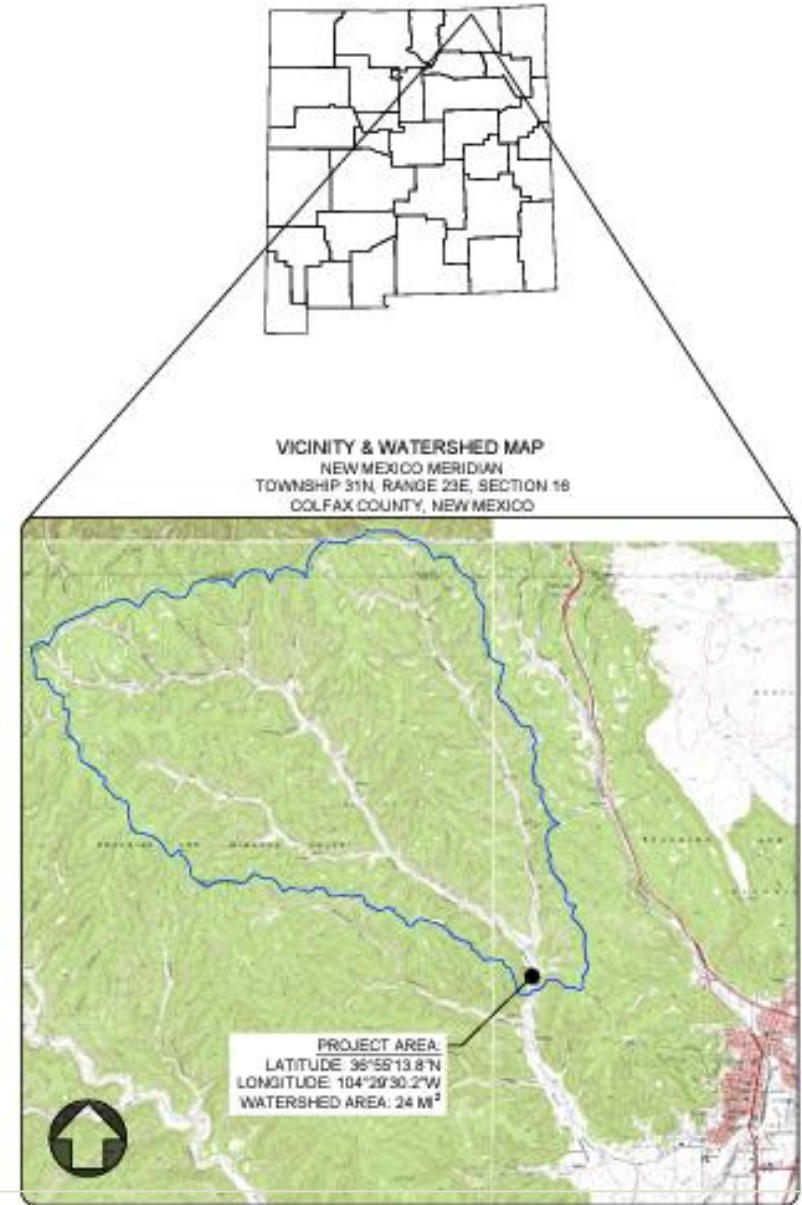


Swastika Mine and Dutchman Canyon Maintenance and Stream Restoration Project Photos



Project Location



*Figure 1. Original completed project (left) and aftermath of 2012 storms (right).
Banks of the channel were potentially eroding into buried gob material.*

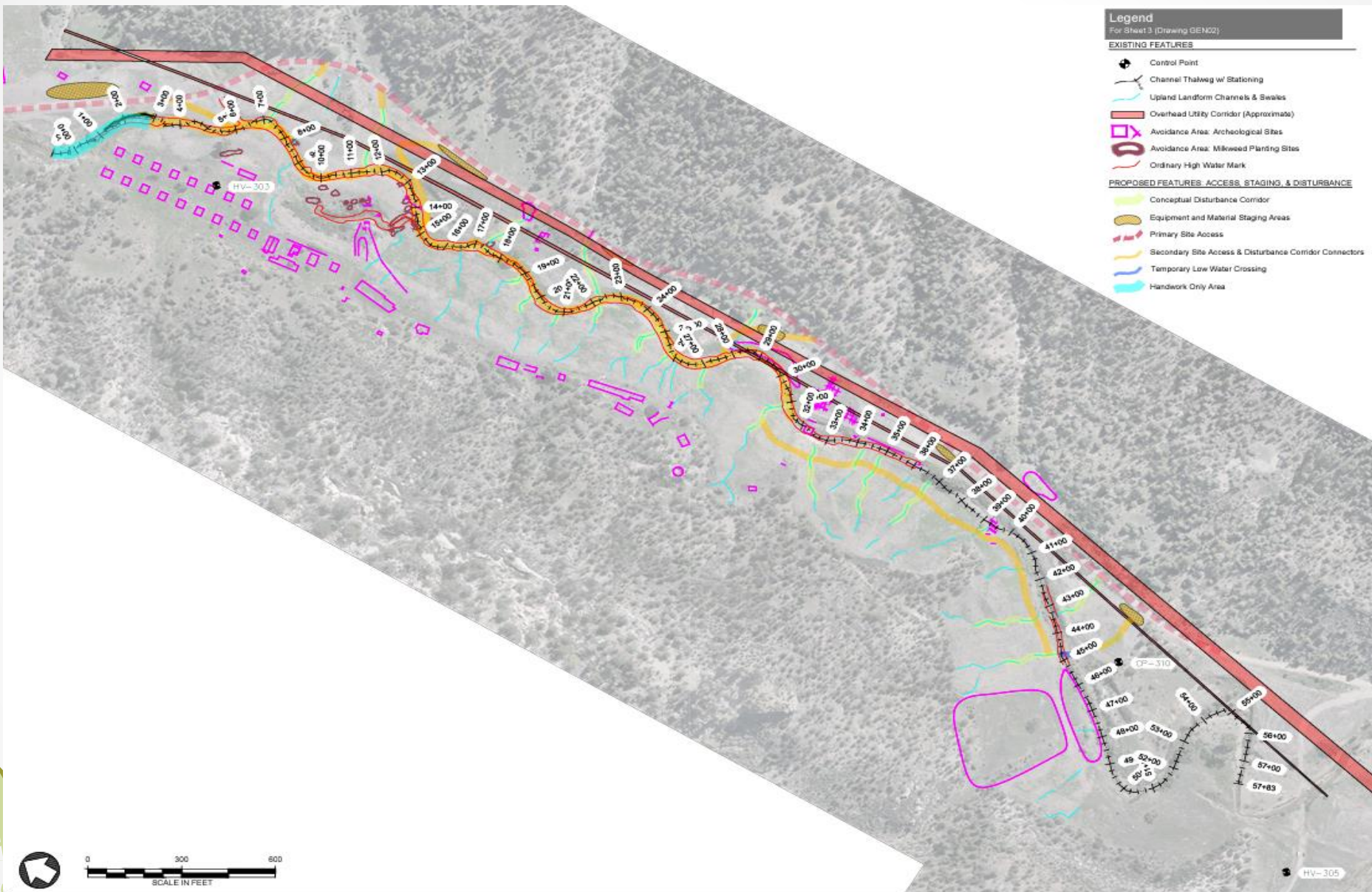


Figure 2. Overview of the Stream Work Design Elements

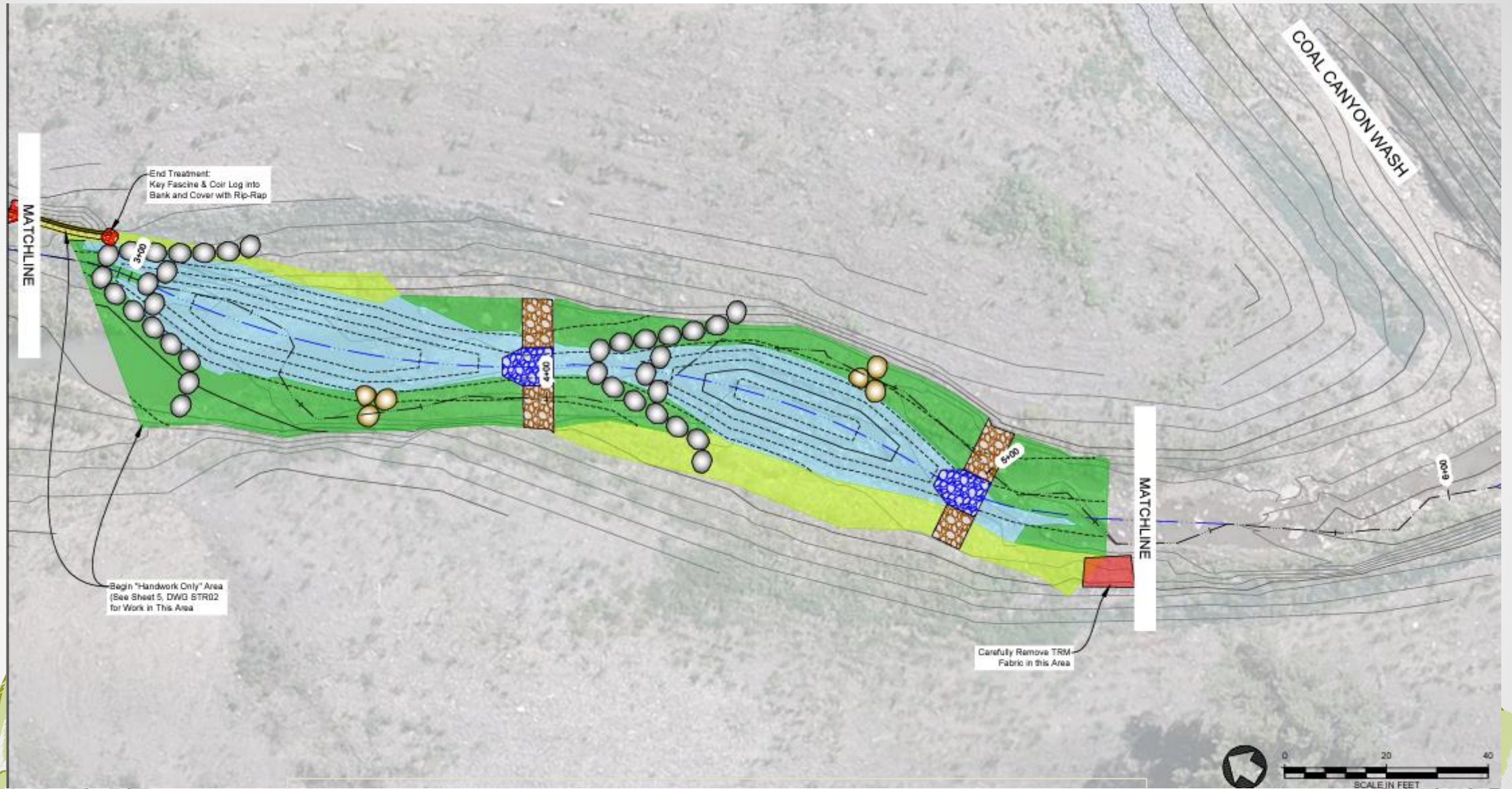
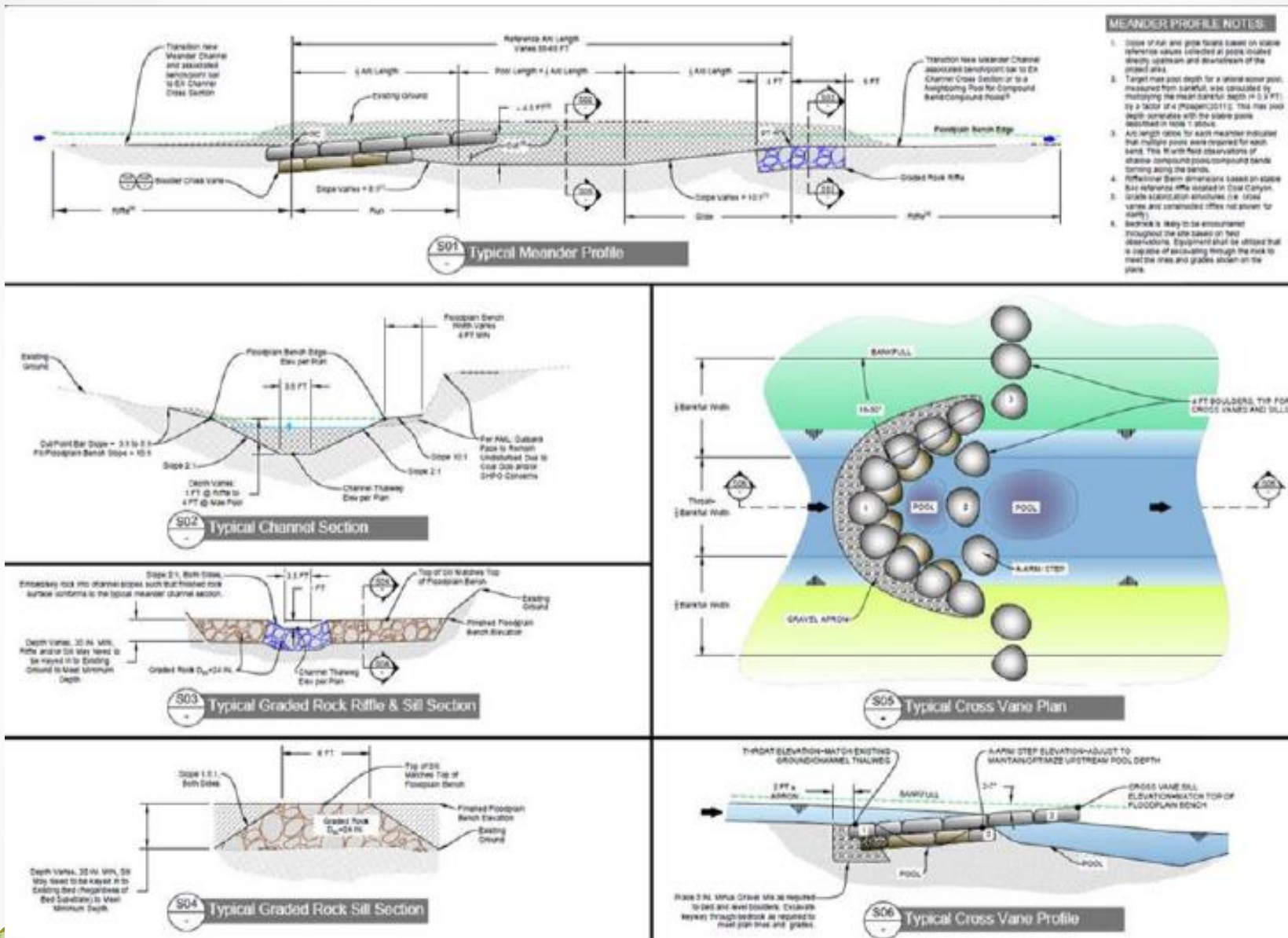


Figure 3. Typical Meander Overview



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760.461.4100 • www.oxbowecology.com

PROJECT NAME:
Swastika Mine and Dutchman Canyon Maintenance and Stream Restoration Project

LOCATION:
Vannoy Park Ranch
Gulfair County, NM

PROJECT NUMBER:
EMNRD-MNRD-2020-09

PROJECT PHASE:
Construction Drawings
100% Submittal

CLIENT:
New Mexico Department of Game and Fish
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PROJECT MANAGER:
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DESIGNER:
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SCALE:
AS SHOWN

DATE:
01.31.20

ISSUE PROJECT:
NM-007-03

DRAWING:
Stream Stabilization:
Meander & Structure
Sections & Details

DRAWING NO.: STR13
SECTION: 01
REVISION: 0

REGISTERED PROFESSIONAL ENGINEER:
GEORGE F. CATHEY
NEW MEXICO
21540
1-31-20

UNLAWFUL CHANGES & VIOLATIONS:
The engineer preparing these plans will not be responsible for, or liable for, construction changes to or uses of these plans. All changes must be in writing and must be approved by the engineer of record.

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811 Show what's below. Call before you dig.

Figure 4. Channel Structure details in Engineering Design

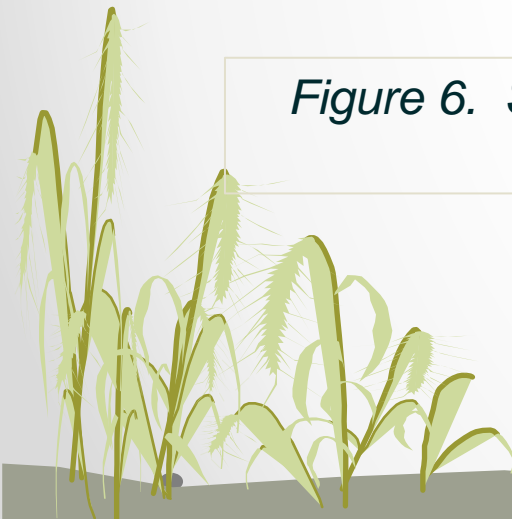


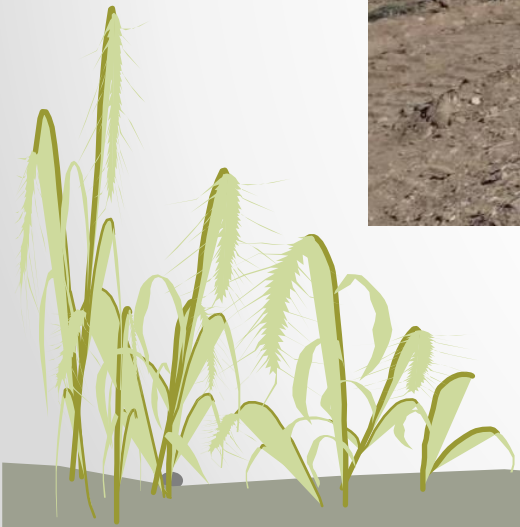
Figure 5. Conveyor belt being used to drop boulders into place in the stream channel across an archaeological avoidance area (left) and equipment work in the channel (above).





Figure 6. Shaping Pools within Channel for Installation of Rock Structures (Cross Vanes)





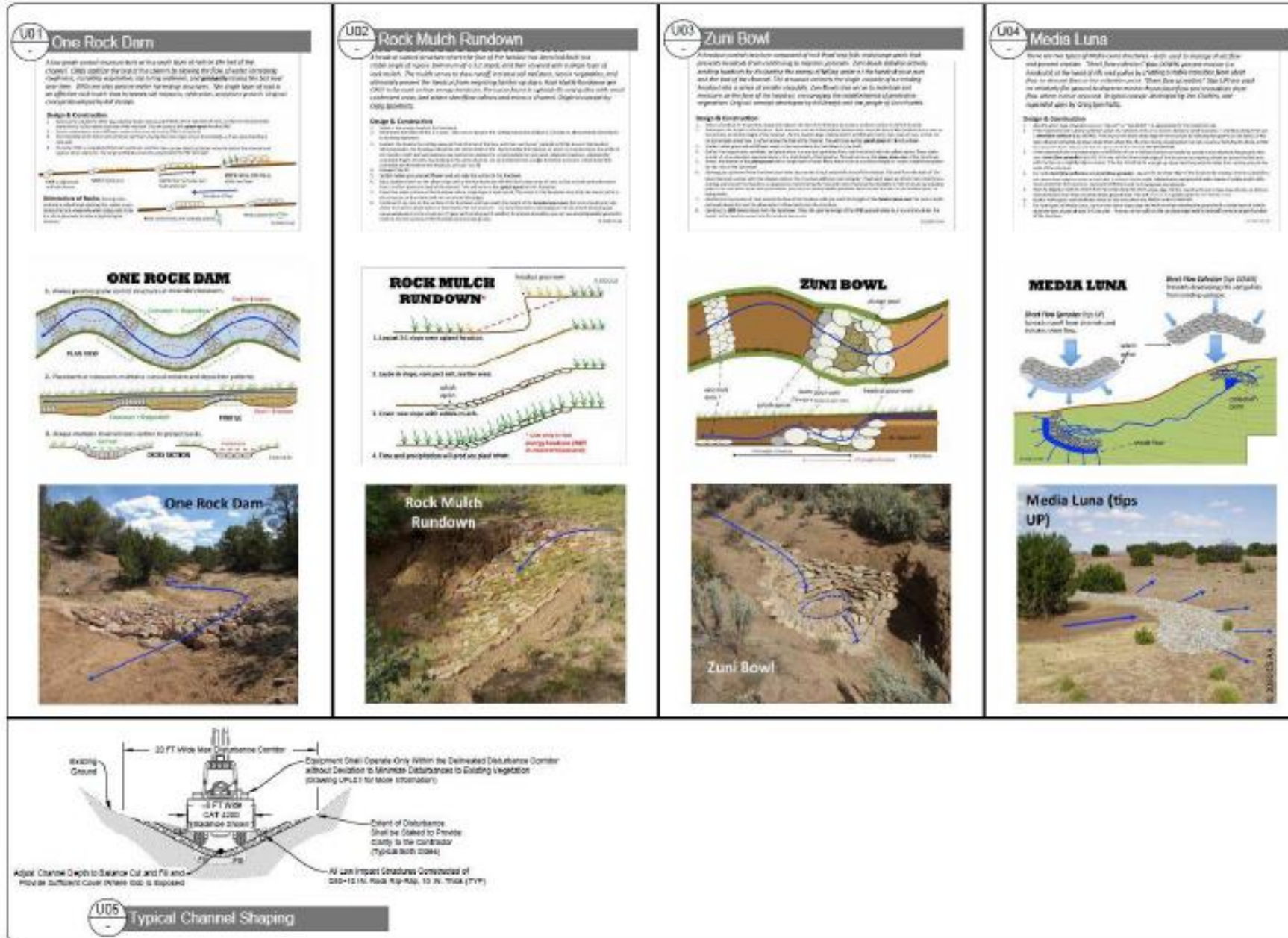


Figure 7. Upland rock structures to address gullying and rilling



Figure 8. Working on upland erosion control structure in steep, frozen conditions.



Figure 9. Shaping and installation of upland rock structures (one-rock check dams and media lunas)

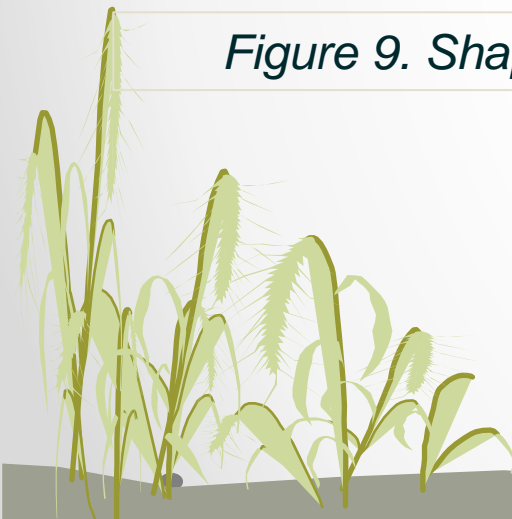




Figure 10. GPS-guided John Deere track loader above and Terramac Crawler below



Figure 11. Structures doing their job after rain events, moving the flow away from eroding banks





Figure 12. One year after reclamation monitoring using small uncrewed aircraft systems. Notice the pant growth on benches.



