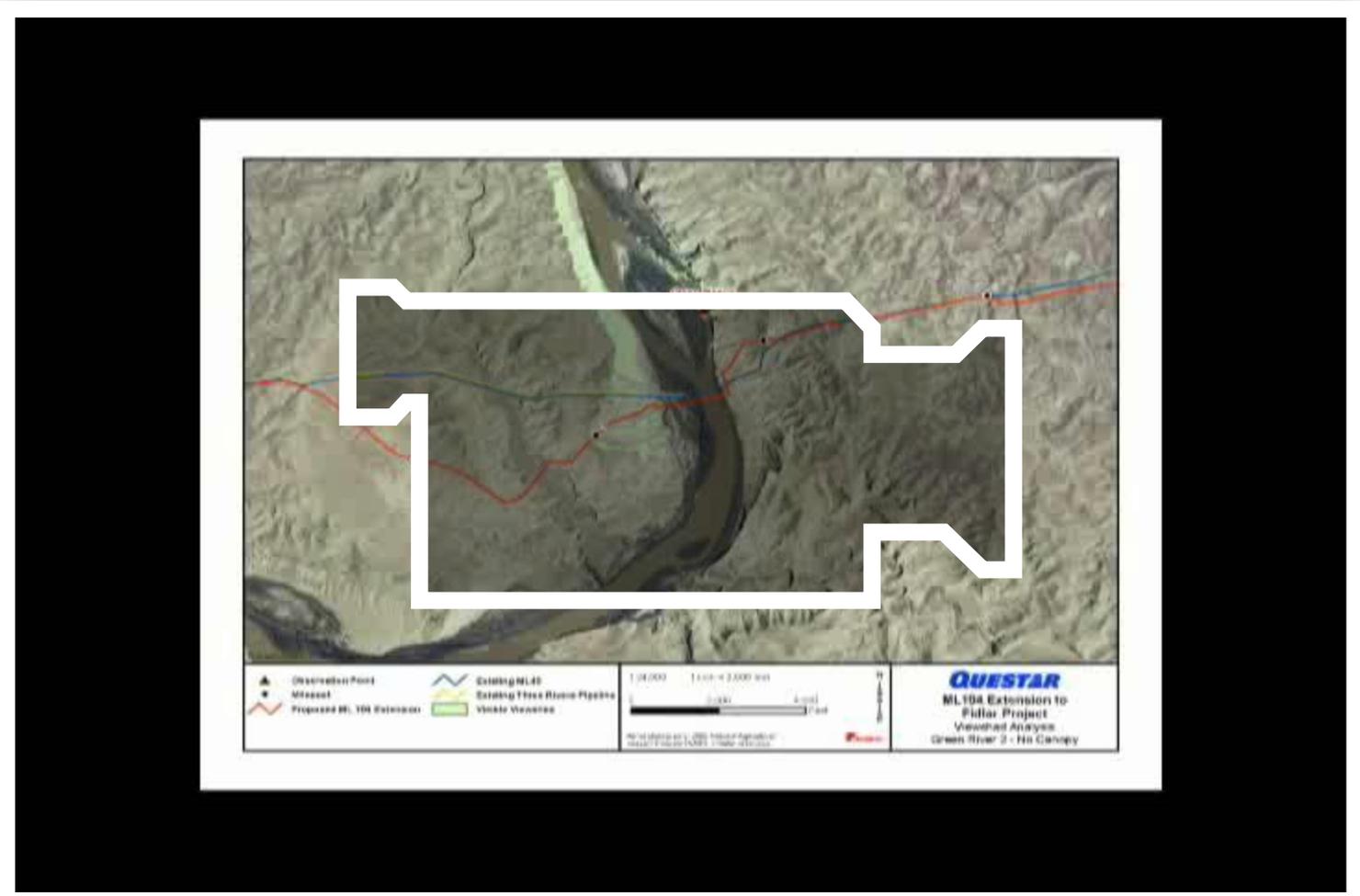
— Existing ML40
— Existing Three Rivers Pipeline
■ Visible Viewshed

1:24,000 1 inch = 2,000 feet
 0 2,000 4,000 Feet

QUESTAR
 ML104 Extension to
 Fidler Project
 Viewshed Analysis
 Green River 4 - No Canopy

Aerial photography, 2009 National Agricultural Imagery Program (NAIP), 1-meter resolution.

Green River area video



Chief Inspector & Canoe Guide



Green River Mitigation

- Route alignment chosen to stay within designated energy corridor/co-located with other utilities and avoid areas where full restoration was not possible.
- Maintained existing riparian vegetation along the river.
- HDD river crossing method and worked on timber mats (on non-topsoiled work areas) to protect sensitive fish habitat and minimize disturbance.
- Utilized existing, previously-disturbed staging area along east slope
- Used special construction methods (i.e. topsoil segregation, narrowed ROW in areas depending on terrain/plants, etc.)

Green River Mitigation

- Installed “pocks” and “rough cleanup” as primary erosion control method.
- Reuse the native rock as rock mulch in erosion prone areas
- Supplemented native seed application with slow-release fertilizer/mycorrhizae inoculum on rocky, non-fertile locations
- Segregated dark rock for accurate replacement
- Applied Permeon™ (rock stain) in late summer 2012 to further match weathered look of surrounding rock ledges.
- Pipeline markers placed with lettering side of the sign away from the river to reduce visual impact.

Horizontal Directional Drill



Sensitive Plant Protection



Sclerocactus wetlandicus

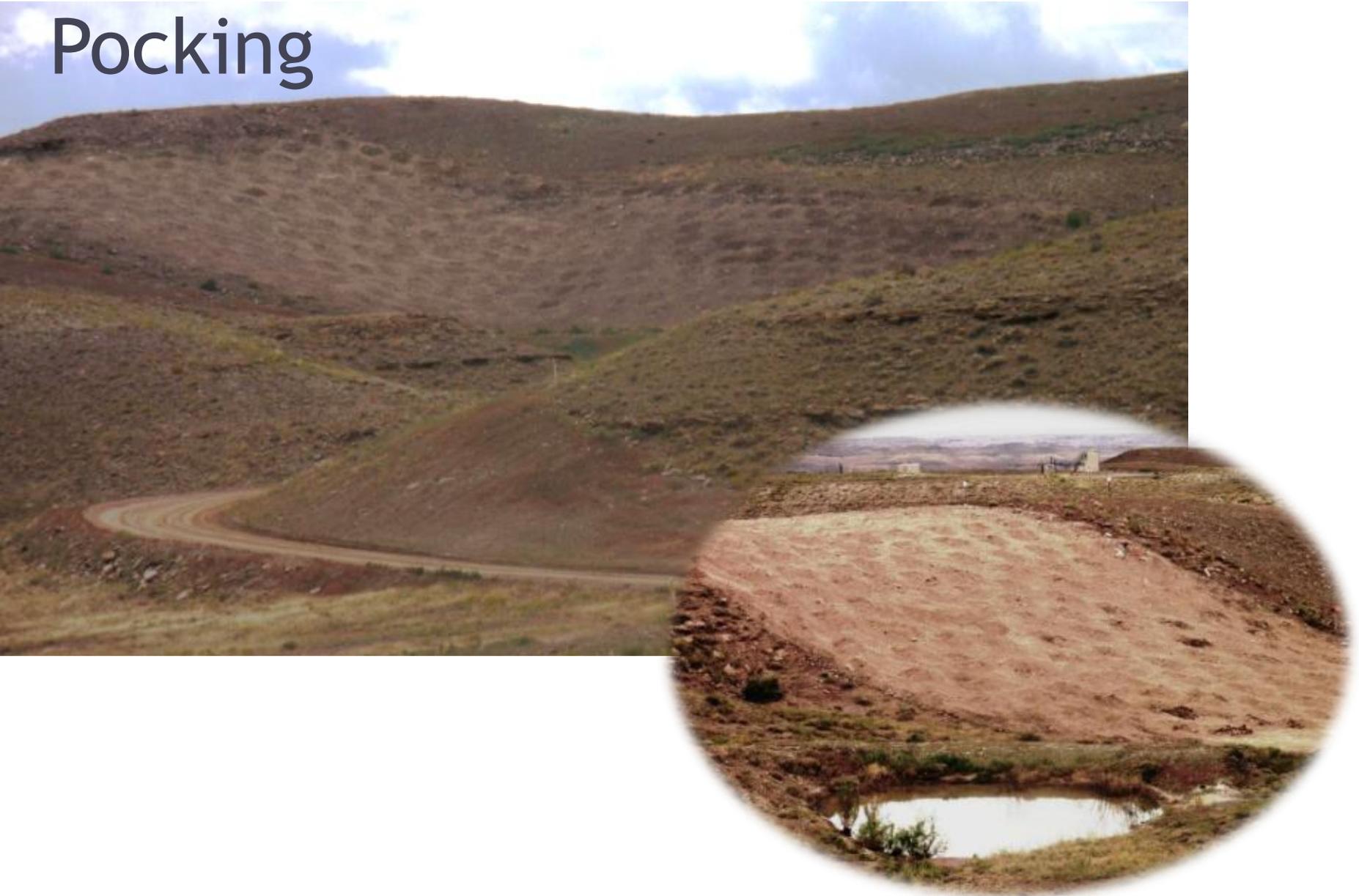
(Uinta Basin Hookless Cactus)



Natural Landscape



Pocking



Rough Clean Up



Waterbars in arid climates



Regrowth Photos



Visual Mitigation

East Side of Green River



Prior to Construction

Visual Mitigation East Side of Green River



During Construction

Visual Mitigation East Side of Green River



Post Construction

“Gunsight” Construction & Reclamation



Visual Mitigation West Side of Green River



Prior to Construction

Visual Mitigation West Side of Green River



During Construction

Visual Mitigation West Side of Green River



Post Construction

Permeon™ East Side of Green River

(Photo from day of application in late summer 2012)



Lessons Learned

- Be willing to try new techniques
 - A one-size fits all approach may not be the best approach
 - Some new techniques are beneficial; others are ineffective
 - May incur risk if the technique is unsuccessful
- Develop your plan & expectations early in the project
 - Work with Environmental, Construction, and the Agencies to determine what is feasible and reasonable
 - Address unreal expectations during the preconstruction phase
- Rely on Construction and Inspection to execute. Allow latitude for field decisions
 - Operators and inspectors with local construction experience preferred
 - When the Team takes ownership the work is more successful
- Work with your Managing Agencies and meet your commitments

BLM Comments

“I have been very impressed with Questar and as I stated the work on the ML 104 Extension to Fidlar pipeline was some of the best work I have seen in my 19 years of working on visual issues.”

“Someone who was floating the river would never know that a major pipeline crossed their path. The attention to detail and the commitment of Questar to work with the BLM was critical to the success of this project.”

- Rob Sweeten, Utah BLM VRM Lead

Questions???



Thank you

