

FY2025

Fisheries Habitat

Restoration

Project Opportunity

Whitewater Creek

Habitat Restoration



Whitewater Creek Habitat Restoration

Background Information

- The last HSP cycle, the CAC prioritized the completion of final designs for the Whitewater Creek Habitat Restoration Project at the Catwalk Recreational Area for the benefit of Gila Trout
- Finishing up compliance and will be ready for implementation in the Fall 2024
- Project will include placing large boulders in the stream, excavating pools, and channel shaping, as well as, native plantings such as willows and cottonwoods.
- This project will provide easy access for anglers and improve habitat for Gila Trout

Project Contacts

Department of Game and Fish

Jill Wick

Native Fish Program Manager

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Gila National Forest

Sandra Taylor

Glenwood District Wildlife Biologist

Sandra.Taylor1@usda.gov

Proposed Management Action

- Complete the Whitewater Creek Habitat Restoration project
- Project will include construction and construction oversight costs
- **Estimates Budget: \$500,000**

Project Name:

Project relation to CAC advice or priorities:

Project Specific Details:

Historical Data:

Itemized Use of Funds:

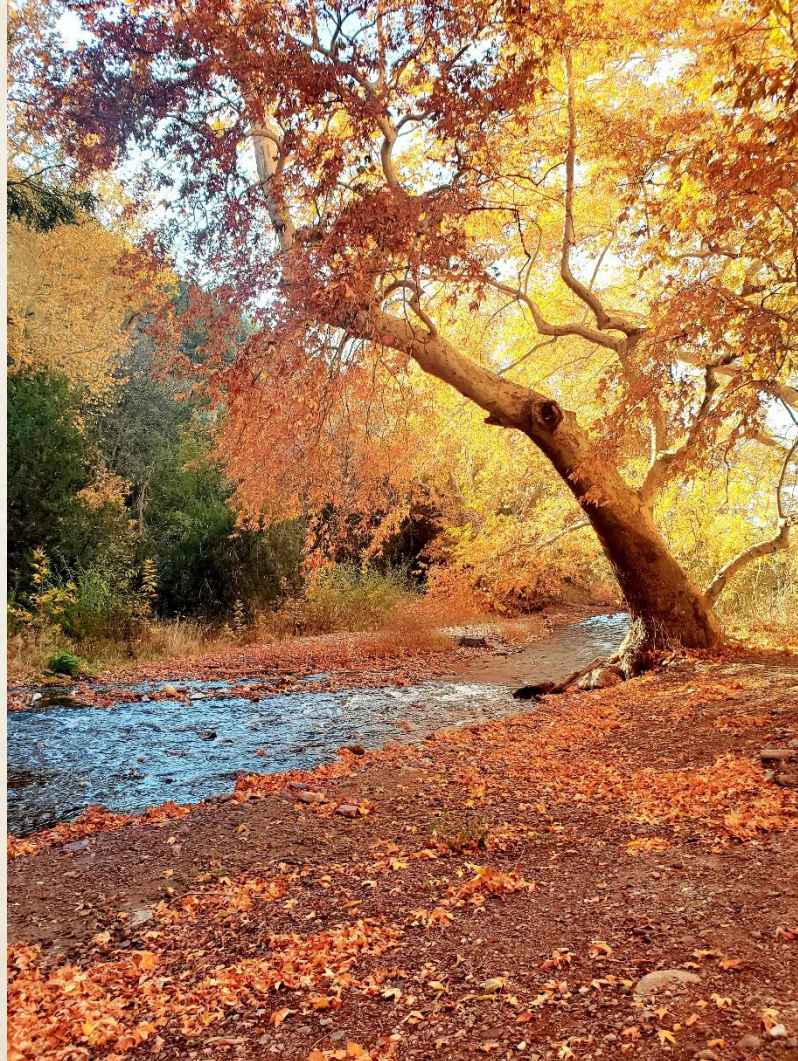
Comprehensive Project Analysis:

Monitoring Plan/ Strategy:

Project Emphasis Species:



Whitewater Creek Habitat Restoration



Project Contacts



Sandy Taylor
Gila National Forest, Glenwood District
Sandra.Taylor1@usda.gov



Jill Wick
Native Fish Program Manager
Jill.wick@dgf.nm.gov

- The Catwalk Recreation Area is a popular site for Gila Trout fishing and general recreation
- Fish habitat was heavily impacted by massive floods after the Whitewater Baldy fire of 2012
- After the Whitewater Baldy Fire, the Department and it's partners restored Gila Trout to Whitewater Creek, one of the largest and most complex drainages available for Gila Trout conservation
- This project will create in-stream complexity to promote a more robust Gila Trout population and provide better angler access

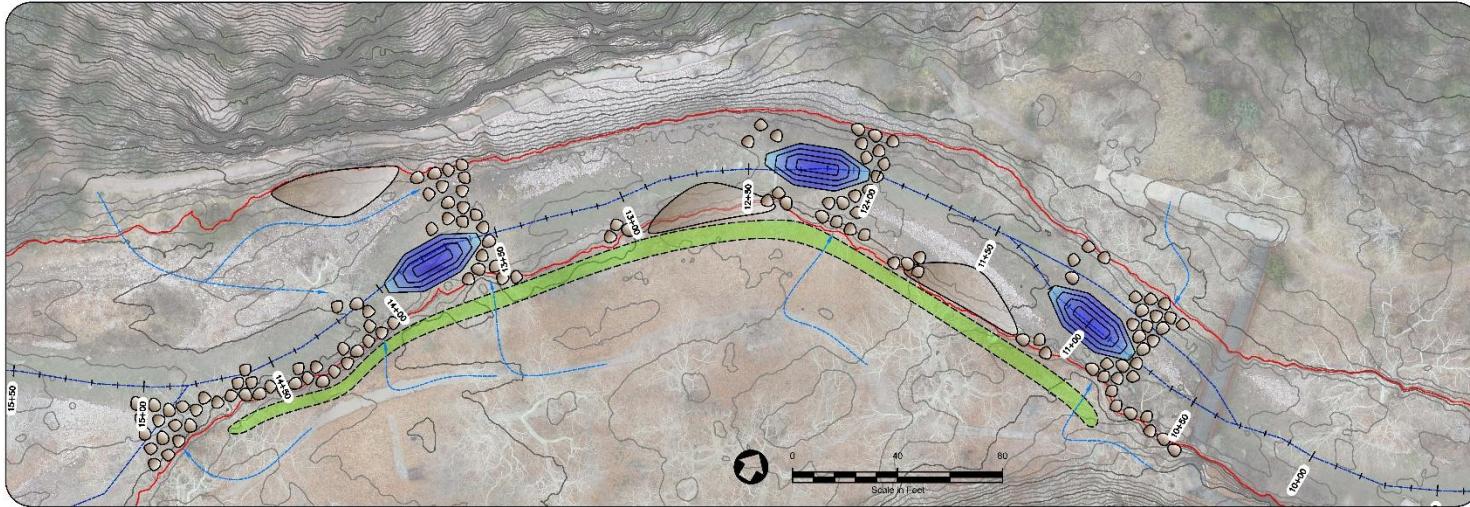


Whitewater Creek Construction

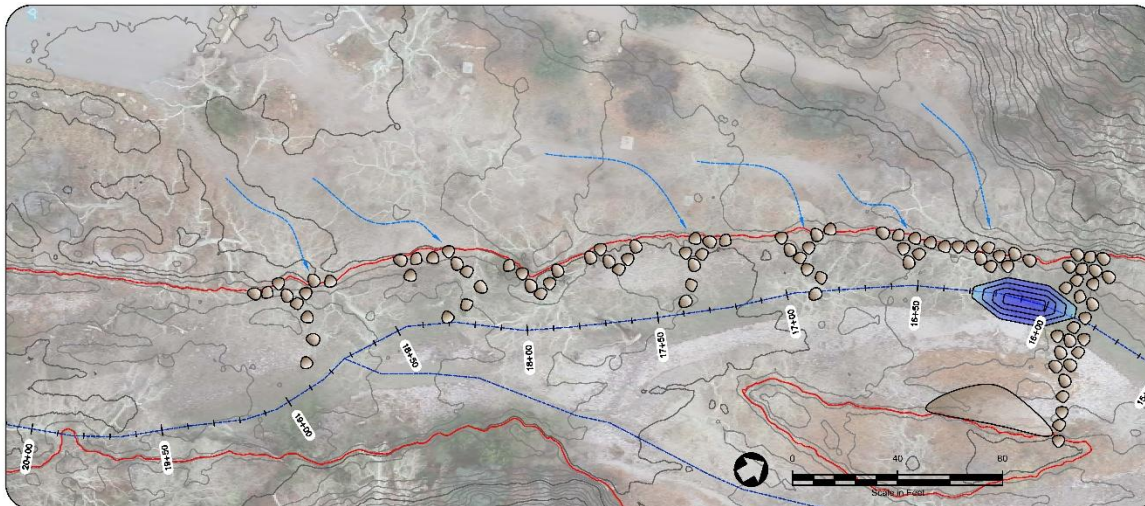
- Last HSP cycle, the CAC funded final designs for Whitewater Creek at the Catwalk Recreation Area. The final designs include multiple structures placed in the stream and along the banks to create pools and complexity which will improve trout habitat, especially in low-flow conditions
- Construction for this project will involve the placement of large boulders, excavated pools, channel shaping, and native plantings along the banks
- Compliance expected to be completed by September 2024
- Anticipated project start date: October 1, 2024

Summary of Project- \$500,000

Habitat Improvement Plan: Area 1



Habitat Improvement Plan: Area 2



Legend

Existing Features

- Whitewater Creek Flowline (with Stationing)
- Major Contours @ 5-FT Intervals (2018 LIDAR)
- Minor Contours @ 1-FT Intervals (2018 LIDAR)
- Ordinary High Water Mark (OHWM)

Proposed Features & Estimated Quantities

- (120 CY) Excavated Pools
- (220 EA) Habitat Boulders
- (4 EA) Constructed Point Bars
- (150 EA) Native Riparian Plantings
- Potential Public River Access Points



PROJECT NAME:
Catwalk Recreation Area: Whitewater Creek Habitat Improvement Project

LOCATION:
 Catwalk Recreation Area
 Gila National Forest
 Catron County, NM

PROJECT NUMBER:
 NMDGF Purchase Order No. 51600-000008250 (1-1)

PROJECT PHASE:
 100% Design Submittal

CLIENT:
 New Mexico Department of Game & Fish
 1 Wildlife Way
 Santa Fe, NM 87507
 (505) 726-3000

DRAWN BY: GFC
DESIGNED BY: GFC & CS
REVIEWED BY: GFC & CS
ENGINEER OF RECORD:

UNAUTHORIZED CHANGES & USES:
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Know what's below. Call before you dig.

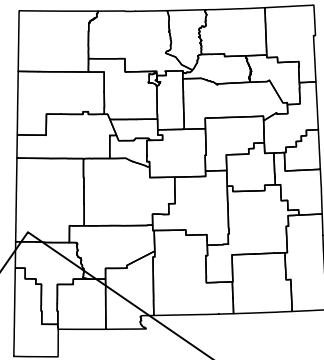
DATE: 06.27.2024 **OLE PROJECT #:** NM-011-2

DRAWINGS:
 Habitat Improvement Plan:
 Area 1 & 2

DRAWING #	SHEET #	REVISION #
HAB02	4 OF 5	2

Catwalk Recreation Area Whitewater Creek Habitat Improvement Project 100% Design Submittal

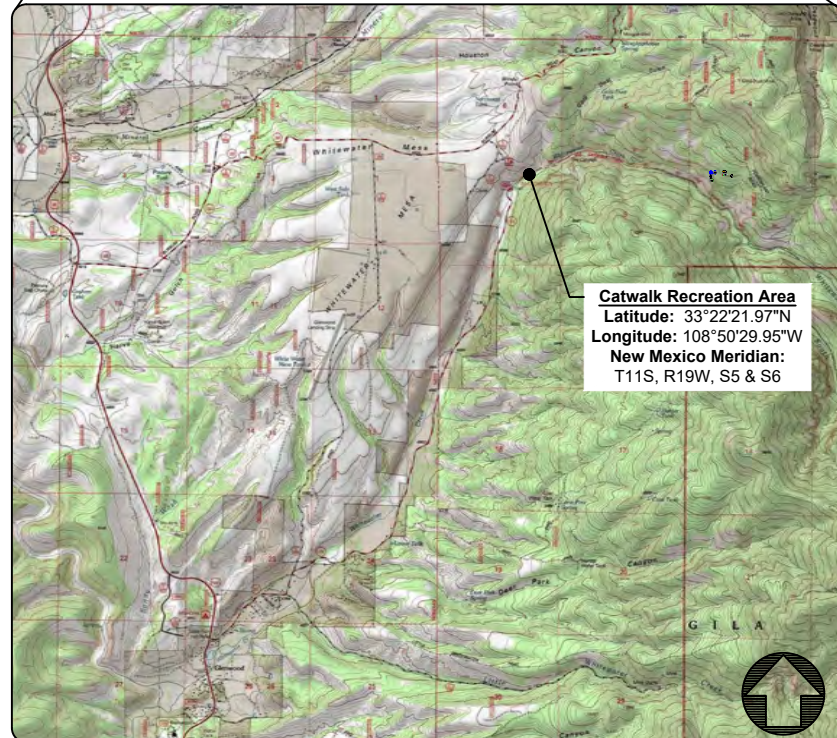
Gila National Forest, Glenwood Ranger District, Catron County, New Mexico
NMDGF Purchase Order No. 51600-0000088250 (1-1)



VICINITY MAP



Whitewater Creek - Photo by OEE, March 23, 2023



SUBMITTED TO



CLIENT:
New Mexico Department of Game & Fish (NMDGF)
1 Wildlife Way
Santa Fe, NM 87507
(505) 476-8000



PROJECT PARTNER:
Gila National Forest (GNF)
Glenwood Ranger District
P.O. Box 8
Glenwood, NM 88039
(575) 539-2481

SUBMITTED BY



PROJECT ENGINEER:
Oxbow Ecological Engineering, LLC (OEE)
3491 S. Gillenwater Drive
Flagstaff, AZ 86005
(928) 266-6192



TECHNICAL ADVISOR:
Watershed Artisans, Inc. (WAI)
1000 Cordova Place, #832
Santa Fe, New Mexico
(505) 577-9625

BACKGROUND

The New Mexico Department of Game & Fish is working with the U.S. Forest Service - Glenwood Ranger District on a potential fish habitat project on a 0.25 mile reach of Whitewater Creek within the Glenwood Catwalk Recreation Area near Glenwood, NM. The project focus is improving habitat for Gila trout, including instream channel improvements, creation of pool habitats, and various stream bank stabilization actions. In addition, improved angler and public access will be explored.

SHEET INDEX

SHEET NUMBER	DRAWING NUMBER	DESCRIPTION
1	CVR01	Cover Sheet
2	EXC01	Site Context: Watershed & Valley Characteristics
3	HAB01	Habitat Improvement Plan: Overview
4	HAB02	Habitat Improvement Plan: Area 1 & 2
5	DTL01	Typical Sections & Details

DRAWING REVISIONS

NUMBER	DATE	BY	REVISION DESCRIPTION
0	4/24/2023	GFC	Assessment & Conceptual Design
1	3/20/2024	GFC	Revised Assessment & Conceptual Design
2	6/27/2024	GFC	100% Design Submittal

PROJECT NAME:
Catwalk
Recreation Area:
Whitewater Creek
Habitat Improvement
Project

LOCATION:
Catwalk Recreation Area
Gila National Forest
Catron County, NM

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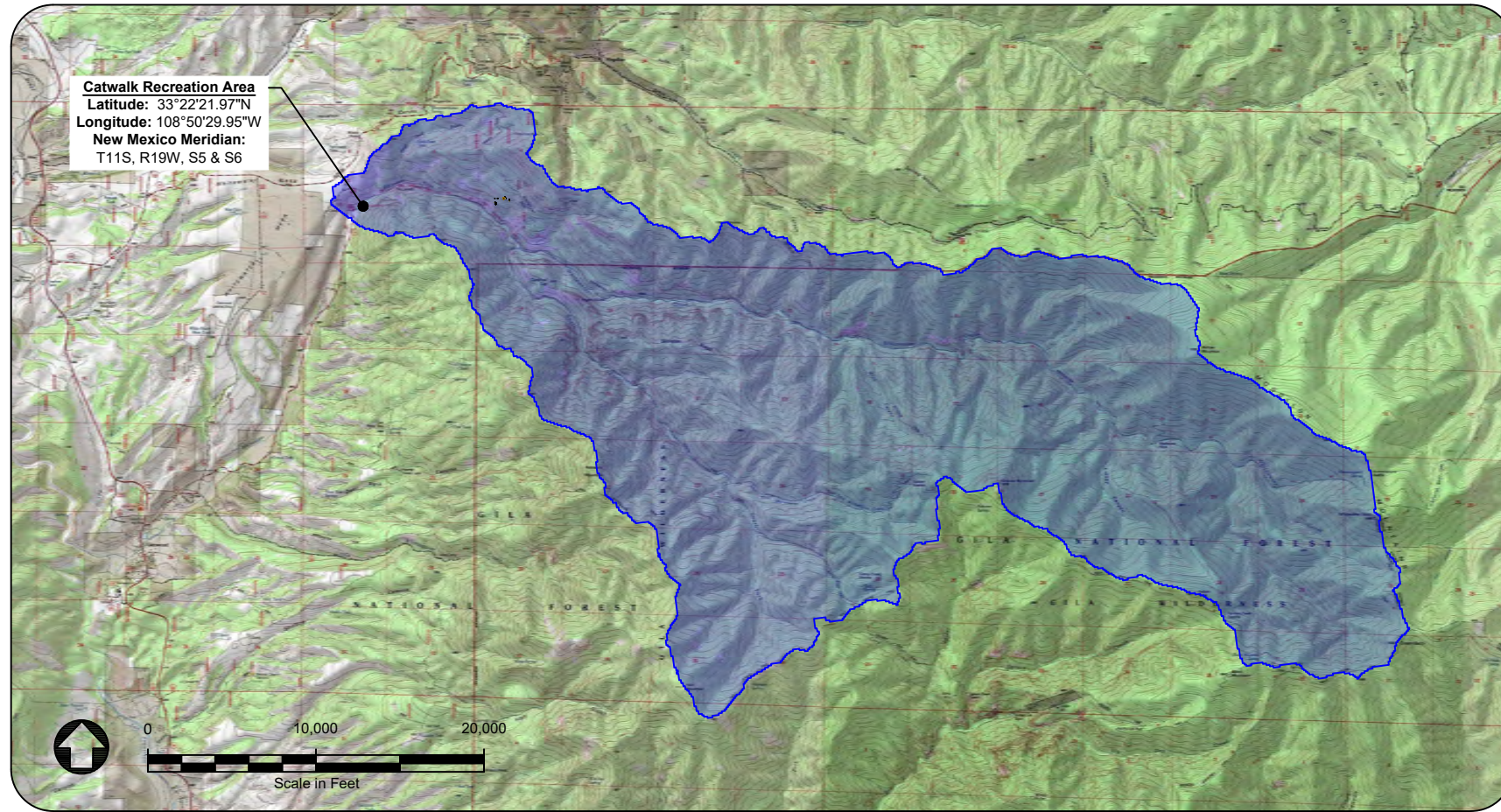
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DATE: 06.27.2024	OEE PROJECT #: NM-011-2
DRAWING: Cover Sheet	
DRAWING #: CVR01	SHEET #: 1 OF 5
REVISION #: 2	



Basin Characteristics	
StreamStats v4.14.0	
Drainage Area	37 MI ²
Mean Basin Slope	55%
Mean Annual Precipitation	33.2 IN.
Mean Basin Elevation	8,198 FT
Recent Wildfires	Whitewater-Baldy Complex (2012)
Peak Flow Statistics	
StreamStats v4.14.0 - Peak 2008 5119 SW Desert Flood Region 7	
50-Percent AEP Flood	753 CFS
20-Percent AEP Flood	1,500 CFS
10-Percent AEP Flood	2,170 CFS
4-Percent AEP Flood	3,220 CFS
2-Percent AEP Flood	4,170 CFS
1-Percent AEP Flood	5,280 CFS
0.2-Percent AEP Flood	8,590 CFS
Bankfull Characteristics	
Regional Relationships for Bankfull Stage [Moody et al. 2003]: Central & Southern Arizona Sites	
Bankfull Discharge	485 CFS
Bankfull Area	84 FT ²
Bankfull Width	50 FT
Mean Bankfull Depth	1.7 FT
Maximum Bankfull Depth	2.8 FT
Width to Depth Ratio	29 FT/FT
Streambed Slope	1.6 - 2.0%

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DATE: 06.27.2024 OEE PROJECT #: NM-011-2

DRAWING:
Site Context:
Watershed & Valley
Characteristics

DRAWING #: EXC01 SHEET #: 2 OF 5 REVISION #: 1



General Legend

- Study Area
- Improvement Areas
- Whitewater Creek Flowline(s)

Landmarks

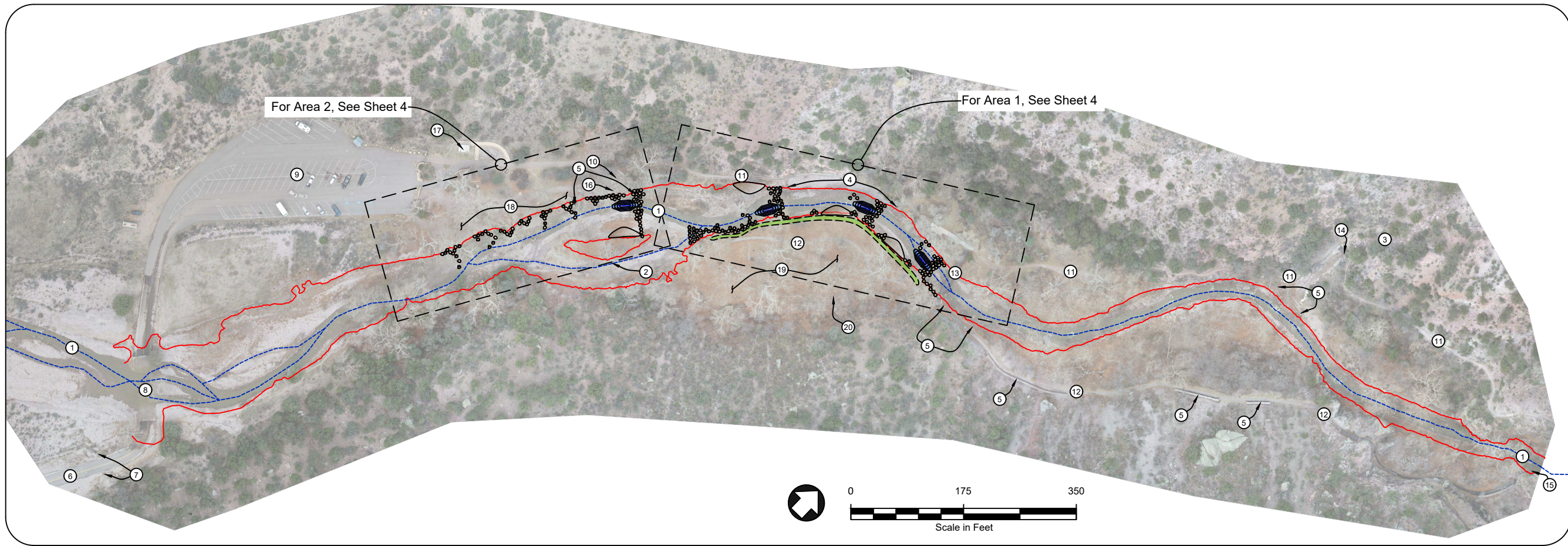
- ① New Mexico Highway 174
- ② Low Water Crossing
- ③ Catwalk Recreation Area Parking Lot
- ④ Pedestrian Bridge
- ⑤ Catwalk

Study Area Context

The Catwalk Study Area is positioned in an area of transition, between a narrow box canyon and a wide depositional plain. It will be critical that any habitat and access improvements work with the natural processes inherent in this dynamic context.

Valley Zones & Representative Cross Sections

	Zone 1 Type: Steep Box Canyon Channel: Narrow/Slot, Confined, Straight, Bedrock Bottom, Bedrock Walls Floodplain: Narrow/Slot, Confined, Bedrock Bottom, Bedrock Walls Sediment: Transfer Zone
	Zone 2 Description: Alluvial Gulch Fill Channel: Entrenched, Low Width-to-Depth, with Some Sinuosity Floodplain: Narrow Sediment: Transfer Zone
	Zone 3 Description: Alluvial Fill Channel: High Width-to-Depth, Mid-Channel/Side Bars, Moderate Channel Scrolling Floodplain: Wider, Numerous Flood Channels Sediment: Transitional Transfer/Depositional Zone
	Zone 4 Description: Depositional Plain Channel: Braided, Actively Scrolling Floodplain: Broad, Coarse Alluvial Material Deposits Sediment: Depositional Zone



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DATE: 06.27.2024	OEE PROJECT #: NM-011-2
DRAWING: Habitat Improvement Plan: Overview	
DRAWING #: HAB01	SHEET #: 3 OF 5
REVISION #: A	

- Legend**
- Whitewater Creek Flowline(s)
 - Ordinary High Water Mark (OHWM)
- Riverscape Features**
- ① Whitewater Creek
 - ② Floodplain Channel
 - ③ Tributary Drainage
 - ④ Engineered Streambank/Slope Protection
 - ⑤ Gabion Walls
- Access Features**
- ⑥ U.S. Highway 174
 - ⑦ Entrance Gate
 - ⑧ Low Water Crossing
 - ⑨ North: Parking Lot
 - ⑩ North: Trailhead
 - ⑪ North: Formal/Surfaced Trail
 - ⑫ South: Formal Paved Trail
 - ⑬ Pedestrian Bridge: Whitewater Creek
 - ⑭ Pedestrian Bridge: Tributary Drainage
 - ⑮ Begin Catwalk
 - ⑯ Bridge Footing Remnant
- Other Site Features**
- ⑰ Restroom
 - ⑱ North: Picnic Area
 - ⑲ South: Picnic Area
 - ⑳ Outdoor Classroom/Seating Area

Multimedia
Drone Flyover Footage
(<https://youtu.be/P91NTGruYk>)

Objectives

- Increase hydraulic diversity and shelter habitat for trout
- Increase pool frequency and depth
- Reduce width-to-depth ratio wherever possible
- Reduce streambank erosion potential
- Increase channel shading with native riparian vegetation
- Increase public access for angling and recreation

Approach
Based on the inventory and assessment for the project (see "Assessment & Conceptual Design" dated 3/20/24), a set of site specific practices was developed to meet the project objectives outlined above. This "restoration toolbox" includes measures that, if implemented holistically, could help to improve trout habitat and public access. Actions include:

- Constructing large pools integrated with boulder clusters and point bars to provide potential habitat for Gila Trout and improved access to fishing opportunities.
- Placing additional boulder clusters to add roughness, help build banks and habitat pockets, and provide public access/playscape opportunities.
- Plant riparian vegetation to help stabilize eroding banks and provide additional cover.

This sheet includes some examples of restoration practices. The remainder of the sheets in this drawing set show the placement of these design elements within the stream corridor and construction details.

Design & Construction Notes

1. This habitat improvements are located in Valley Zone 3, a transitional sediment transfer/depositional zone (see Sheet 2 for more information). Because of the dynamic nature of this area:
 - 1.1. Locations of design elements will likely need to be adjusted and field fitted to current conditions as the streambed morphology has likely changed since assessments were completed.
 - 1.2. Once constructed, the depth, shape, and location of scour pools will likely change depending on the frequency of magnitude of floods.
2. The material & equipment staging area will be located in the pullout on the south side of U.S. Highway 174, between the entrance gate and low water crossing.
3. Equipment will access the site by traveling up the streambed of Whitewater Creek from the material & equipment staging area.

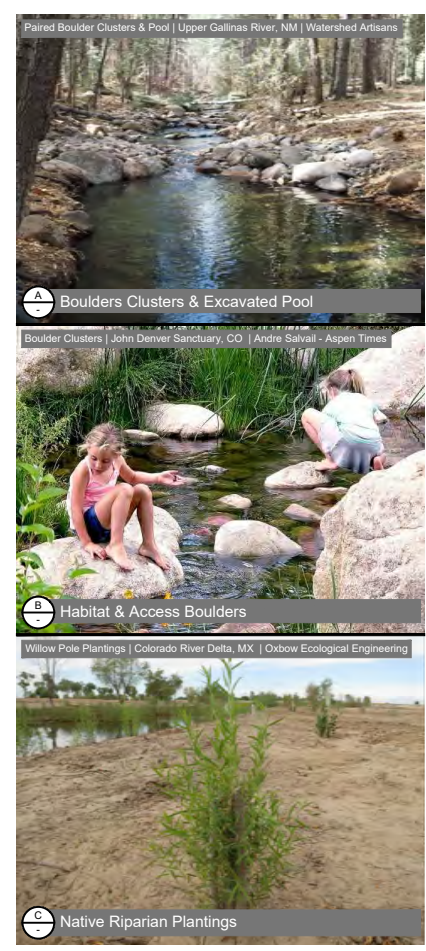
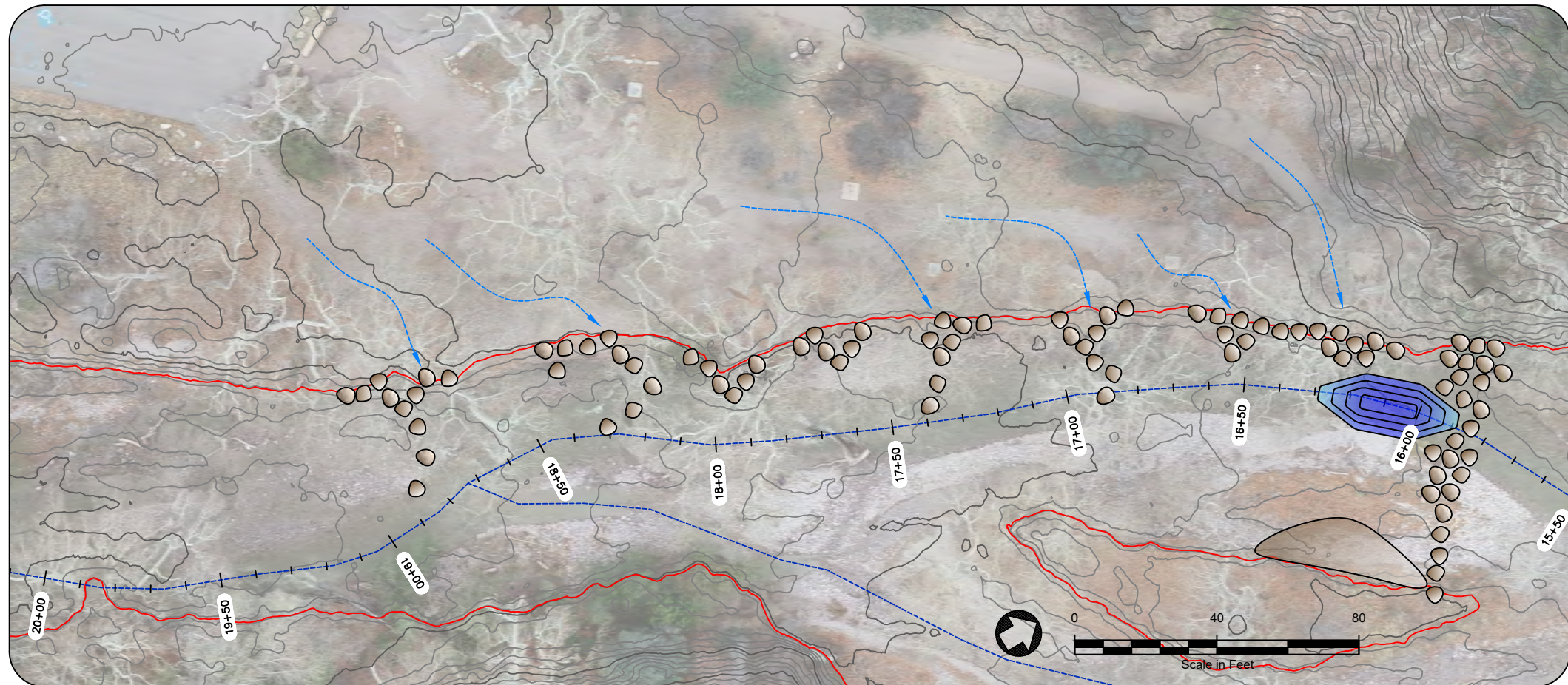
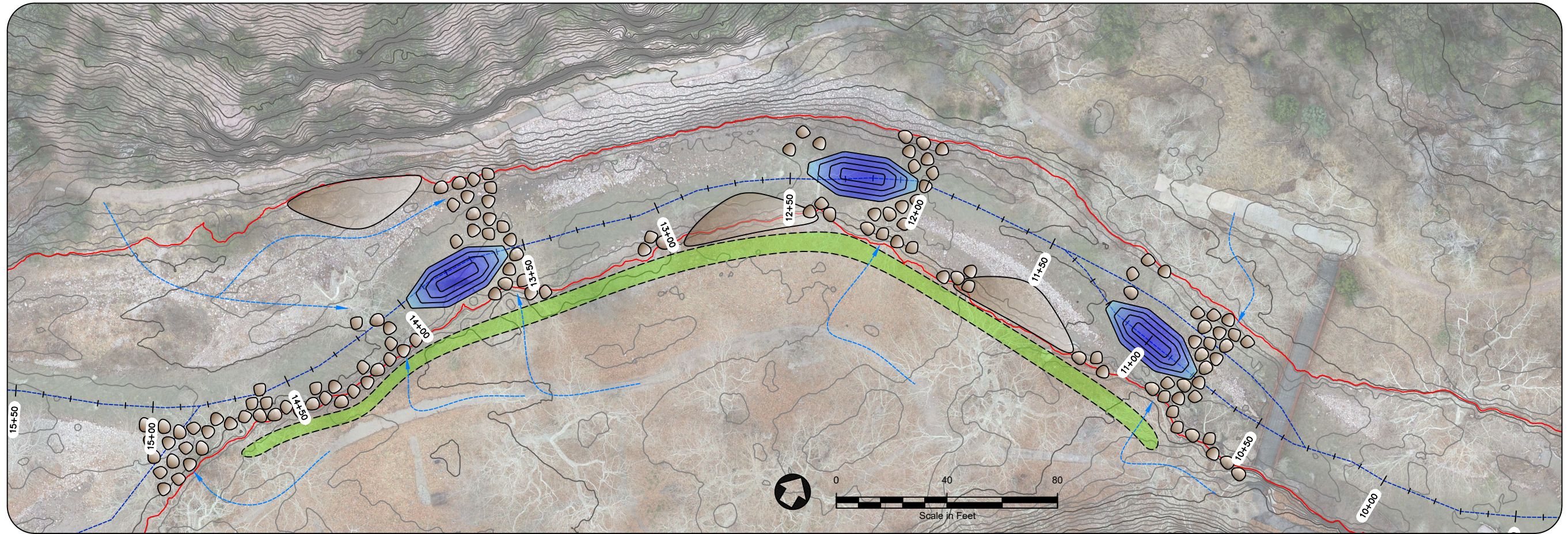


TABLE 1: Data Sources

No.	Type	Date	Source	Description
1	Aerial Imagery	3/2023	Oxbow Ecological Engineering	UAS derived digital orthoimagery
2	Topography	2018	USGS	Existing conditions surface and contours derived from LIDAR: NM_South_Central_2018_D19

TABLE 2: Datum & Coordinate Projection Information

	Horizontal Datum	North American Datum 1983, 2011 realization [NAD83(2011)]
Coordinate Projection	New Mexico State Plane Coordinate System, West Zone [0201]	
Vertical Datum	North American Vertical Datum of 1988 [NAVD88]	
GEOID Model	GEOID12B (CONUS)	
Units	U.S. Survey Feet	



Legend

Existing Features

- Whitewater Creek Flowline (with Stationing)
- Major Contours @ 5-FT Intervals (2018 LIDAR)
- Minor Contours @ 1-FT Intervals (2018 LIDAR)
- Ordinary High Water Mark (OHWM)

Proposed Features & Estimated Quantities

- (120 CY) Excavated Pools

1
5
- (220 EA) Habitat Boulders

2
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- (4 EA) Constructed Point Bars

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- (150 EA) Native Riparian Plantings

4
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- Potential Public River Access Points

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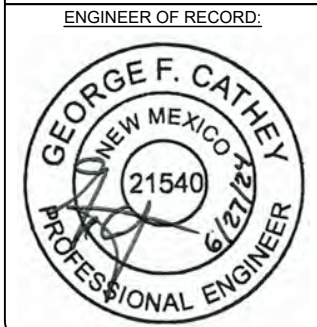
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DATE: 06.27.2024	OEE PROJECT #: NM-011-2
DRAWING: Habitat Improvement Plan: Area 1 & 2	
DRAWING #: HAB02	SHEET #: 4 OF 5
REVISION #: 2	

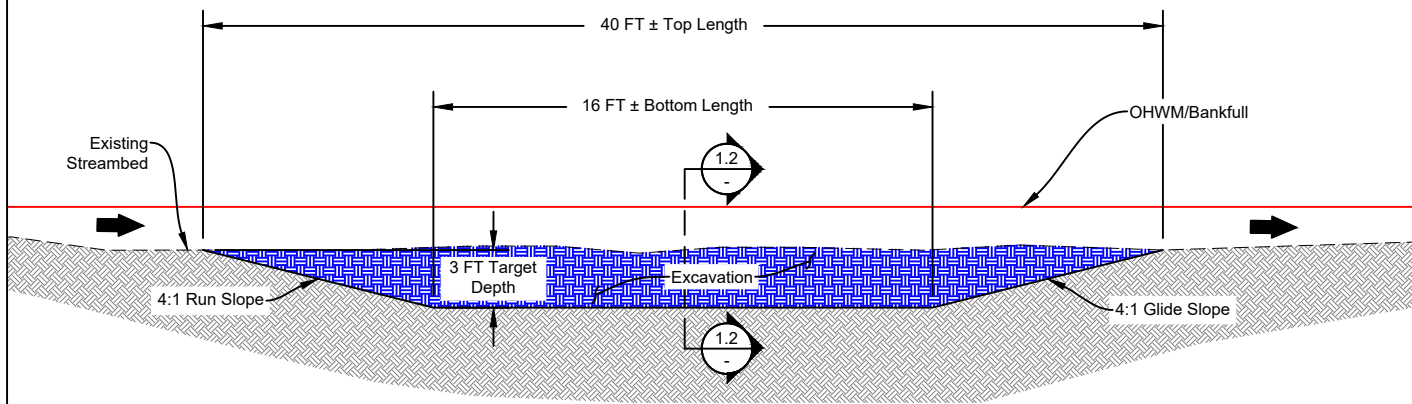


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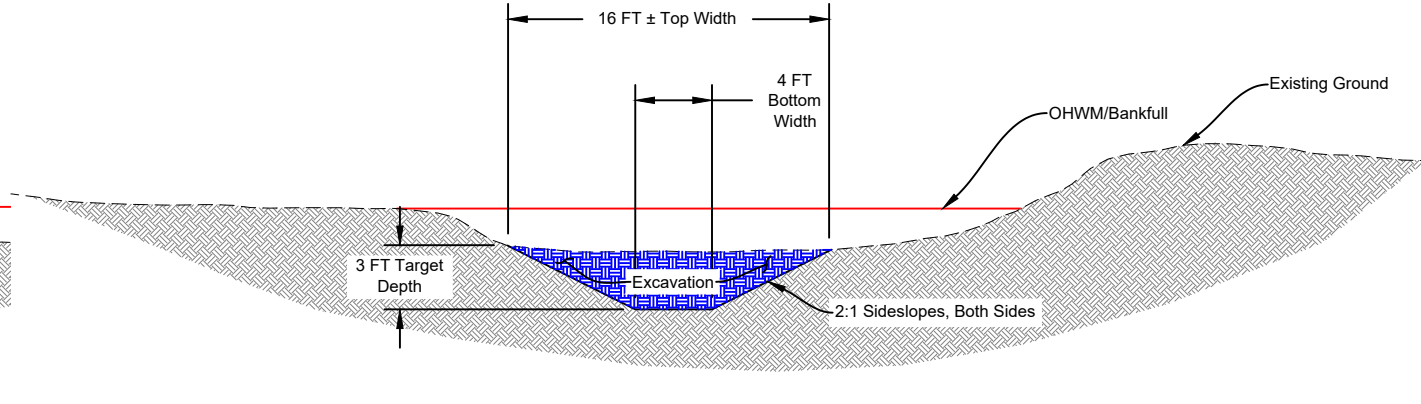
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Excavate deep pools, with facet slopes, dimensions, & spacing based on regional reference information. Pools will provide valuable refugia habitat during low flow as well as improved fishing opportunities.

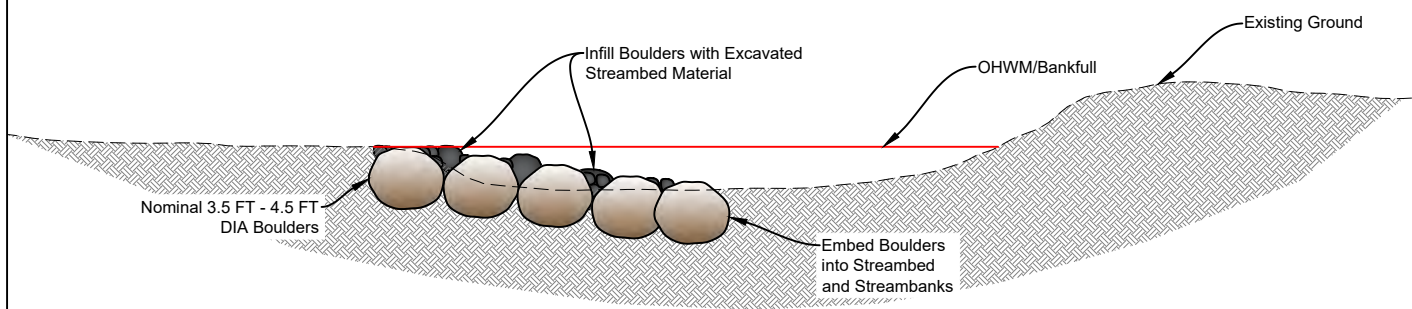


1.1 Excavated Pool: Typical Profile



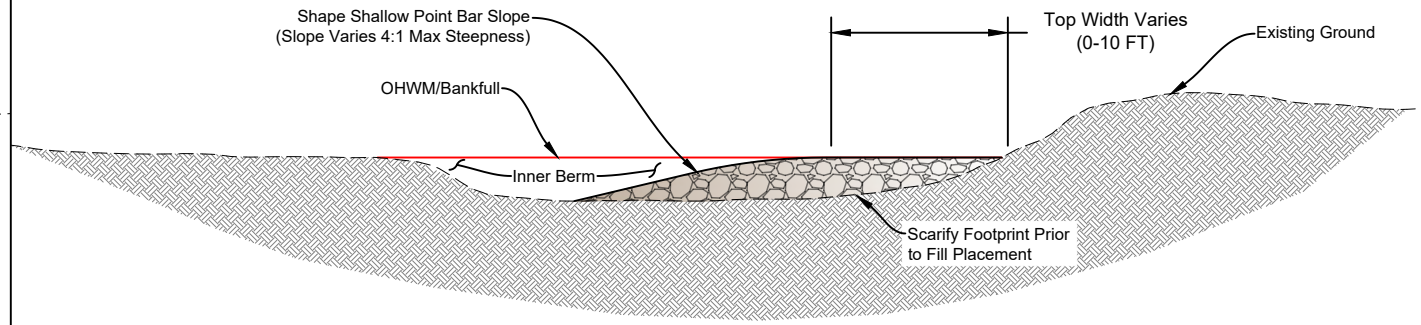
1.2 Excavated Pool: Typical Section

Construct irregular clusters of boulders, sized commensurate with channel size and type, to add roughness and force convergent lateral flow and hydraulic variation. Install boulder clusters tapering in elevation from the bankfull depth at the bank to the low flow water level in the channel. Pair clusters at the head of the pools to force convergent/scouring flow and encourage sediment transport.



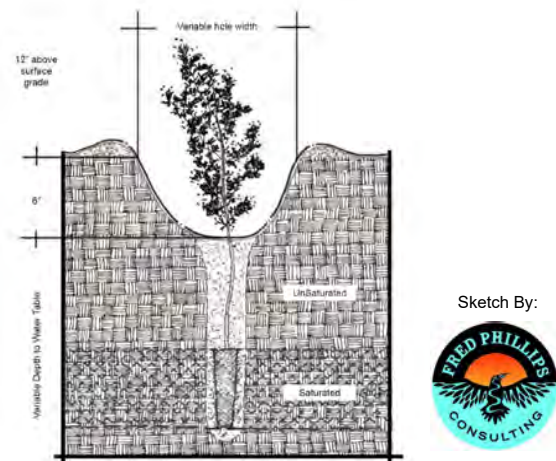
2 Habitat Boulders: Typical Section

Construct point bar features from excavated pool materials to create a low flow inner berm channel feature. This inner berm feature will provide connectivity during low flows and reduce width-to-depth ratios. Construct inner berm feature into the channel two thirds of the bankfull width, and tapering in elevation from the bankfull depth at the bank to the low flow water level in the channel.



3 Constructed Point Bar: Typical Section

Plant native riparian vegetation to stabilize streambanks and provide stream cover. See specifications for more planting information.



4 Deep Pot Containers: Typical Planting Detail