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Floodplain and Wetland Assessment for Construction and Restoration Activities in Lower Pueblo Canyon Title:

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# Floodplain and Wetland Assessment for Construction and Restoration Activities in Lower Pueblo Canyon

# Introduction

A severe flood event occurred on September 13<sup>th</sup> 2013 which resulted in damages to the 100-year floodplain and a wetland in lower Pueblo Canyon. Currently the wetland is losing functionality due to severe erosion and headcuts. The objective of the proposed action is to stabilize the Pueblo Canyon wetland and support floodplain development. This action will prevent the progression of the headcuts in the channel, stabilize the channel banks, and reduce movement of sediments containing radionuclides or chemicals from historic LANL releases.

# **Project Description**

Flooding is a natural and recurring event for a river or stream. Floodplains are, in general, those lands most subject to recurring floods, situated adjacent to rivers and streams. A 100-year floodplain describes an area subject to a 1% probability of a certain size flood occurring in any given year. The frequency of inundation depends on the climate, the material that makes up the banks of the stream, and the channel slope. In the case of lower Pueblo Canyon, the 100-year floodplain now has a higher risk of flood frequency and extent because of changes in upstream conditions after the 2011 Las Conchas Wildfire. This proposed work will mitigate the increased flood risk by better stabilizing the floodplain and wetland.

The project location is in lower Pueblo Canyon, approximately 0.8 mi upstream from the NM Highway 502 / NM State Route 4 interchange. The majority of the water maintaining the wetland is effluent from the County of Los Alamos Wastewater Treatment Plant. Actions that will take place to improve the project area are detailed below and are shown in Figure 1. The engineering designs are in Appendix 1.

- Install temporary water control features down gradient of the project in an area to provide soil
  for re-sloping banks and as a holding area for reed canarygrass (*Phalaris arundinacea* L.)
  temporarily removed from the project area.
- Construct redi-rock stabilization structures at the eastern end of headcut area within the wetland.
- Reslope eroded banks and install matting made from coconut husk fibers (coir).
- Remove reed canarygrass from terraced areas above areas impacted by erosion and begin transplanting it into hydrated areas.

- Fill the headcut open channel area with material cut from the banks. The channel fill will proceed from the eastern extent to the western extent of the headcut, 12- 14 in below grade to allow for transplanting of the reed canarygrass.
- Existing boulders from the western end of the reed canarygrass transplant area and logs made of coir will be placed along the unprotected bank east of the area that will have coir matting installed. This will armor the bank from further erosion.
- Areas with bare soil following the restoration project will by reseeded and mulched with Flexterra FGM hydromulch.
- All of the area will have native coyote willow (*Salix exigua* Nutt.), cottonwood trees (*Populus fremontii* S. Watson), and other local native wetland species planted following the actions described to promote vegetation development and sediment stabilization in the wetland and floodplain.

# **Wetland and Floodplain Impacts**

The proposed construction and restoration of the project area will disturb approximately 16 ac of floodplain and 2.5 ac of wetland. The short-term effects to the floodplain and wetland will be negative from the large amount of soil disturbance. After the project is completed these short-term negatives will be replaced by long-term improvements to the floodplain and wetland. The proposed action will protect the existing floodplain and wetland function and will correct the deficiencies in the floodplain and wetland caused by the flooding in 2013.

Best management practices for work in wetlands and floodplains will be implemented during all project activities. These protection standards will minimize negative impacts. The best management practices will include:

- Project will not locate equipment staging areas within the floodplain
- Project will refuel equipment at least 100 ft from any drainage, including dry arroyos
- Project will not store hazardous materials, chemical, fuels, and oils within the floodplain
- Project will revegetate following soil disturbances using an appropriate native seed mix or plants
- Project will remove all debris (eg. construction material) from the floodplain

This project has gone through an integrated environmental review to maintain compliance with all laws and regulations. All applicable requirements in the National Pollution Discharge Elimination System, Storm Water Pollution Prevention Plan will be followed. To comply with the Migratory Bird Treaty Act, wetland vegetation will not be removed during the bird breeding season in June and July to protect nesting birds.

# **Other Alternatives Considered**

A No Action alternative was considered, but was not selected because without this stabilization, the risk of transport of sediments containing radionuclides or chemicals from historic LANL releases would increase. Temporary measures were also considered and not selected because they would not withstand another large flood event.

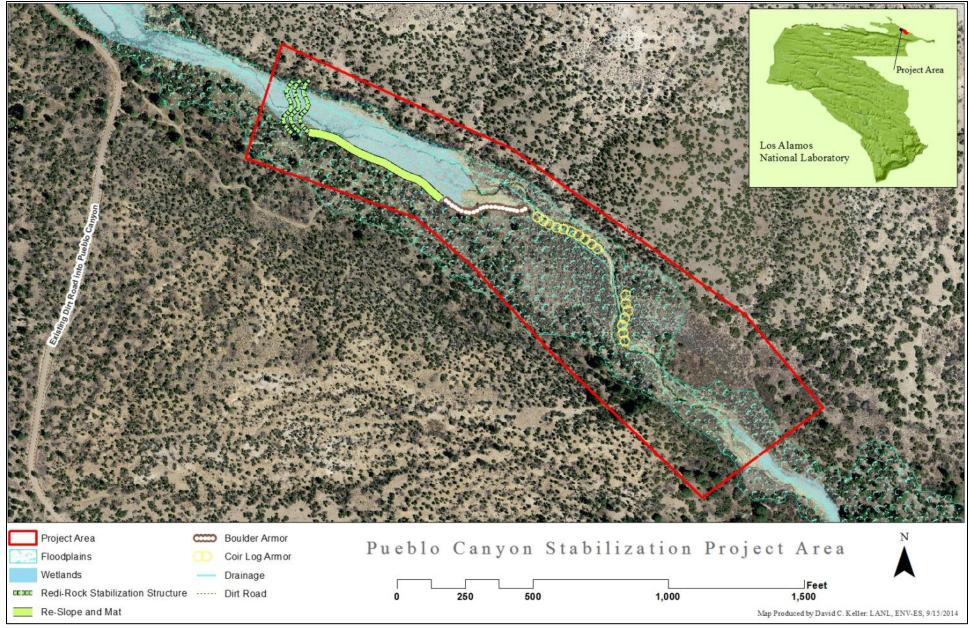


Figure 1. Orthophoto map showing the general location of the proposed project in relation to the wetlands and 100-year floodplains in Pueblo Canyon.

# Appendix 1

Engineering designs for the Pueblo Canyon Restoration Project

# PUEBLO WETLANDS

BLDG NA

TA-74

# LIST OF DRAWINGS

REVISION NUMBER	SHEET NUMBER	DISCIPLINE SHEET NUMBER	DRAWING TITLE
000000000000000000000000000000000000000	1 2 3 4 5 6 7 8 9 10	G-0001 C-0001 C-1000 C-1001 C-1002 C-1003 C-3000 C-3001 C-3002 C-5000 C-9000	TITLE SHEET LIGEND DISSTAIN CONDITIONS CUT & FILL DEMOLITION DISSTAIN CONDITIONS & NEW CONSTRUCTION ROO TRANSPLANT & WILLOW PLANTING CONTINUATION SECTIONS CONTINUED SECTIONS CONTINUED DISTALS THYDOL, 41" REDI-ROOK BLOCK ISOMETRICS

WORK PERFORMED UNDER THE ARMY CORP OF ENGINEERS / NAMED AUTHORIZATION REQUEST AND SUBSEQUENT ISSUANCE OF 404 DETERMINATION, TO BE COMPLETED FOLLOWING FINAL ISSUANCE OF THIS DRAWING SET.

THE CURRENT VERSIONS OF THIS LIST OF ADEP-SPECS ARE TO BE USED FOR THIS PROJECT:

- PROJECT:

  1. ACEP-SPEC-C-01-3345, WATER DISCHARGE REQUIREMENTS

  2.) ACEP-SPEC-C-01-5705, TEMPORARY CONTROLS AND COMPLIANCE REQUIREMENTS

  3.) ACEP-SPEC-C-31-200, EARTH MOVING

  4.) ACEP-SPEC-C-31-3519, CEDSYNIPLETC

  5.) ACEP-SPEC-C-32-9219, SEEDING

  6.) ACEP-SPEC-C-03-3001, RENYORCED CONCRETE

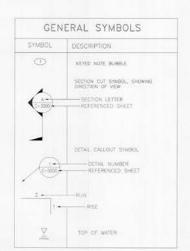
PROJECT DESIGN DATA





"OR APPROVED EQUAL" IS ALBAYS INPUED AFTER A BRAND NAME, PATENTED PROCESS OR CATALOG NAMER. THE SUBCONTRACTOR MAY SUBSTITUTE ANY BRAND OR PROCESS APPROVED AS AN EQUAL BY THE SPECIFING ARCHITECT/EXCHETE THROUGH THE SUBMITTAL PROCESS. THE ONLY EXCEPTION IS WHERE "NO SUBSTITUTION' IS SPECIFIED.







# HATCH TYPE LEGEND HATCH DESCRIPTION EARTH: CHANNEL SEDIMENTS PUYE BEDROOK COMPACTED - FILL BANK PROTECTION AREA वहमध WILLOW/ COIR BANK PROTECTION ..... REED CANARY GRASS (RCC) CUT RCG TO REMAIN RCG TRANSPLANT AREA WILLOW PLANTING AREA . 4 CONCRETE W GRANULAR BASE FILL CLASS B RIPRAP

## **ABBREVIATIONS**

- ALTERNATING
- AREA OF CONCERN
- AMERICAN SOCIETY FOR TESTING AND MATERIALS BLDG CG C OF G CFT DC DIA BUILDING
CERRO GRANDE
CENTER OF GRAVITY
CUBIC FEET
DERIVATIVE CLASSIFICATION DIAMETER EACH ELEVATION EA ELEV ESM ENGINEERING: STANDARDS MANUAL
FLOWLINE
FOOT OR FEET
HIGH DENSITY POLYETHYLENE
NVERT
POUNDS
LINEAR FEET
LINEAR FEET
LINEAR FOR THE STANDARDS MANUAL
MINIMUM
NORTH AMERICAN DATUM
NATIONAL OF ODETIC VERTICAL DATUM
NEW MEXICO DEPARTMENT OF TRANSPORTATION
NEW MEXICO DEVIRONMENT DEPARTMENT
POLYVINY, CHURDING
RED CANARY, GRASS
SECOND ENGINEERING STANDARDS MANUAL HOPE LLDPE

MIN NAD NGVD NMDD NMED PVC RCG SEC SMA STA SECOND STORM WATER MANAGEMENT AREA STATION SOLID WASTE MANAGEMENT UNIT TECHNICAL AREA

- TOP OF CONCRETE/TOP OF CURB

# GENERAL NOTES:

- 1. ALL ELEVATIONS ARE FINISHED GRADE, UNLESS OTHERWISE NOTED.
- 2. THE WORK CREW SHALL BE RESPONSIBLE FOR THE ACCEPTANCE AND CONTROL OF ALL FLOWS, INCLUDING STORM FLOWS. IN AND ENTERING THE CONSTRUCTION.
- 3. ALL SYMBOLS, ABBREVIATIONS, HATCH, AND LINE TYPES MAY NOT BE USED.
- SITE FEATURES & CONTOUR MAPPING PROVIDED BY UTILITIES AND INSTITUTIONAL FACETIES. EXISTING CONTOUR TOPDORAPHIC SURVEY DATE APRIL 2014.
- B. ALL BEARNOS AND DISTANCES ARE BASED ON THE NADBS NEW MEXICO STATE PLANE, CENTRAL ZONE, US SUPPLY FOOT. SHOWN DISTANCES ARE ORD DISTANCES. COMBINED PROJECT SCALE FACTOR IS 0.99955528300. MULTIPLY BY I GOOD-4491436 TO CONVERT FROM ORID TO GROUND DISTANCE. ELEVATIONS ARE BESED ON NOVZOZE DATUM.



