Colorado Springs Utilities

It's how we're all connected

Stewardship Approaches Used in Compensatory Wetland Mitigation

Kevin Shrewsbury

April 6, 2022

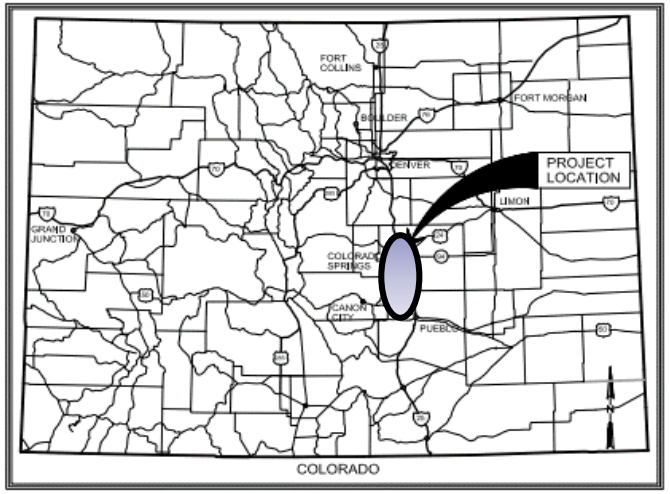
SDS Water Delivery Project

PHASE 1
PHASE 2

SDS
Water for generations

Treated-water Pipeline
Water Treatment Plant
Raw Water Pipeline
Upper Williams Creek Reservoir
Bradley Pump Station
Williams Creek Reservoir
Williams Creek Pump Station
New Pueblo Dam Connection for SDS
Juniper Pump Station

COLORADO SPRINGS
SECURITY
FOUNTAIN
PUEBLO WEST
PUEBLO
Pueblo Reservoir
Monument Creek
Fountain Creek
Arkansas River
Teller County
Fremont County
El Paso County
Pueblo County
25



Phase I: 2016

- 50 miles underground pipeline
- 3 pump stations
- 50 MGD treatment plant

Phase 2: 2025 or later

- Additional pipeline
- Two reservoirs
- Expanded capacity

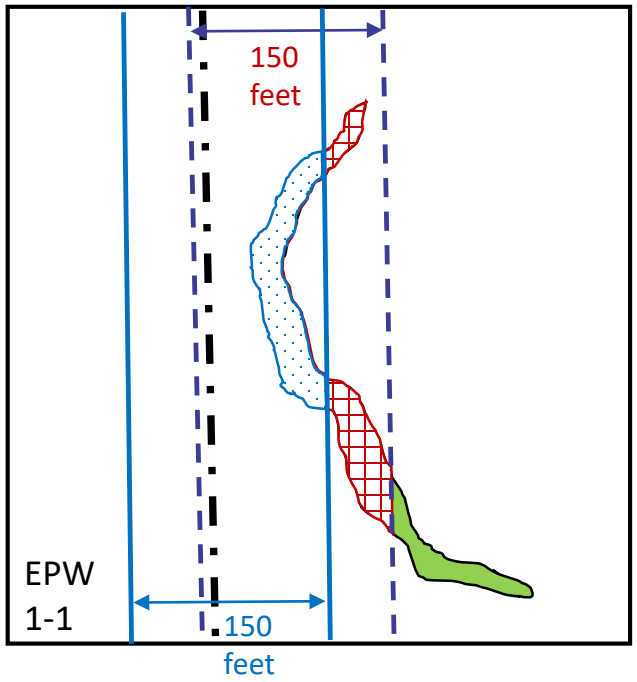
Regulatory Oversight (Wetlands)

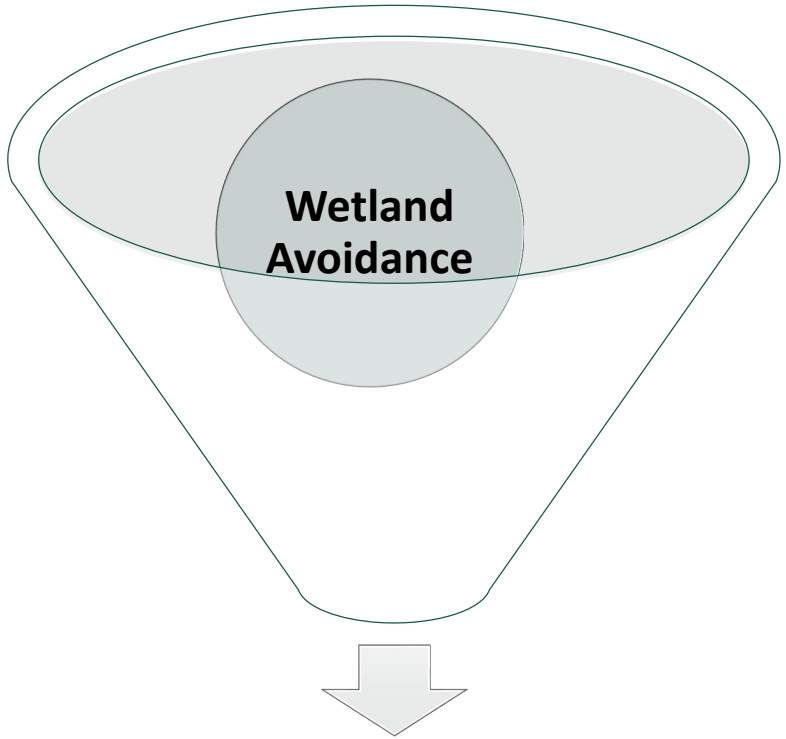
Environmental Impact Statement
Record of Decision

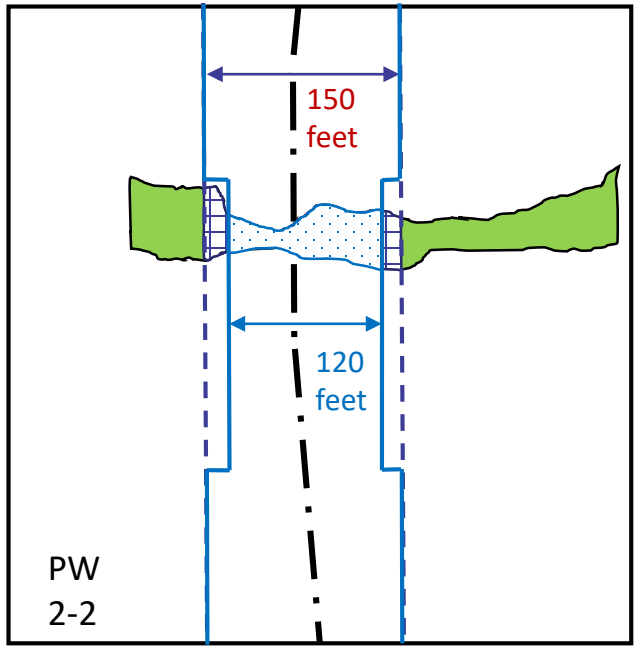
404 Individual Permit
Regional and Nationwide Permits

Wetland Impacts	Temporary	Permanent
Jurisdictional	7.59	0.24
Non-Jurisdictional	1.38	11.38
Total	8.98	12.04

Wetland Mitigation Strategies

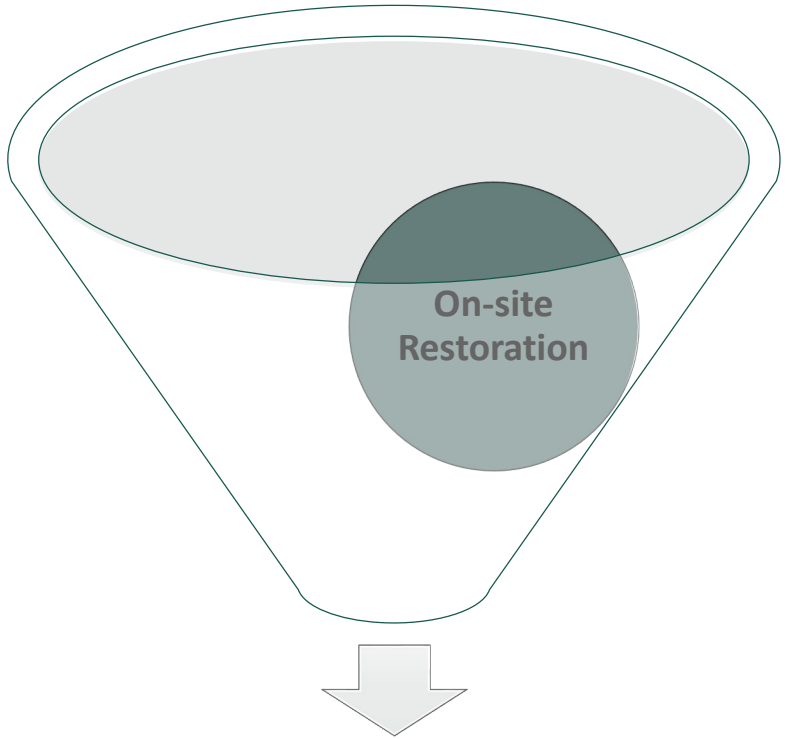






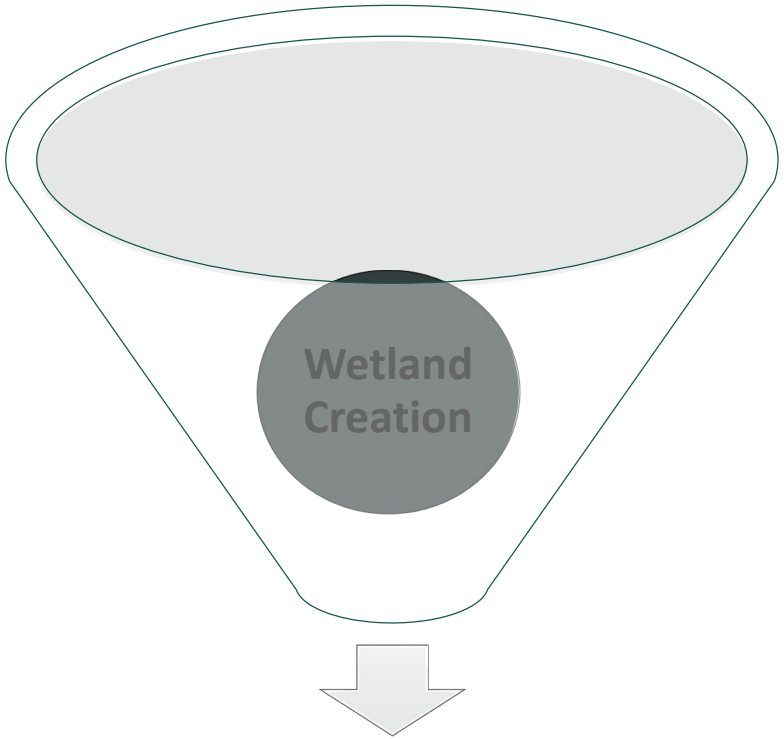
Maximize Results

Wetland Mitigation Strategies



Maximize Results

Wetland Mitigation Strategies



Maximize Results

Wetland Mitigation Strategies

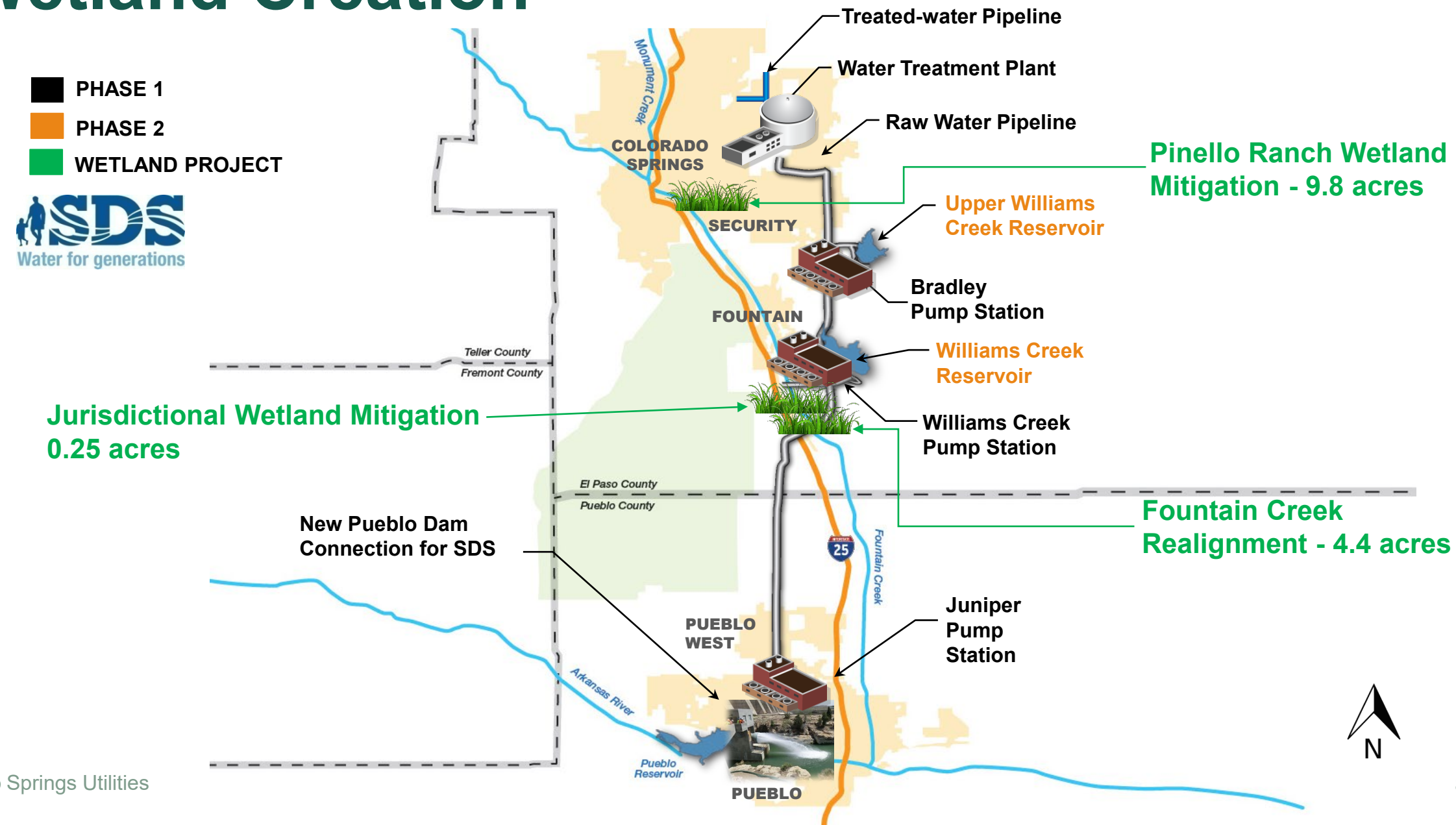
Long-Term Stability

Restoration

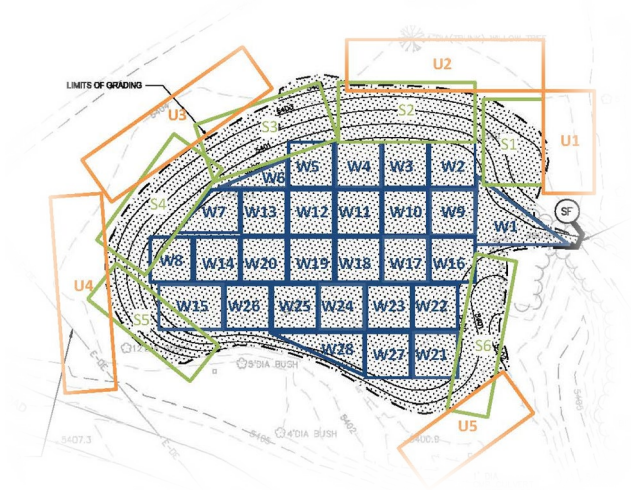
Construction

Planning

Wetland Creation



Jurisdictional Wetland Mitigation



Jurisdictional Wetland Mitigation

September 2011

September 2012

September 2013

September 2014

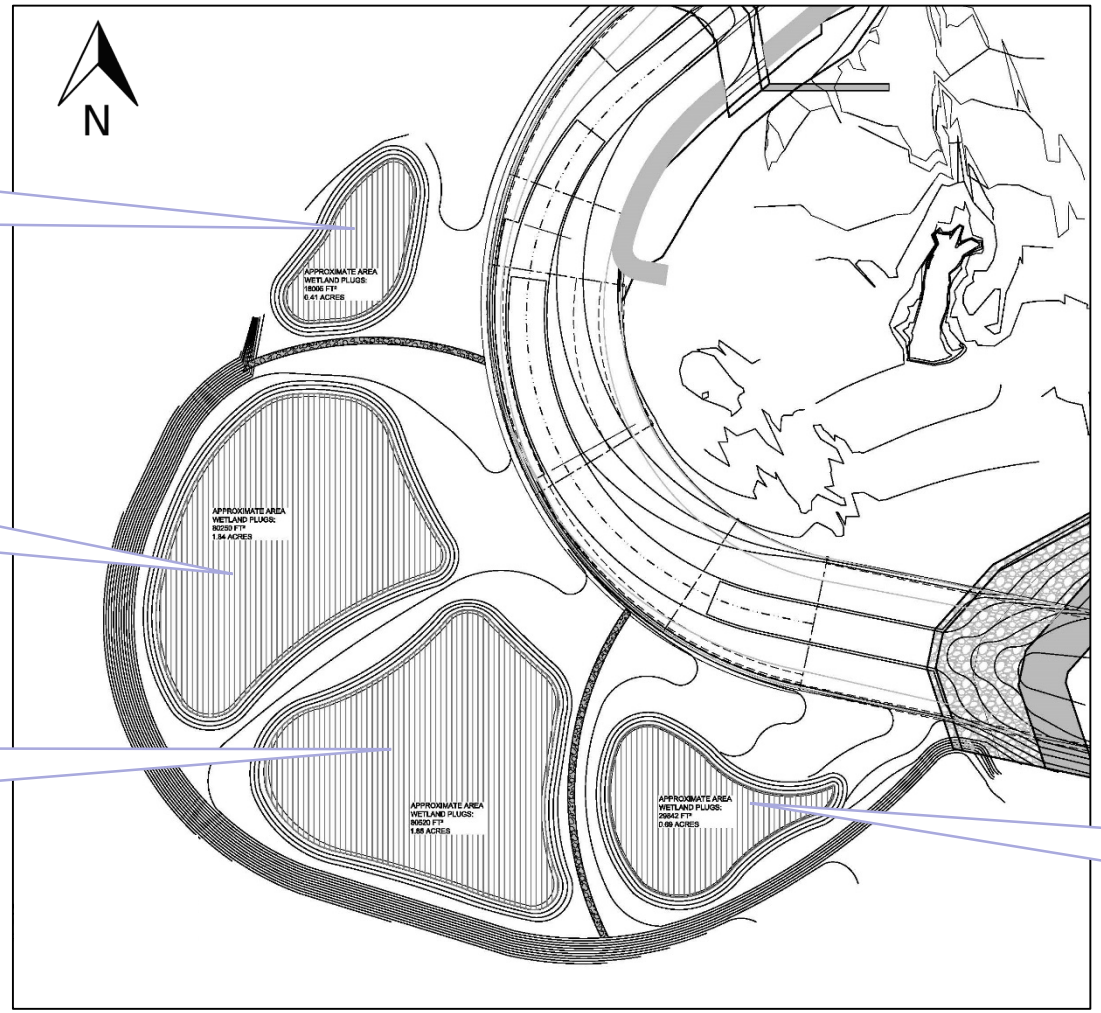
Dominant Species
Beaked sedge
Baltic rush
Spikerush
Nebraska sedge
Sandbar willow

Fountain Creek Realignment

0.41 acres

1.84 acres

1.85 acres



0.69 acres

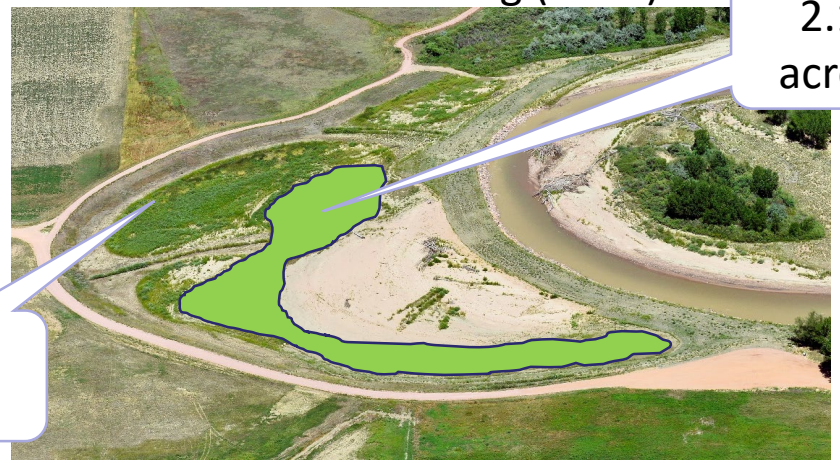
Total Wetland Area = 4.79 acres

Fountain Creek Realignment

Post – Construction (2014)

Post – Storm (2015)

Post – Reseeding (2016)



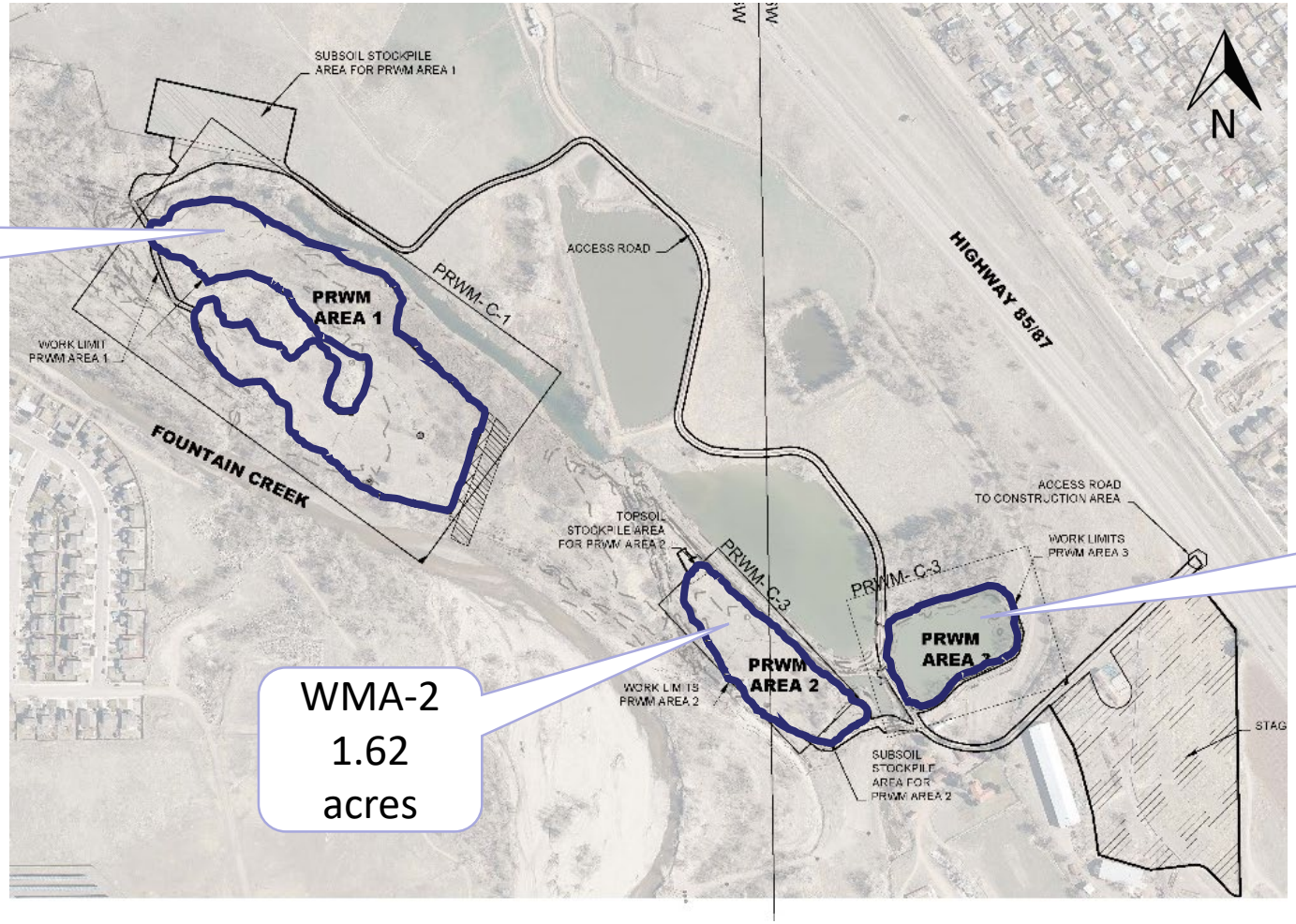
Potential Wetland Area = 4.40 acres

Final Survey (2019)

Dominant Species
Hardstem bulrush
Alkali sacaton
Sandbar willow

Pinello Ranch Wetland Mitigation

WMA-1
6.55
acres



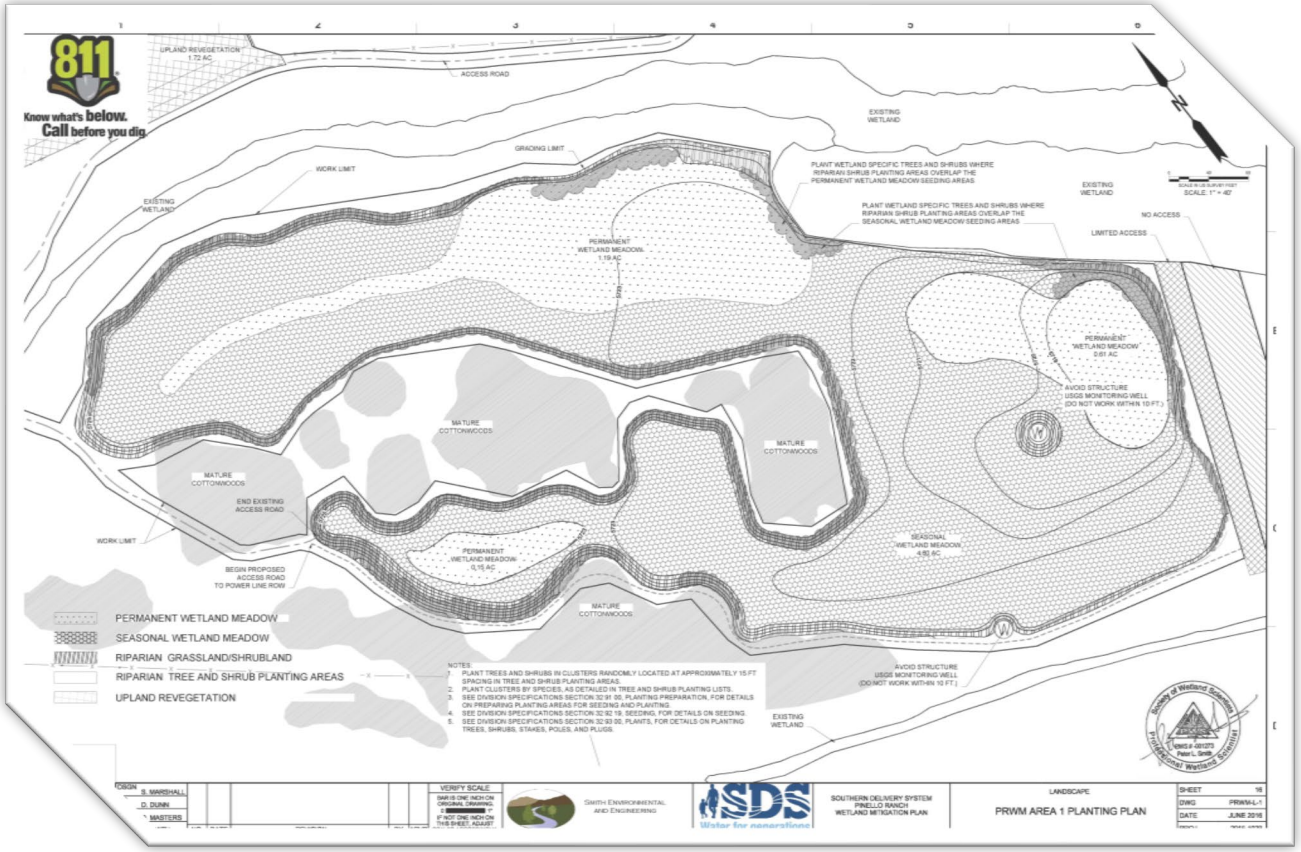
WMA-2
1.62
acres

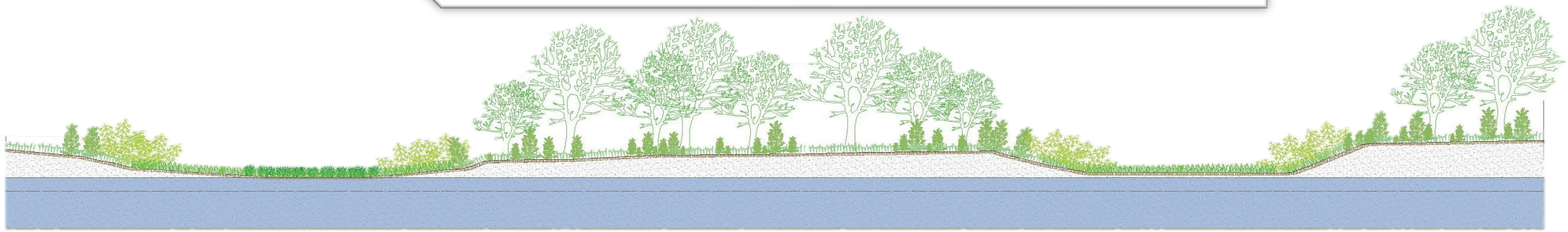
WMA-3
1.65
acres

Pinello Ranch Wetland Mitigation

Pinello Ranch Wetland Mitigation – Area 1

Pinello Ranch Wetland Mitigation – Area 1





Pinello Ranch Wetland Mitigation – Area 1

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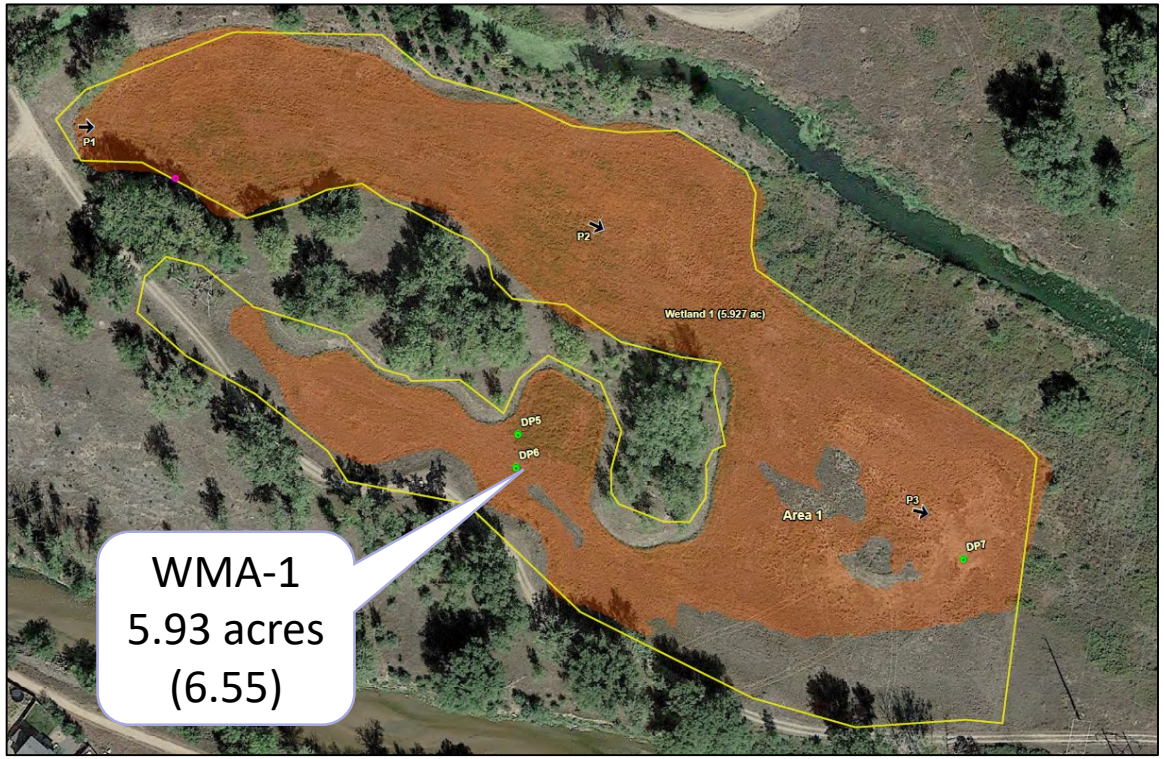


2021 Survey

WMA-1 P1

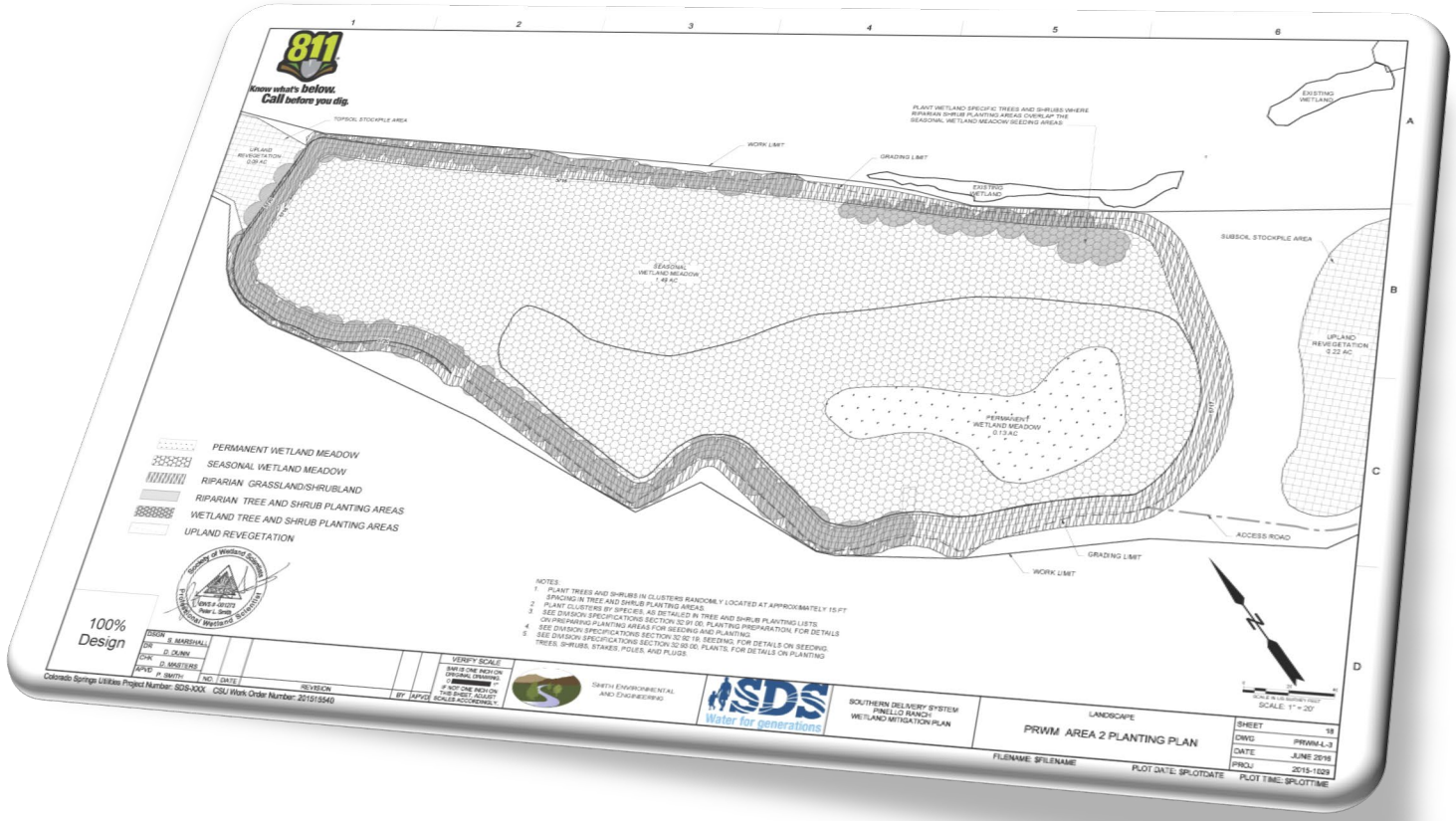
WMA-1 P2

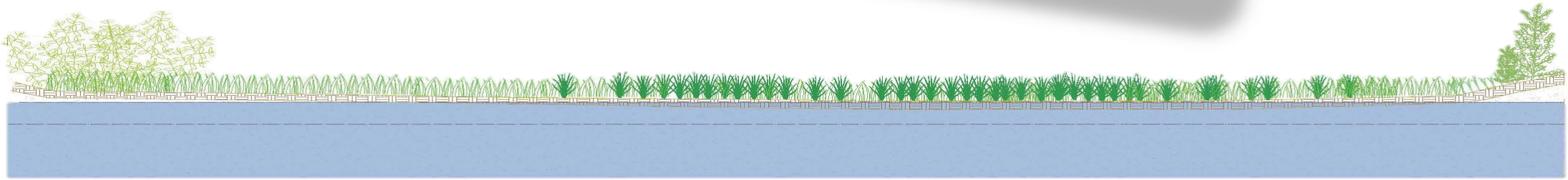
Dominant Species
Switchgrass
Slender wheatgrass
Softstem bulrush
Colorado rush
Nebraska sedge
Panicled bulrush
Foxtail barley*
Canada horseweed*

*Volunteer

Pinello Ranch Wetland Mitigation – Area 2

Pinello Ranch Wetland Mitigation – Area 2





Pinello Ranch Wetland Mitigation – Area 2

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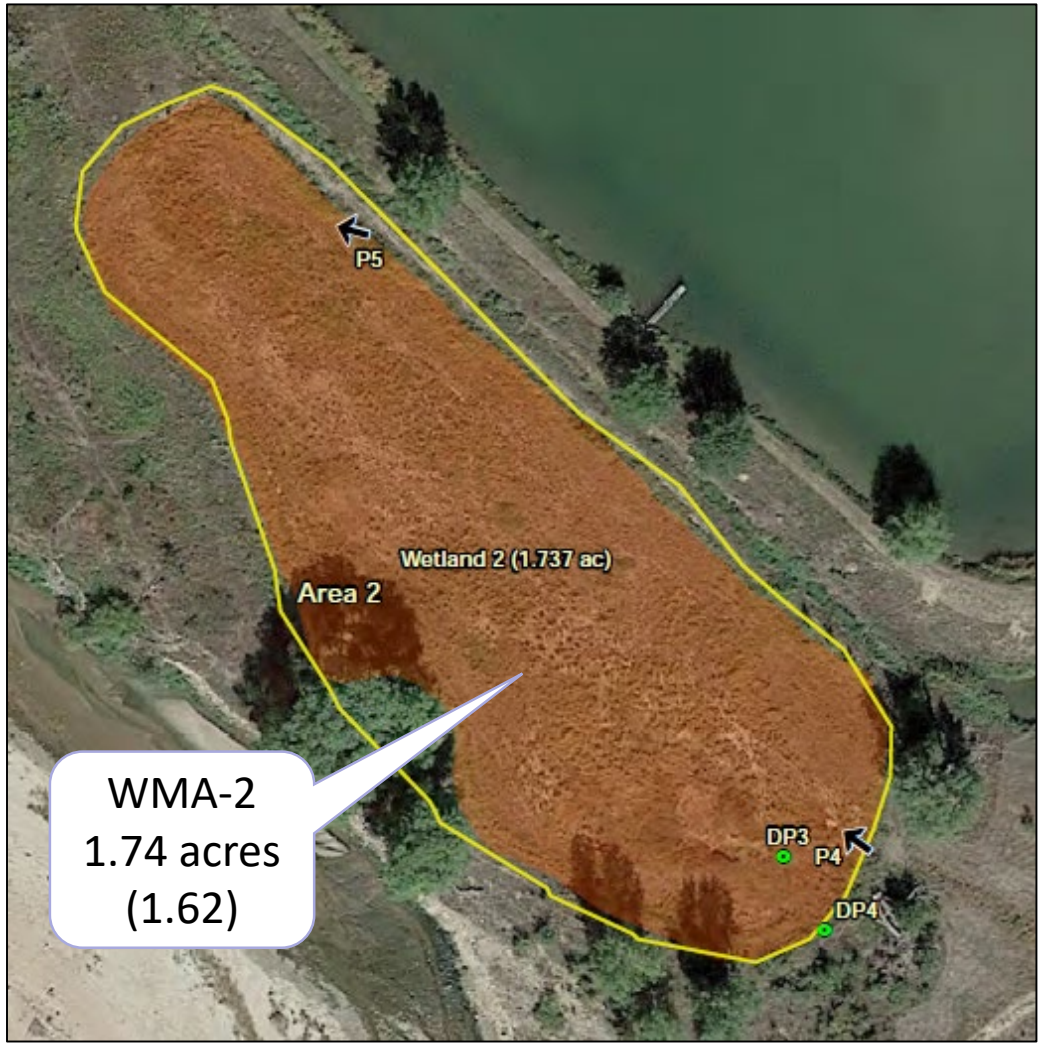


2021 Survey

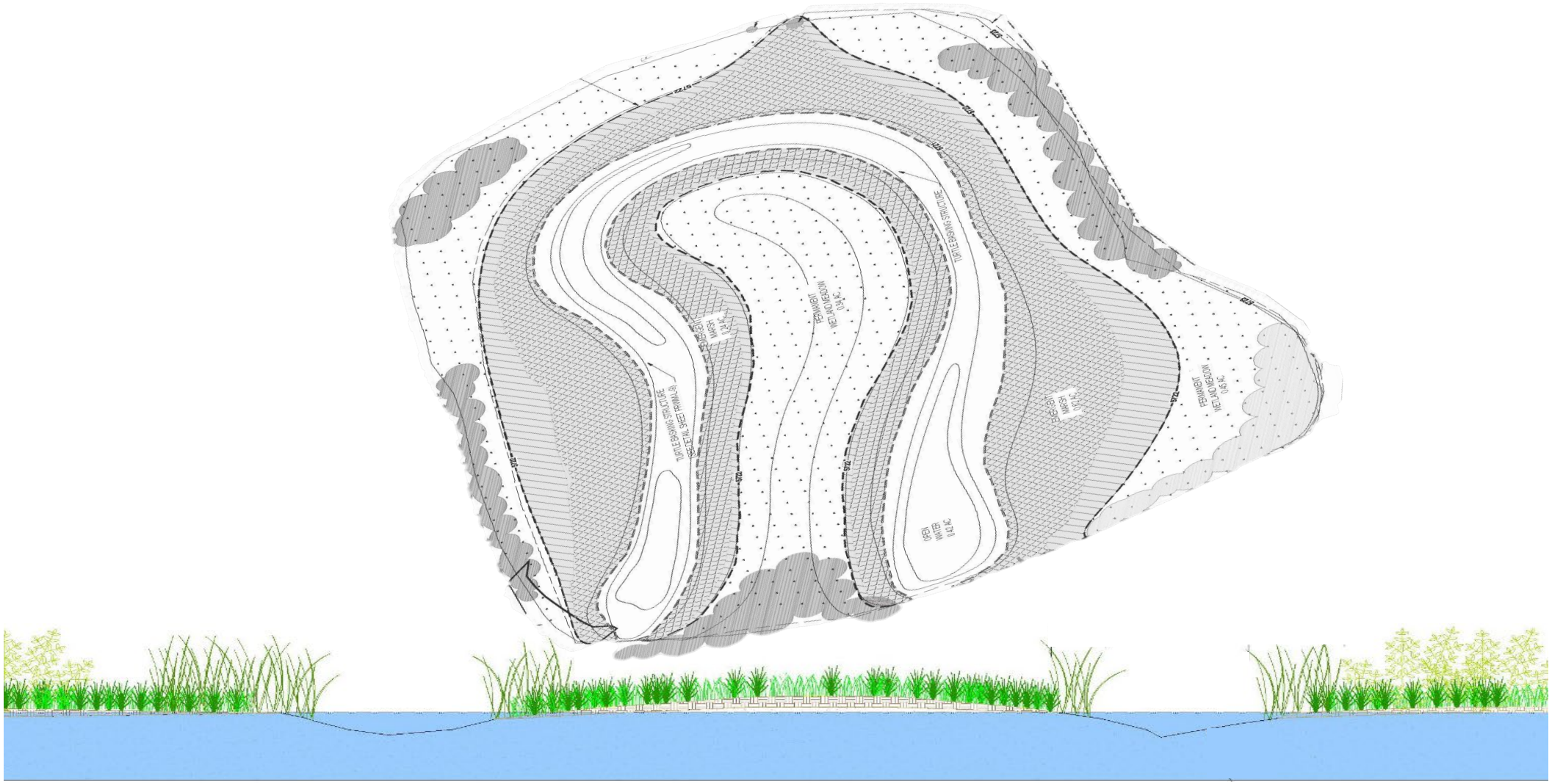
WMA-2 P4

WMA-3 P5

Dominant Species
Switchgrass
Slender wheatgrass
Nuttall's sunflower
Colorado rush
Prairie cordgrass
Saltgrass

Pinello Ranch Wetland Mitigation – Area 3

Pinello Ranch Wetland Mitigation – Area 3



Pinello Ranch Wetland Mitigation – Area 3

Pinello Ranch Wetland Mitigation – Area 3

Pinello Ranch Wetland Mitigation – Area 3

Pinello Ranch Wetland Mitigation – Wetland Sod

Pinello Ranch Wetland Mitigation – Area 3

Pinello Ranch Wetland Mitigation – Area 3

Pinello Ranch Wetland Mitigation – Area 3

Pinello Ranch Wetland Mitigation – Area 3

2021 Survey

WMA-3 P6

WMA-3 P8

Dominant Species
Softstem bulrush
Colorado rush
Nuttall's sunflower
Lady's thumb*
Cattails*
Switchgrass
Colorado rush
Reed canarygrass*

*Volunteer

Lessons Learned


Questions

Abstract:

Stewardship Approaches used in Compensatory Wetland Mitigation Sites

The Southern Delivery System (SDS) is a regional water project in Colorado that conveys Arkansas River water stored in Pueblo Reservoir to Colorado Springs, the City of Fountain, Security, and Pueblo West. During the planning phase of SDS, 21 acres of wetland impacts were identified. The project team formulated a three-step approach to mitigate wetland impacts: minimizing wetland disturbance, on-site mitigation of temporary impacts, and off-site compensatory mitigation with the creation of new wetland areas. Three compensatory mitigation sites were selected ranging from a quarter acre to approximately 10 acres. Successful wetland establishment and long-term stability was managed through a three-tier management strategy which consisted of direct oversight of the planning, construction, and restoration phases of the projects. The planning phase included site selection, data collection (e.g., piezometers), engineering design, construction permitting, and plant procurement. Oversight during construction consisted of regular site inspections, planting schematic adjustments, plant procurement, and construction change management. Restoration management included protection from environmental impacts, monitoring vegetative establishment, mitigating damages, and education and outreach.

	Temporary	Permanent
Jurisdictional	7.59	0.24
Non-Jurisdictional	1.38	11.38
Total	8.98	12.04
Grand total	21.08	

Managing Design