



## **Jurisdictional Determination Request for the 824 Acre Curtis Road Subdivision Project Peyton, Colorado**

October 17, 2018

**Prepared for:**

Rob Fuller, Owner  
ROI Property Group, LLC  
1100 Lincoln Avenue, Suite 100  
Napa, California 94558

**Prepared by:**



1455 Washburn Street  
Erie, Colorado 80516  
(p): 970-812-3267

Project Number: 2018-13-2



## TABLE OF CONTENTS

<b>1.0 INTRODUCTION .....</b>	<b>1</b>
1.1 SITE LOCATION .....	1
<b>2.0 METHODOLOGY.....</b>	<b>1</b>
2.1 OFFICE-LEVEL DATA REVIEW .....	1
2.2 FIELD ASSESSMENT.....	2
2.3 CLARIFICATION OF JURISDICTIONAL VS. NON-JURISDICTIONAL WATERS OF THE U.S. .....	5
2.3.1 <i>Isolated Waters of the U.S.</i> .....	5
2.3.2 <i>Demonstrated Significant Nexus with a Traditional Navigable Water</i> .....	6
<b>3.0 SITE CONDITIONS .....</b>	<b>6</b>
3.1 TOPOGRAPHY .....	6
3.2 SOILS.....	6
3.3 WATERS OF THE U.S. AND WETLAND HABITAT .....	6
3.3.1 <i>Hydrophytic Vegetation</i> .....	7
3.3.2 <i>Hydric Soil</i> .....	7
3.3.3 <i>Sustaining Hydrology</i> .....	7
<b>4.0 JURISDICTIONAL DETERMINATION.....</b>	<b>7</b>
4.1 ISOLATED WATERS OF THE U.S. .....	7
4.2 JURISDICTIONAL WATERS OF THE U.S. .....	8
<b>5.0 SUMMARY .....</b>	<b>10</b>
<b>6.0 REFERENCES.....</b>	<b>10</b>

## LIST OF FIGURES

- FIGURE 1. USGS Site Location Map
- FIGURE 2. National Wetland Inventory & CNHP Wetland & Riparian Areas Map
- FIGURE 3. Ecos Wetland and Waters Delineation Map

## LIST OF APPENDICES

- Appendix A – USDA NRCS Soil Survey Map
- Appendix B – Representative Photographs
- Appendix C – USACE Datasheets
- Appendix D - Professional Qualifications

## **1.0 INTRODUCTION**

ROI Property Group, LLC (ROI) proposes to design and develop the 824-acre Curtis Road Subdivision project (Project) in Peyton, Colorado (Site) and would like to clarify the presence/absence of jurisdictional Waters of the U.S. (WOUS), including wetland habitat, such that development may proceed in compliance with the Clean Water Act (CWA). Therefore, Ecosystem Services, LLC (Ecos or ecos) was retained to perform a detailed assessment of the 824-acre Site to: 1) Verify non-jurisdictional areas/drainage features pursuant to the guidance referenced in Section 2.3 below; and 2) Delineate jurisdictional wetland habitat and WOUS boundaries.

This Jurisdictional Determination Request report (Report) summarizes ecos' determination of non-jurisdictional drainage features, and the delineation of drainages/areas determined to be jurisdictional within the Site. Ecos requests formal review of, and concurrence with, the findings of the Report from the U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (USEPA) via an Approved Jurisdictional Determination (AJD).

The contact information for the CCES and ecos representatives for this Report is provided below:

<b>Client</b>	<b>Agent</b>
Rob Fuller, Owner	Grant E. Gurnée, P.W.S.
ROI Property Group, LLC	Ecosystem Services, LLC
1100 Lincoln Avenue, Suite 100	1455 Washburn Street
Napa, California 94558	Erie, Colorado 80516
Phone: (360) 989-5395	Phone: (970) 812-6167
rob@roipropertygroup.com	grant@ecologicalbenefits.com

### **1.1 Site Location**

The Site lies approximately 3 miles east/northeast of the town of Falcon, Colorado, and about 16 miles northeast of Colorado Springs in Peyton, CO (refer to Figure 1). The Site is comprised of 824-acres of undeveloped land and lies within Section 3 and the northern ½ of the northern ½ of Section 10 in Township 13 South, Range 64 West of the 6th Principal Meridian in El Paso County. The center of the Site is located at approximately Latitude 38.944756 degrees north, Longitude -104.543257 degrees west at an elevation of approximately 6,729 feet above mean sea level.

## **2.0 METHODOLOGY**

### **2.1 Office-Level Data Review**

Ecos reviewed available background information and base mapping to gain a better understanding of the Site and the adjacent region, including but not limited to:

- U.S. Geological Survey (USGS) topographic base mapping of the Site (Figure 1);
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil mapping and information (Appendix A);
- U.S. Fish and Wildlife Service (USFWS), National Wetland Inventory mapping (Figure 2);
- Colorado Natural Heritage Program (CNHP) Wetland and Riparian Areas mapping (Figure 2);
- Google Earth (GE) aerial imagery of the Site and adjacent region, dated 6-9-17;

- 1987 Corps of Engineers Wetlands Delineation Manual;
- 2008 Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Great Plains Region;
- Jurisdictional Determination Form Instructional Guidebook prepared by the U.S. Environmental Protection Agency (USEPA) and the USACE (May 30, 2007); and
- Revised Guidance on CWA Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States*, prepared by the USEPA and the USACE (December 2, 2008).

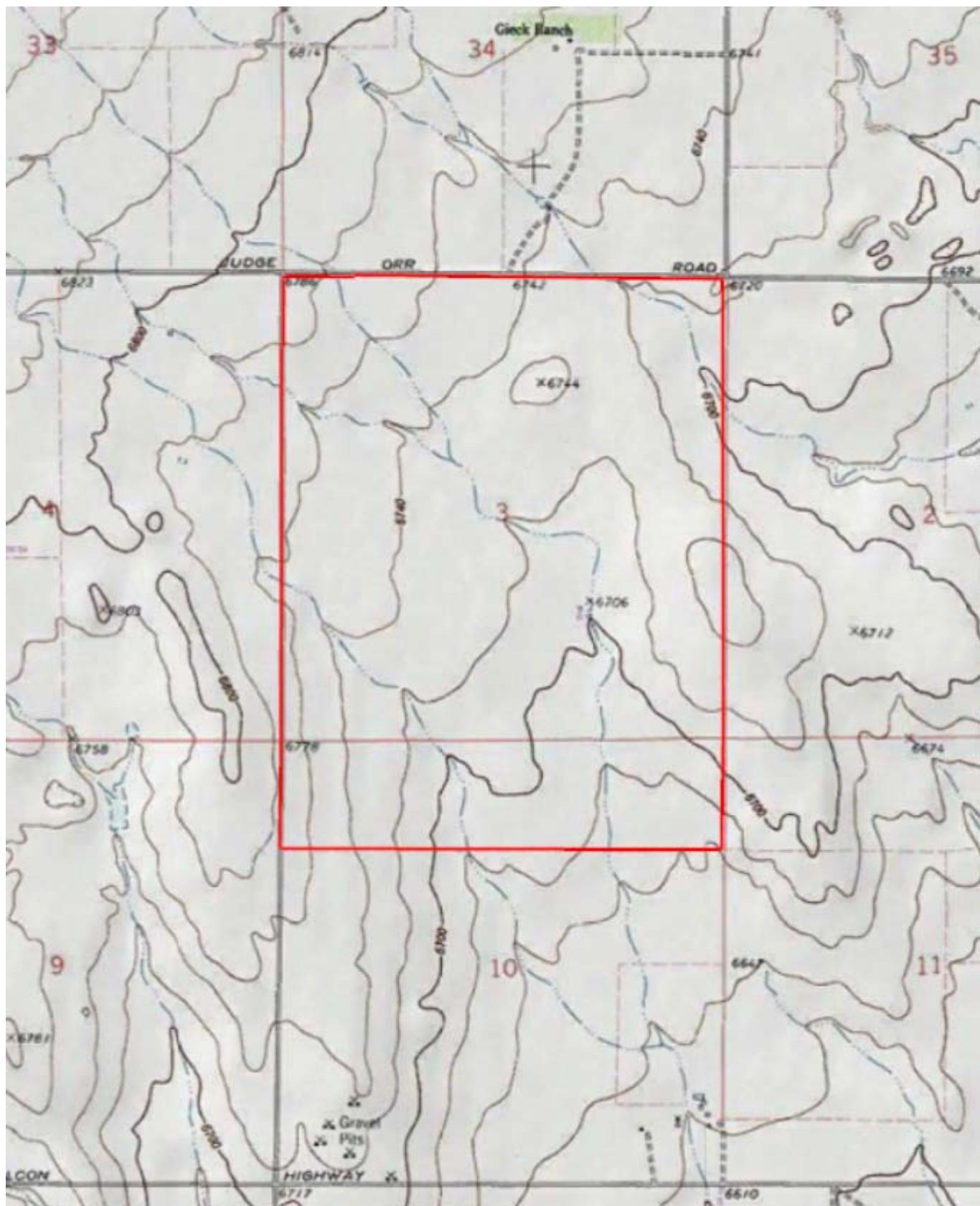
We also utilized the office review to determine and preliminarily verify the extent of potential WOUS within the Site, as well as the presence of downstream connections to other WOUS.

## **2.2 Field Assessment**

Following the collection and review of existing data and background information, Grant Gurnée and Jon Daužvardis, Professional Wetland Scientists with ecos, conducted a field assessment of the Site and potential offsite, downstream connections to WOUS on September 19 and 20, 2018. The purpose of the assessment was to verify non-jurisdictional areas/drainage features pursuant to the guidance referenced in Section 2.3 below; and delineate jurisdictional wetland habitat and WOUS boundaries.

Ecos discussed our proposed Jurisdictional Assessment & Delineation Approach with Van Truan of the Army Corps in late Fall 2017 and have been implementing it throughout the Albuquerque District in Colorado during the 2018 field season for numerous projects. The approach agreed upon with Mr. Truan is summarized below:

- 1) Ecos will utilize best available data for the Site including the NWI and CNHP wetland and waters mapping, USDA Soil Survey, topographic base mapping, and current Google Earth aerial imagery to identify and digitize all potential jurisdictional drainages within the Site;
- 2) Ecos will review the entire Site and identify all drainages deemed to lack a continuous connection to downstream WOUS.
- 3) No further jurisdictional delineation work will be performed on those drainages that are found to lack continuous connection to downstream WOUS; rather, ecos will document conditions and illustrate the “break” areas with aerial imagery for use in an Approved Jurisdictional Determination application to the Corps.
- 4) All drainages that ecos determines to have a continuous connection to downstream WOUS will be delineated using a rapid assessment methodology. The rapid methodology primarily uses aerial imagery and soils maps for preliminary boundary delineation of WOUS, including wetland habitat. The preliminary delineation will be prepared electronically and overlain on aerial imagery for use in the field. The preliminary boundaries will be refined/finitely adjusted in the field using a global positioning system (GPS), field indicators of wetland vegetation, hydric soil and sustaining hydrology documented along numerous transects located along key points of each potential WOUS/wetland polygon. Transects will not be required in areas with well-defined topography and a well-defined WOUS/wetland boundary.

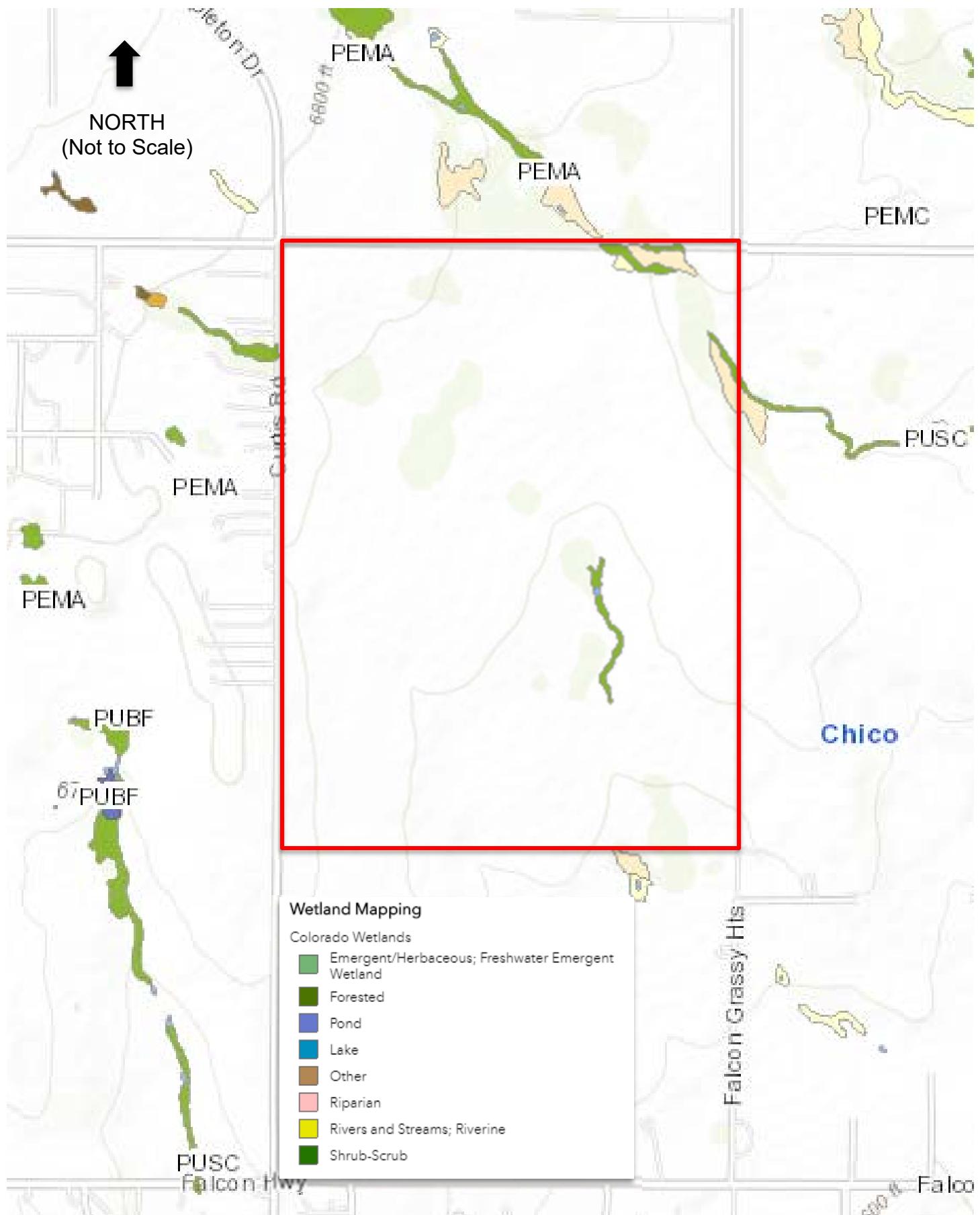


USGS 7.5 min. Quad: Falcon

Latitude: 38.944756°N

Longitude: -104.543257°W

Section 3 & 10, Township 13 South, Range 64 West



SOURCE: USFWS, National Wetland Inventory (NWI) & CNHP, Colorado Wetland Inventory

## **2.3 Clarification of Jurisdictional vs. Non-Jurisdictional Waters of the U.S.**

The USACE and USEPA prepared a guidance memorandum, *Revised Guidance on Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States* (December 2, 2008), to provide guidance to USEPA regions and districts implementing the Supreme Court's decision in the consolidated Rapanos and Carabell cases regarding jurisdiction over waters of the United States under the CWA. The key points of the memorandum are summarized below, and serve as the basis for the non-jurisdictional determinations made in the field by ecos and the USACE:

The agencies will assert jurisdiction over the following waters:

- Traditional navigable waters;
- Wetlands adjacent to traditional navigable waters;
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); and
- Wetlands that directly abut such tributaries.

The agencies will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a TNW:

- Non-navigable tributaries that are not relatively permanent; and wetlands adjacent to such tributaries.

Note: Footnote 24 of the memorandum defines a “tributary” as follows: “a tributary includes natural, man-altered, or man-made water bodies that carry flow directly or indirectly into a traditional navigable water.”

The agencies generally will not assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow); and
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

Additionally, although not included in the USACE/USEPA guidance memo above, ecos 25 years of experience with the Albuquerque District of the Corps verifies that the agency generally will not assert jurisdiction over the following features:

- Uplands transporting overland flow generated from precipitation (i.e., rain events and snowmelt); and
- Drainage features upstream of the point at which they dissipate into an upland area and lose their defined bed, banks and channel.

### **2.3.1 Isolated Waters of the U.S.**

Utilizing the summary of key points from the USEPA and USACE guidance memorandum above, as well as the U.S. Army Corps of Engineers' *Jurisdictional Determination Form Instructional Guidebook* (USACE 2007), ecos and the USACE based the “isolated waters” determination on the following key factors:

- 1) Is the drainage feature a traditional navigable water (TNW) or a wetland adjacent to a TNW?

- 2) Is the drainage feature a Relatively Permanent Water (RPW) or a wetland directly abutting an RPW with perennial or seasonal flow?
- 3) Is the drainage feature adjacent to or directly abutting an RPW with perennial or seasonal flow?
- 4) Does the drainage feature have a demonstrated significant nexus with a TNW?
- 5) Has the drainage feature dissipated into an upland area and lost its defined bed and banks (i.e., channel)?

### **2.3.2 Demonstrated Significant Nexus with a Traditional Navigable Water**

The closest WOUS to the Site considered to be a “traditional navigable water” by the Albuquerque District of the USACE is the John Martin Reservoir on the Arkansas River which is over 100 miles away. Therefore, it is highly unlikely that any of the drainages on the Site would be determined to have a demonstrated “significant nexus” with a TNW under current regulatory guidance. (Note: although John Martin Reservoir is referenced as a TNW by the Albuquerque District in Colorado it has not been designated as a Section 10 water by the USACE.)

## **3.0 SITE CONDITIONS**

### **3.1 Topography**

The Site is generally characterized as gently sloping from northwest to southeast with Site topography ranges from a high elevation of 6783 feet above mean sea level (AMSL) in the northwestern corner to a low elevation of 6662 feet above AMSL in the southeast corner; for a total elevation drop of 121 feet. A man-made pit was excavated in the southeast corner and the soil was stockpiled adjacent to the pit, creating a topographic irregularity that is not represented on the USGS Topographic Map (Figure 1).

### **3.2 Soils**

Ecos utilized the U.S. Department of Agriculture, Natural Resource Conservation Service Web Soil Survey (USDA, NRCS, 2018) to determine if hydric soils are present within the Site, as this data assist in informing the presence/absence of potential wetland habitat regulated under the Clean Water Act. The soils data were also utilized to supplement the field observations of vegetation, as the USDA provides correlation of native vegetation species by soils types. The Site is underlain by the following soil types:

- Blakeland loam sand, 1 to 9 percent slopes;
- Columbine gravelly sandy loam, 0 to 3 percent slopes;
- Fluvaquentic Haplaquolls, nearly level; and
- Stapleton sandy loam, 3 to 8 percent slopes.

Please refer to Appendix A for the NRCS Soil Map and additional information.

### **3.3 Waters of the U.S. and Wetland Habitat**

Two ephemeral drainages (prairie sloughs) are present in the southwestern and central areas of the Site. The southwestern, ephemeral drainage is primarily comprised of upland habitat and the central one is comprised of discontinuous patches of wetland and upland habitat. One intermittent drainage is located in the northeastern portion of the Site and it is tributary to Black Squirrel Creek offsite. The findings of our field assessment are illustrated on Figure 3.

### **3.3.1 Hydrophytic Vegetation**

Hydrophytic vegetation (wetland vegetation) is present within the discontinuous wetland patches in the central ephemeral drainage and the northeastern, intermittent drainage. Dominant wetland vegetation includes Baltic rush, Torrey's rush, poverty rush, reedtop, Nebraska sedge, and three square bulrush. Willow is notably absent. Dominant upland vegetation at the margin of the wetland boundary includes little bluestem and blue grama grasses, fringed sage and other miscellaneous upland weeds. Please refer to the attached TP1/TPU-1 and TP2/TPU-2 datasheets for absolute cover, species dominance and wetland indicator status information.

### **3.3.2 Hydric Soil**

The following soils are listed by the NRCS as a hydric soils by the National Hydric Soils List for Colorado (CDOT, 2015):

- Columbine gravelly sandy loam, 0 to 3 percent slopes;
- Fluvaquentic Haplaquolls, nearly level; and
- Stapleton sandy loam, 3 to 8 percent slopes.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS, 1994) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in *Field Indicators of Hydric Soils in the United States* (USDA, NRCS, 2010).

### **3.3.3 Sustaining Hydrology**

The northeastern, intermittent drainage had several field indicators of sustaining hydrology, including: surface water, a high water table, oxidized rhizospheres along living roots, drainage patterns, salt crust, and it was located in an indicative geomorphic position (i.e., a channel with well-formed bed and banks).

## **4.0 JURISDICTIONAL DETERMINATION**

The following preliminary, jurisdictional determination of the onsite drainages and associated wetland habitat is based on ecos' office review and onsite assessment and is submitted for USACE and USEPA review.

### **4.1 Isolated Waters of the U.S.**

Ecos has preliminarily determined that Drainage A/B is non-jurisdictional under the CWA based on its isolated status (refer to Figure 3). We followed Drainage A/B throughout the Site and found 3 upland breaks, where the drainage loses its bed and banks and ephemeral flows would fan out over an upland area: 1) in the central portion of the Site (refer to Figure 3 and Photo 6 in Appendix B); 2) approximately 371 feet upstream of the southern Site boundary; and 3) approximately 60 feet upstream of the southern Site boundary (Figure 3). Additionally, we identified another upland break approximately 784 feet downstream and of the southern Site boundary (i.e., offsite), where the drainage loses its bed and banks. Larger scale aerial review confirms that

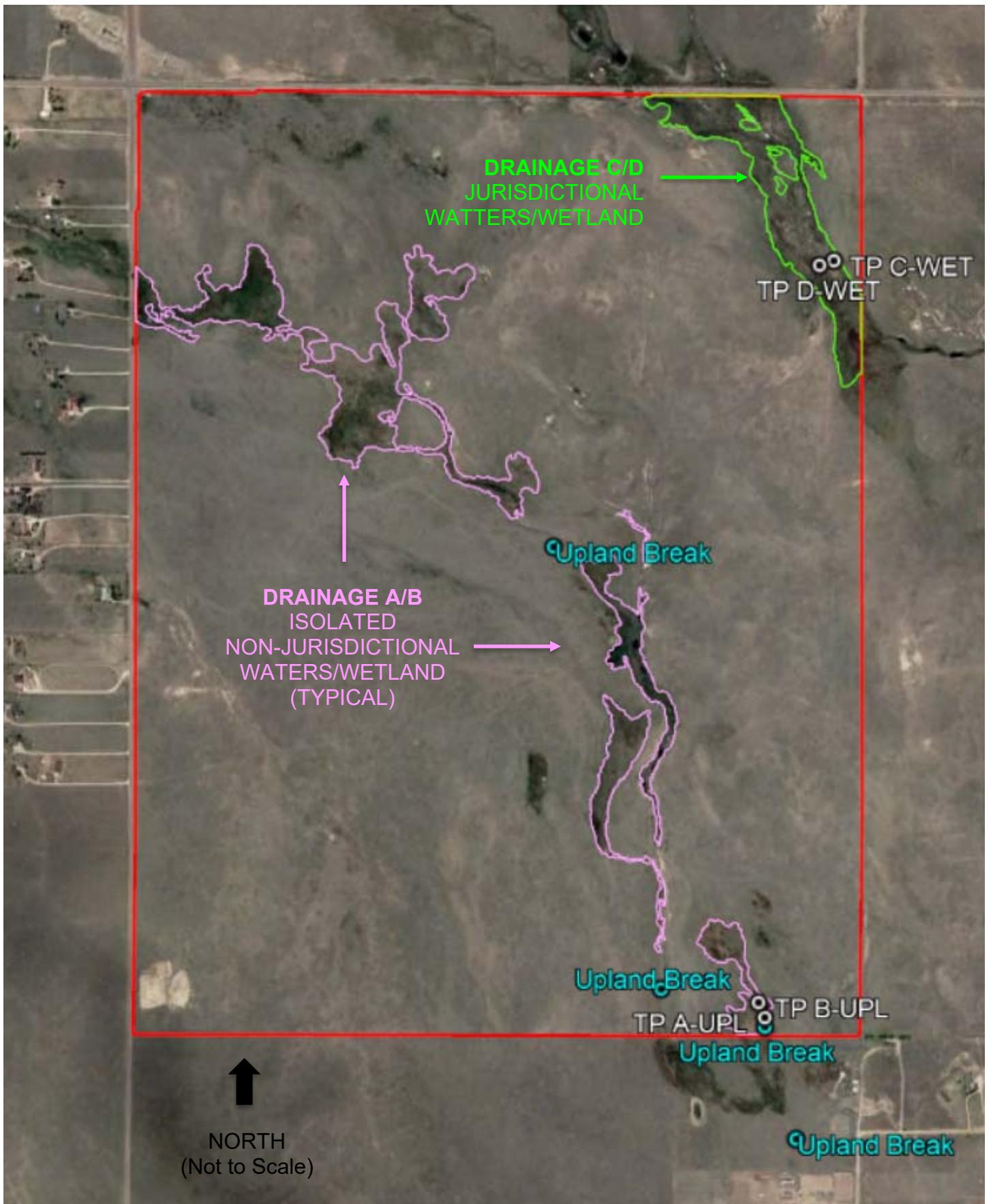
once Drainage 1 leaves the Site it becomes an ill-defined, sandy swale with numerous upland breaks and it ultimately terminates in an upland without ever connecting to a downstream WOUS of any kind.

Ecos proposes a non-jurisdictional determination of Drainage A/B based on the following facts verified in the field and via aerial imagery:

- This feature is a swale characterized by infrequent and or short duration flow associated with precipitation events;
- This feature is not a TNW or wetland adjacent to a TNW;
- This feature is not an RPW or a wetland directly abutting an RPW with perennial or seasonal flow;
- This feature is not a tributary to a TNW, and is not even a direct tributary to a downstream WOUS as the feature loses its bed and banks; and
- This feature is not adjacent to or directly abutting an RPW with perennial or seasonal flow.

#### **4.2 Jurisdictional Waters of the U.S.**

Ecos confirmed that Drainage C/D in the northeast corner of the Site has a downstream connection to an unnamed tributary of Black Squirrel Creek immediately offsite, and then Black Squirrel Creek flows south into Pueblo County and is tributary to the Arkansas River. ROI does not wish to pursue the status of Drainage C/D based on the presence/absence of a demonstrated significant nexus with the closest TNW, John Martin Reservoir, and as such is conceding that this is a jurisdictional drainage under the CWA.



SOURCE: Ecosystem Services, LLC On-site Delineation, 9-20-18

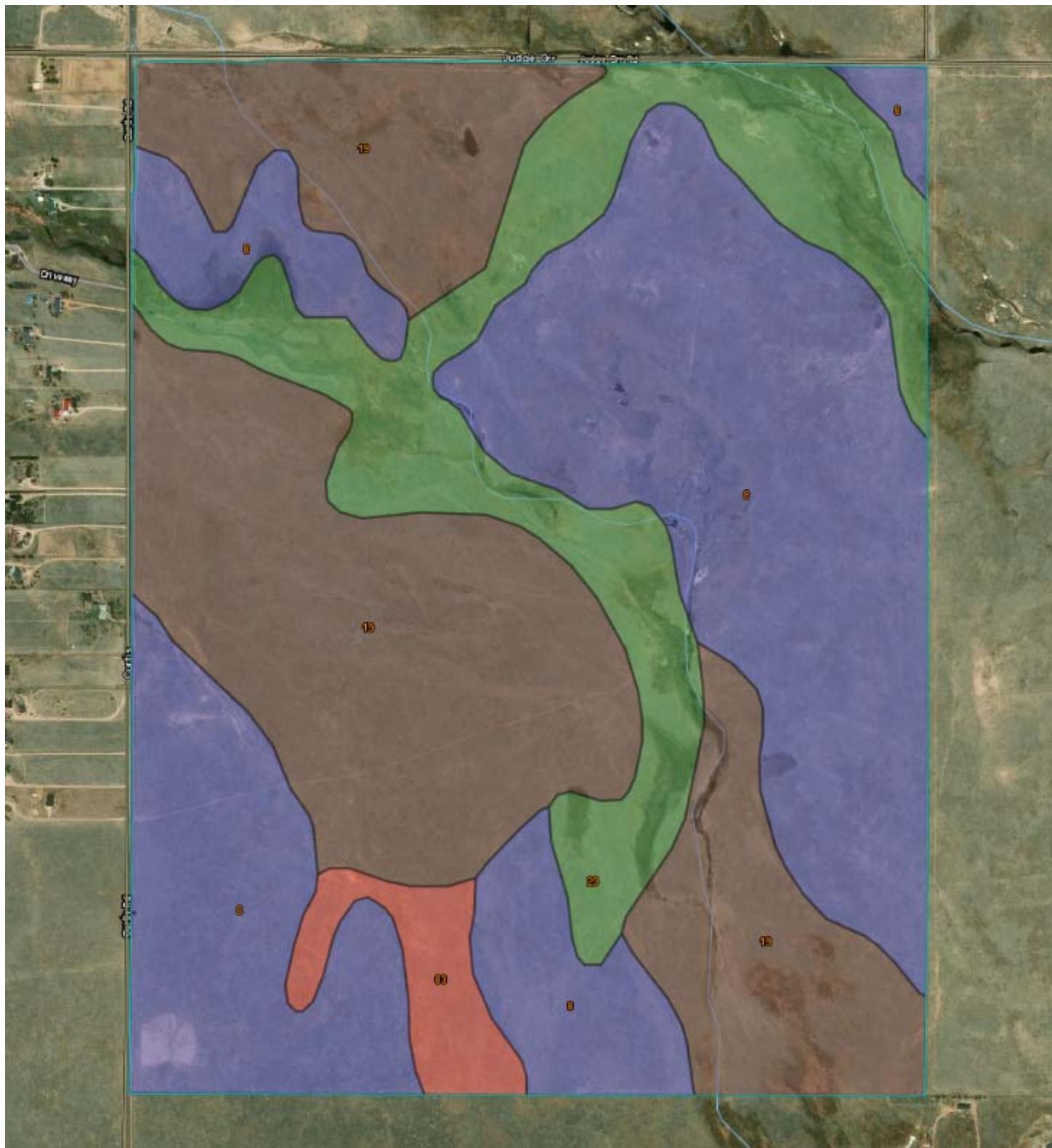
## **5.0 SUMMARY**

Ecos proposes that Drainage A/B is non-jurisdictional under the CWA based on its discontinuous and isolated status; and Drainage C/D is jurisdictional under the CWA given its downstream connection to a WOUS. We respectfully request USACE and USEPA concurrence with our findings based upon the data presented in this Report.

## **6.0 REFERENCES**

- Colorado Department of Transportation. 2015. National Hydric Soils List for Colorado. Accessed at:  
<https://www.codot.gov/programs/environmental/wetlands/documents/national-hydric-soils-list-colorado-2015/view>
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.
- NTCHS (National Technical Committee for Hydric Soils). 1994. *Changes in Hydric Soils of the United States* (including the NTCHS definition of Hydric Soil). Federal Register Volume 59, Number 133. Wednesday, July 13, 1994.
- USEPA and USACE. 2008. Revised Guidance on Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States (December 2, 2008). Available at:  
[http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/cwa\\_guide/cwa\\_juris\\_2dec08.pdf](http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/cwa_guide/cwa_juris_2dec08.pdf). Last accessed on May 17, 2016.
- USACE. 2007. U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook. Available at:  
[http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/cwa\\_guide/jd\\_guidebook\\_051207final.pdf](http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/cwa_guide/jd_guidebook_051207final.pdf). Last accessed on May 17, 2016.
- USACE. 2008. Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Great Plains Region. May 2008.
- USDA, Natural Resources Conservation Service (NRCS). 2010. Field Indicators of Hydric Soils in the United States, A Guide for Identifying and Delineating Hydric Soils, Version 7.0. L.M. Vasilas, G.W. Hurt and C.V. Noble (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
- USDA, NRCS. 2018. Web Soil Survey. Available at: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Last accessed September 24, 2018.

**APPENDIX A**  
**USDA NRCS Soil Information**



Summary by Map Unit — El Paso County Area, Colorado (CO625)					
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI	
8	Blakeland loamy sand, 1 to 9 percent slopes	Blakeland loamy sand, 1 to 9 percent slopes	357.5	43.8%	
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	Columbine gravelly sandy loam, 0 to 3 percent slopes	296.0	36.3%	
29	Fluvaquentic Haplauquolls, nearly level	Fluvaquentic Haplauquolls, nearly level	139.2	17.1%	
83	Stapleton sandy loam, 3 to 8 percent slopes	Stapleton sandy loam, 3 to 8 percent slopes	23.7	2.9%	
<b>Totals for Area of Interest</b>			<b>816.5</b>	<b>100.0%</b>	

SOURCE: Web Soil Survey, Accessed 10-9-18

**APPENDIX B**  
**Representative Photographs**

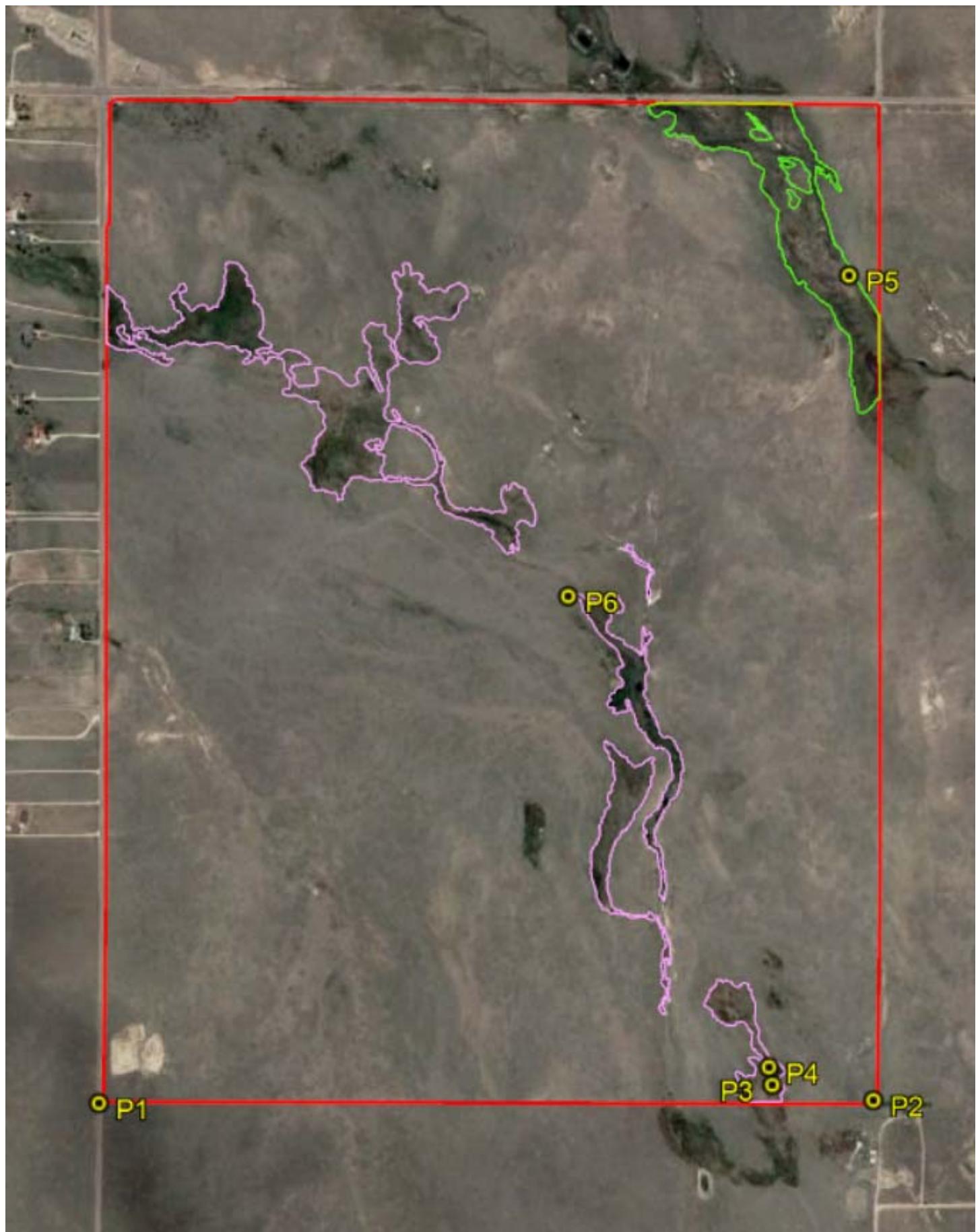




Photo Point 1: View northeast from southwest corner of the site of overall prairie conditions.



Photo Point 2: View northwest from southeast corner of the site of overall prairie conditions.



Photo Point 3: View north/upstream of ephemeral Drainage A/B near southern property line.



Photo Point 3: View south/downstream of upland break along ephemeral Drainage A/B near southern property line.



Photo Point 4: View north/upstream of ephemeral Drainage A/B near southern property line.



Photo Point 4: View south/downstream of upland break along ephemeral Drainage A/B near southern property line.



Photo Point 5: View southeast/downstream of intermittent Drainage C/D near eastern property line.



Photo Point 5: View northwest/upstream of intermittent Drainage C/D waters/wetland near eastern property line.



Photo Point 6: View northwest/upstream of upland break in middle of the Drainage A/B.



Photo Point 6: View southeast/downstream of upland break in middle of the Drainage A/B.

**APPENDIX C**  
**USACE Datasheets**

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 824 Acre Curtis Road Subdivision City/County: El Paso Sampling Date: 9-19-18  
 Applicant/Owner: ROI Property Group, LLC / Rob Fuller State: CO Sampling Point: A/B-UPL  
 Investigator(s): G. Gurnee & J. Dauzvardis Section, Township, Range: Sec. 3 & 10, T 13 S, R 64 W  
 Landform (hillslope, terrace, etc.): Rolling Plains Local relief (concave, convex, none): Concave Slope (%): 0-3  
 Subregion (LRR): Southern Rock Mountain Foothills Lat: 38.944756°N Long: -104.543257°W Datum: WGS84  
 Soil Map Unit Name: Columbine gravelly sandy loam NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No _____	Is the Sampled Area within a Wetland?	Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		
Remarks:  Dry, upland disturbed prairie swale with no defined bed or banks. Potential wetland area is within an ephemeral channel and is an upland break. Refer to photo points P3 and P4.				

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:		
1.		0	= Total Cover			Number of Dominant Species That Are OBL, FACW, or FAC: 1 _____ (A)	
2.						Total Number of Dominant Species Across All Strata: 3 _____ (B)	
3.						Percent of Dominant Species That Are OBL, FACW, or FAC: 33 _____ (A/B)	
4.							
Sapling/Shrub Stratum (Plot size: _____)		P	No	FACU	Prevalence Index worksheet:		
1. Rosa woodsii (Wood's rose)					Total % Cover of:	Multiply by:	
2.					OBL species 0	x 1 = 0	
3.					FACW species 20	x 2 = 40	
4.					FAC species 0	x 3 = 0	
5.					FACU species 40	x 4 = 160	
		0	= Total Cover			UPL species 40	x 5 = 200
Herb Stratum (Plot size: _____)		40	Yes	NI	Column Totals: 100 (A) _____ (B)		
1. Bouteloua gracilis (Blue grama)							
2. Juncus balticus (Baltic rush)							
3. Pascopyrum smithii (Western wheatgrass)							
4. Cirsium arvense (Canada thistle)							
5. Argentina spp. (Silverweed spp.)							
6. Conyza canadensis (Canadian horseweed)							
7.							
8.							
9.							
10.							
11.							
		100	= Total Cover			Prevalence Index = B/A = 0.25	
Woody Vine Stratum (Plot size: _____)		0	= Total Cover			Hydrophytic Vegetation Indicators:	
1.						1 - Rapid Test for Hydrophytic Vegetation	
2.						2 - Dominance Test is >50%	
% Bare Ground in Herb Stratum 0						✓ 3 - Prevalence Index is ≤3.0 <sup>1</sup>	
						4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
						5 - Wetland Non-Vascular Plants <sup>1</sup>	
						Problems Hydrophytic Vegetation <sup>1</sup> (Explain)	
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.							
Hydrophytic Vegetation Present?		Yes <input checked="" type="checkbox"/>	No _____				
Remarks:  Grazed area, but not significantly disturbed dominated by upland grasses with Baltic rush. TP B-UPL investigated to confirm A-UPL conditions. TP B-UPL exhibits same soil with 70% Baltic rush, 5% thistle, and 5% horseweed and no hydrology. Refer to Photo point 4.							

soil

Sampling Point: A/B-UPL

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>	
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
Secondary Indicators (2 or more required)	
<input type="checkbox"/> Water-Stained Leaves (B9) ( <b>MLRA 1, 2, 4A, and 4B</b> )	
<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )	
<input type="checkbox"/> Frost-Heave Hummocks (D7)	

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 824 Acre Curtis Road Subdivision City/County: El Paso Sampling Date: 9-19-18  
 Applicant/Owner: ROI Property Group, LLC / Rob Fuller State: CO Sampling Point: C-WET  
 Investigator(s): G. Gurnee & J. Dauzvardis Section, Township, Range: Sec. 3 & 10, T 13 S, R 64 W  
 Landform (hillslope, terrace, etc.): Rolling Plains Local relief (concave, convex, none): Concave Slope (%): 0  
 Subregion (LRR): Southern Rock Mountain Foothills Lat: 38.944756°N Long: -104.543257°W Datum: WGS84  
 Soil Map Unit Name: Fluvaquentic Hapaquolls NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b>	
Remarks:			
Broad wetland swale with defined channel connecting to downstream area with defined channel. Refer to Photo point P5 and Datasheet D-Wet for data related to wetlands on adjacent slopes.			

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: 1 _____ (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: 3 _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: 33 _____ (A/B)
4. _____	_____	_____	_____	
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species 50 _____ x 1 = 50 _____
3. _____	_____	_____	_____	FACW species 45 _____ x 2 = 90 _____
4. _____	_____	_____	_____	FAC species 5 _____ x 3 = 15 _____
5. _____	_____	_____	_____	FACU species 0 _____ x 4 = 0 _____
	0	= Total Cover		UPL species 0 _____ x 5 = 0 _____
				Column Totals: 100 _____ (A) 155 _____ (B)
				Prevalence Index = B/A = 1.55
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators:
1. Juncus balticus (Baltic rush)	40	Yes	FACW	1 - Rapid Test for Hydrophytic Vegetation
2. Juncus torreyii (Torrey's rush)	5	Yes	FACW	✓ 2 - Dominance Test is >50%
3. Juncus tenuis (Poverty rush)	P	Yes	FAC	3 - Prevalence Index is ≤3.0 <sup>1</sup>
4. Carex nebrascensis (Nebraska sedge)	40	No	OBL	4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
5. Schoenoplectus pungens (Three-square bulrush)	10	No	OBL	5 - Wetland Non-Vascular Plants <sup>1</sup>
6. Agrostis gigantea (reddtop)	5	No	FAC	Problems Hydrophytic Vegetation <sup>1</sup> (Explain)
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	100	= Total Cover		<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum 0	0	= Total Cover		
Remarks:				
Significant diversity and lush vegetation for time of year.				

soil

Sampling Point: C-WET

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:** (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
  - Histic Epipedon (A2)
  - Black Histic (A3)
  - Hydrogen Sulfide (A4)
  - Depleted Below Dark Surface (A11)
  - Thick Dark Surface (A12)
  - Sandy Mucky Mineral (S1)
  - Sandy Gleyed Matrix (S4)
  - Sandy Redox (S5)
  - Stripped Matrix (S6)
  - Loamy Mucky Mineral (F1) (**except MLRA 1**)
  - Loamy Gleyed Matrix (F2)
  - Depleted Matrix (F3)
  - Redox Dark Surface (F6)
  - Depleted Dark Surface (F7)
  - Redox Depressions (F8)

## Indicators for Problematic Hydric Soils<sup>3</sup>:

- 2 cm Muck (A10)
  - Red Parent Material (TF2)
  - Very Shallow Dark Surface (TF12)
  - Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes X No \_\_\_\_\_

---

**Remarks:**

## Oxidized root channels and mottled clay.

HYDROLOGY

## **Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required: check all that apply)

- Surface Water (A1)
  - High Water Table (A2)
  - Saturation (A3)
  - Water Marks (B1)
  - Sediment Deposits (B2)
  - Drift Deposits (B3)
  - Algal Mat or Crust (B4)
  - Iron Deposits (B5)
  - Surface Soil Cracks (B6)
  - Inundation Visible on Aerial Imagery (B7)
  - Sparsely Vegetated Concave Surface (B8)
  - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
  - Salt Crust (B11)
  - Aquatic Invertebrates (B13)
  - Hydrogen Sulfide Odor (C1)
  - Oxidized Rhizospheres along Living Roots (C3)
  - Presence of Reduced Iron (C4)
  - Recent Iron Reduction in Tilled Soils (C6)
  - Stunted or Stressed Plants (D1) (**LRR A**)
  - Other (Explain in Remarks)

#### **Secondary Indicators (2 or more required)**

- Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
  - Drainage Patterns (B10)
  - Dry-Season Water Table (C2)
  - Saturation Visible on Aerial Imagery (C9)
  - Geomorphic Position (D2)
  - Shallow Aquitard (D3)
  - FAC-Neutral Test (D5)
  - Raised Ant Mounds (D6) (**LRR A**)
  - Frost-Heave Hummocks (D7)

#### **Field Observations:**

Surface Water Present? Yes No  X Depth (inches):

Water Table Present? Yes \_\_\_\_\_ No  X Depth (inches): \_\_\_\_\_

Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

---

**Remarks:**

Surface water assumed based on perennial vegetation and hydric soil. Assumed early season precipitation causes this channel to run intermittently and cause significant saturation to sustain wetlands. Swale is connected to downstream channel. Seepage from side slopes with wet sand present on adjacent side slopes and wet benches.

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 824 Acre Curtis Road Subdivision      City/County: El Paso      Sampling Date: 9-19-18  
 Applicant/Owner: ROI Property Group, LLC / Rob Fuller      State: CO      Sampling Point: D-WET  
 Investigator(s): G. Gurnee & J. Dauzvardis      Section, Township, Range: Sec. 3 & 10, T 13 S, R 64 W  
 Landform (hillslope, terrace, etc.): Rolling Plains      Local relief (concave, convex, none): Concave      Slope (%): 0  
 Subregion (LRR): Southern Rock Mountain Foothills      Lat: 38.944756°N      Long: -104.543257°W      Datum: WGS84  
 Soil Map Unit Name: Fluvaquentic Hapaquolls      NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation No \_\_\_\_\_, Soil No \_\_\_\_\_, or Hydrology No \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation No \_\_\_\_\_, Soil No \_\_\_\_\_, or Hydrology No \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland?	
		Yes <input checked="" type="checkbox"/> No _____	
Remarks: Wet side slopes connected and adjacent to broad wetland swale. Refer to Photo point P5 and Datasheet C-Wet for data related to wetland swale.			

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: 1 _____ (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: 3 _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: 33 _____ (A/B)
4. _____	_____	_____	_____	
	0 _____ = Total Cover			
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species 90 _____ x 1 = 90 _____
3. _____	_____	_____	_____	FACW species 0 _____ x 2 = 0 _____
4. _____	_____	_____	_____	FAC species 0 _____ x 3 = 0 _____
5. _____	_____	_____	_____	FACU species 0 _____ x 4 = 0 _____
	0 _____ = Total Cover			UPL species 0 _____ x 5 = 0 _____
Herb Stratum (Plot size: _____)				Column Totals: 90 _____ (A) 90 _____ (B)
1. Schoenoplectus pungens (Three-square bulrush)	90	Yes	OBL	Prevalence Index = B/A = 1.00
2. Gramanoid spp. (grazed beyond recognition)	5	Yes	?	
3. _____	_____	_____	_____	
4. Present in Complex (outside of 30' radius): _____	_____	_____	_____	
5. Agrostis gigantea (reddtop)	no	_____	FAC	<b>Hydrophytic Vegetation Indicators:</b>
6. Juncus balticus (Baltic rush)	no	_____	FACW	1 - Rapid Test for Hydrophytic Vegetation
7. Juncus tenuis (Poverty rush)	no	_____	FAC	✓ 2 - Dominance Test is >50%
8. Scirpus microcarpus (Small-fruited bulrush)	no	_____	OBL	3 - Prevalence Index is ≤3.0 <sup>1</sup>
9. Epilobium ciliatum (Fringed willowherb)	no	_____	FACW	4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
10. Mentha arvensis (Watermint)	no	_____	FACW	5 - Wetland Non-Vascular Plants <sup>1</sup>
11. Panicum virgatum (Switchgrass)	no	_____	FACW	Problemsatic Hydrophytic Vegetation <sup>1</sup> (Explain)
	95 _____ = Total Cover			<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum 5	0 _____ = Total Cover	Hydrophytic Vegetation Present?		Yes <input checked="" type="checkbox"/> No _____

Remarks:

Delineation line surveyed at break between wetland species and *Schizachyrium scoparium* (little bluestem). 3 upland islands excluded from overall wetland complex.

soil

Sampling Point: D-WET

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>	
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except <b>MLRA 1, 2, 4A, and 4B</b> )
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
Secondary Indicators (2 or more required)	
<input type="checkbox"/> Water-Stained Leaves (B9) ( <b>MLRA 1, 2, 4A, and 4B</b> )	
<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )	
<input type="checkbox"/> Frost-Heave Hummocks (D7)	

**APPENDIX D**  
**Professional Qualifications**



RESUME

**Grant E. Gurnée, P.W.S.**

*Owner/Manager  
Senior Restoration Ecologist  
Fisheries and Wildlife Biologist  
Wetland Ecologist*

**AREAS OF EXPERTISE:**

- Project Management for Complex, Environmental Regulatory and Restoration Projects
- Habitat Assessment, Surveys, Planning, Permitting, Restoration Design, Construction Oversight & Monitoring for:
  - Aquatic, Wetland and Riparian Habitat, and Wildlife Habitat
  - Threatened & Endangered Species, Special Status Species, and Species of Concern
  - Nesting Birds, Raptors and Burrowing Owls
  - Natural Areas, Open Space, Trails and Environmental Education Facilities
  - Conservation and Resource Mitigation Banks
- Natural Resources/Environmental Regulatory Compliance
- Grant Funding Support for Conservation and Restoration Projects
- Expert Witness Testimony

**EDUCATION:**

- MCRP, Environmental Planning and Law Program, Rutgers University, 1994
- Bachelor of Science, Biology, Richard Stockton College of N.J., 1984

**EMPLOYMENT HISTORY:**

- 2008-Current: Owner, Managing Partner and Senior Restoration Ecologist  
Ecosystem Services, LLC, Erie, Colorado
- 2010-2011: Director Ecological Solutions and Natural Systems Group  
Walsh Environmental Scientists and Engineers, LLC, Boulder, Colorado
- 1999-2010: Ecological Restoration Group Manager  
Walsh Environmental Scientists and Engineers, LLC, Boulder, Colorado
- 1994-1999: Vice President and Consulting Division Manager  
Aquatic and Wetland Company, Boulder, Colorado
- 1987-1994: Ecological Assessment Group Manager  
Killam Associates, Millburn, New Jersey
- 1989 – 1994: Owner and Ecologist, Westhill Environmental, Colonia, NJ
- 1986-1987: Project Manager, Connolly Environmental, Denville, New Jersey
- 1985-1986: Biological Technician/Team Lead, EA Engineering Science and Technology, Forked River Field Station, New Jersey

**CONTINUING EDUCATION:**

- Stream Functions Pyramid Workshop, Denver, CO - 2014
- Colorado Natural Heritage Program, Wetland Plant Identification - 2014
- Colorado Natural Heritage Program, Ecological Integrity Assessment for Colorado Wetlands - 2013
- FACWet – Functional Assessment of Colorado Wetlands - 2010, 2012 and 2013
- Natural Treatment System Design and Implementation, Southwest Wetlands, Phoenix, AZ - 1995
- Continuing Education in Coastal and Wetland Ecology, Rutgers University, 1985 – 1994

## **REGISTRATIONS and CERTIFICATIONS:**

- Professional Wetland Scientist, Certification (#559), Society of Wetland Scientists Certification Program, 1995
- Certified Wetland Delineator, Army Corps of Engineers Wetland Delineator Certification Program, 1993
- Wetland Mitigation Planning and Design Certification, Environmental Concern, Sparks, MD, 1992
- Certified Ornithologist, Marine Biologist, Aquatic Biologist and Ecologist for the preparation and certification of Environmentally Sensitive Areas Protection Plans, N.J. Dept. of Environmental Protection and Energy, 1988
- Wetland Delineation and Regulatory Certification, National Wetland Science Training Institute, 1988

## **PROTECTED SPECIES SURVEYS AND HABITAT ASSESSMENTS:**

- Ute-ladies' tresses orchid and Colorado butterfly plant
- Preble's meadow jumping mouse
- Nesting raptors, including burrowing owls
- Swift fox and bobcat
- Boreal toad
- Pine Barrens and grey tree frogs
- Freshwater, estuarine and marine surveys for native fish
- Western Tiger Salamander
- Terrestrial and sea turtles

## **EXPERIENCE SUMMARY:**

Mr. Gurnée is a founder and managing partner of Ecosystem Services, LLC (ecos), a small design-build firm that is the culmination of his life's work and passion for restoring and conserving the natural world. Grant is a certified Professional Wetland Scientist with over 33 years of experience in wetland ecology, restoration ecology, wildlife and fisheries biology, environmental planning, and regulatory compliance. Prior to ecos Grant established the Ecological Restoration Group at Walsh Environmental and was the Vice President in charge of the Consulting & Design Division for Aquatic and Wetland Company, the first design-build-grow firm in Colorado. Mr. Gurnée utilizes his diverse field assessment and hands-on experience to bring a unique and pragmatic, big-picture perspective to projects from conceptual planning through implementation. Grant's environmental planning and law education combined with his regulatory compliance experience make him one of the leading experts in the Intermountain West in Clean Water Act and Endangered Species Act issues. He enjoys teaching and furthering the science and art that comprise the field of restoration ecology. As such, Grant has published and presented papers and technical manuals, and lectured nationally and internationally at educational programs that further the understanding of aquatic, wetland, riparian and T&E species habitat assessment and restoration. Mr. Gurnée has also been called upon to provide expert reports, expert witness testimony and liaison representation in complex regulatory compliance matters.

## **RELEVANT PROJECT EXPERIENCE:**

### **Habitat Assessment and Regulatory Compliance**

- **Bellvue Pipeline Project, Larimer County, CO** – ecos was retained by the City of Greeley as Best Management Practices (BMP) Facilitators to provide pre-construction documentation post-construction oversight of pipeline reclamation processes. Essential responsibilities include meeting with landowners prior to construction to facilitate project understanding and post-construction outcomes; to document landowner needs and wants relative to project goals and land use; and to document and monitor pre- and post-construction reclamation and maintenance requirements.
- **Georgetown Lake, Georgetown, CO** – ecos was hired to perform an onsite assessment of ecological resources and prepare a summary report to describe the physical/ecological characteristics of the Project area and evaluate the potential effects of the construction of a loop trail project on environmental issues and species of concern to support a GOCO grant application. Items evaluated and documented, include site location/ownership, general site characteristics, current land use, proposed impacts, possible effects on Federal- and State-listed T&E animal and plant species, unique or important wildlife, water quality, water bodies, wetlands, and floodplains, stormwater runoff, sedimentation, soil erosion, and invasive species. The assessment report also included mitigation measures, project benefits, and environmental compliance recommendations under applicable regulatory programs.

- **Site Assessments for General Vegetation Cover and T&E Species Presence/Absence** – ecos was retained by JADE Consulting, LLC to perform the assessment of two future development sites located in Lafayette and Yuma, Colorado. We performed a desk-top assessment to identify existing site characteristics and screen the potential presence/absence of federally-listed threatened and endangered (T&E) species and followed up with onsite assessments to verify our preliminary findings. Our findings and recommendations were summarized in a Technical Memorandum in which we determined that no further assessment or regulatory compliance actions are required.
- **The Cove Assessment & Regulatory Compliance Report, El Paso County, CO** - ecos was retained by Lake Woodmoor Development, Inc. to perform a natural resource assessment for The Cove development, and to prepare a Natural Features Wetland, Wildfire, Noxious Weeds & Wildlife Report (Report) pursuant to El Paso County environmental review regulations. The purpose of the project was to identify and document the natural resources, ecological characteristics and existing conditions of the Site; identify potential ecological impacts associated with Site development; and provide current regulatory guidance related to potential development-related impacts to natural resources, including: Mineral and Natural Resource Extraction; Vegetation; Wetland Habitat and Waters of the U.S.; Noxious Weeds; Wildfire Hazard; Wildlife; Federal and State Listed Candidate, Threatened and Endangered Species; and Raptors and Migratory Birds.
- **Jurisdictional Determination Request for Banning Lewis Ranch, Villages 1 and 2 Residential Development, El Paso County, CO** - ecos was retained by Oakwood Homes, LLC to review a 2014 Jurisdictional Boundary Delineation and determine if a portion of the wetlands and waters within the site could be deemed non-jurisdictional under the Clean Water Act (CWA) based on their “isolated” status. Following data review, ecos arranged a field assessment with the U.S. Army Corps of Engineers (Corps) to review site conditions, and potential offsite, downstream connections to waters of the U.S. (WOUS), and particularly the presence of a Significant Nexus to Traditional Navigable Waters (TNW). Ecos and the Corps agreed that several of the intermittent drainages on the suite are not jurisdictional under the CWA, as they are not: 1) a TNW or wetland adjacent to a TNW; 2) a Relatively Permanent Water (RPW) or a wetland directly abutting an RPW with perennial or seasonal flow; 3) a tributary to a TNW; or 4) a direct tributary to a downstream WOUS as the feature loses its bed and banks. The Corps submitted ecos’ findings to the U.S. Environmental Protection Agency (EPA) and they concurred and issued an Approved Jurisdictional Determination stating that the drainages were indeed “isolated” features exempt from the CWA.
- **Bellvue Pipeline Project, Larimer County, CO** – ecos was retained by the City of Greeley to provide regulatory and technical support for the preparation and submittal of the CWA, Supplement Pre-Construction Notification (PCN) for the Bellvue Pipeline Project (Project). Ecos scope includes reviewing the Project CWA permitting and review data and history, assessing wetland and riparian habitat within the Project reach of the Cache la Poudre River, preparing a Resources Impact Assessment Report, and assisting the City with discussions and presentations to the Corps during their review and processing of a Minimal Effects Determination for the Project.
- **Appraisal Support Documentation Report for the 1st Bank Parcel, Colorado Springs, CO** - ecos was retained by 1st Bank Holding Company to perform a Preble’s meadow jumping mouse (PMJM) habitat assessment, mitigation cost analysis and conceptual lot layout for the approximate 9.4-acre 1st Bank Parcel (Site) situated south of the Gleneagle residential development and north of the current Northgate Open Space along Smith Creek in Colorado Springs, Colorado.
- **South Boulder Canon Ditch Maintenance, Clean Water Act (CWA) Exemption Determination, Erie, CO** – ecos assisted the Town of Erie in exempting their proposed ditch maintenance project by performing an assessment of site conditions, submitting the assessment report to the Corps, and verifying that said project is exempt pursuant to Section 404(f) of the CWA.
- **Endangered Species Act (ESA) Compliance Documentation for the Pinon Lake tributary CLOMR Application, Forest Lakes Filing 2B in El Paso County, Colorado** – ecos performed an assessment to document the absence of federally-listed T&E species and their habitat and prepared a report for FEMA that documents that the proposed CLOMR action will not result in a “take” of T&E species.
- **Gleneagle Infill Development Assessment & Regulatory Compliance Report, El Paso County, CO** - ecos was retained by G & S Development, Inc. to perform a natural resource assessment for the proposed Gleneagle Infill Development at the former Gleneagle Golf Course, and to prepare a Natural Features and Wetland Report (Report) pursuant to El Paso County environmental review regulations. The purpose of the project was to identify and document the natural resources, ecological characteristics and existing conditions of the Site; identify potential ecological impacts associated with Site development; and provide current regulatory guidance related to potential development-

related impacts to natural resources, including: Mineral and Natural Resource Extraction; Vegetation; Wetland Habitat and Waters of the U.S.; Weeds; Wildfire Hazard; Wildlife; Federal and State Listed Candidate, Threatened and Endangered Species; and Raptors and Migratory Birds. As part of the Project, ecos obtained an Approved Jurisdictional Determination from the Corps.

- **North Fork at Briargate Habitat Evaluation and ESA Compliance, Colorado Springs, CO** - ecos performed a habitat evaluation on behalf of High Valley Land Co., Inc. and La Plata Communities to support informal consultation with the U.S. Fish and Wildlife Service (FWS) under the ESA for potential effects to the Federally-listed, threatened PMJM from the proposed North Fork development, Filings 3 through 7 at Briargate.
- **C Lazy U Preserves Natural Resource Inventory and Conservation Easement Documentation, Grand County, CO** – ecos is assisting the C Lazy U Preserves in assessing and documenting the conservation values of the 980-acre site known as C Lazy U Preserves near Granby, CO such that the site may be protected under Conservation Easements (CE's) held by The Nature Conservancy. The purpose of the CE's is the long-term preservation of the scenic, open space, agricultural, significant natural habitat, native vegetation, rare plant communities, riparian, and wetland values of the Property. ecos staff completed the Easement Documentation Reports Phase 1 of the CE's in 2006, Phase 2 in 2007, and Phase 3 in 2015.
- **Bellvue Transmission Line Project, CWA and ESA Regulatory Negotiation** - Mr. Gurnée assisted the City of Greeley in their negotiations with the Corps to facilitate review and verification of the Northern Segment of the Project under CWA, Nationwide Permit12. Grant aided the City during Corps meetings, field visits and teleconferences; in coordinating with the Corps and the technical experts on the Corps Common Technical Platform (CTP) team; and in utilizing the CTP Poudre watershed data to assess the probability of Project-specific impacts. Mr. Gurnée also assisted Greeley in their negotiations with the FWS to facilitate review and consultation for the Northern Segment of the Project under Section 7 of the ESA. Grant led the field assessment with FWS, identification and prioritization of potential PMJM habitat mitigation sites, development of a conceptual design for the selected PMJM habitat mitigation sites, and preparation of the Biological Assessment Addendum and Habitat Mitigation Plan. Grant also aided the City during agency review and approval of the FWS Biological Opinion by utilizing his relationships with the FWS, and extensive experience of ESA regulations, policies and precedents.
- **Seaman Water Management Project, Riparian-Wetland Technical Support** - Mr. Gurnée is supporting Greeley in the NEPA EIS process by reviewing riparian and wetland technical reports prepared by the Corps CTP team, and providing comments to assist the City in their formal review and response to the Corps. He is also providing technical and regulatory support for CWA and ESA (PMJM habitat) assessment, consultation, and compensatory mitigation planning and design.
- **ARCO Clark Fork River Basin Anaconda Smelter Superfund Site, Anaconda, MT** – Grant and his Team performed wetland delineation, functional assessments, and impact analysis over a 200 square mile area affected by historic mining practices and current remedial actions required by an EPA consent decree.
- **ARCO Clark Fork River Basin Milltown Reservoir Superfund Site, Missoula, MT** – Mr. Gurnée and his Team performed wetland delineation, functional assessments, and impact analysis of proposed remedial actions that will remove metal laden sediments from the site prior to dam removal.
- **C-Lazy-U and Horn Ranch Environmental Assessments, Granby, CO** – Mr. Gurnée and his Team performed an assessment of ecological opportunities and constraints in the aquatic, riparian, wetland and threatened and endangered species habitat along the Colorado River for the development and enhancement of fishing/resort ranch amenities.
- **Village at Avon, Avon, CO** – Grant and his Team performed a wetland delineation and prepared CWA Section 404 permitting for the town center expansion and low-density ranchette development.

#### **Protected Species Surveys and Habitat Assessments**

- **Golden Eagle Monitoring at Meadow Park in Lyons, CO** - ecos was retained by the Town of Lyons (Town) to perform the monthly monitoring of the Golden Eagle (*Aquila chrysaetos*) nest sites at Meadow Park, to prepare monthly Monitoring Summary Memorandum following each event, and to prepare and submit annual reporting to the U.S. Fish and Wildlife Service (USFWS) associated with the *Lyons Federal Fish and Wildlife Permit #MB82833B-0, Eagle Take Associated With But Not The Purpose Of An Activity (Take Permit)*.
- **Nesting Birds, Raptors and Burrowing Owls** – Grant has completed over 100 pre-construction nesting surveys and numerous monitoring surveys for raptors and burrowing owls. His projects include pipeline rights-of-way, housing

and commercial development projects, stream and river restoration projects, wind and solar farm projects, and oil and gas projects along the Front Range of Colorado, as well as projects in the Pine Barrens of southern New Jersey. His avian experience includes golden eagle nest monitoring; barred owl roost and nest monitoring, and call playback inventory; and multi-species raptor surveys.

- **Native Plants** - Grant has completed numerous pre-construction and monitoring surveys for Ute ladies' tresses orchid and Colorado butterfly plant since 1994. His projects include pipeline rights-of way, mined land reclamation projects, housing and commercial development projects, stream and river restoration projects, wind and solar farm projects, and oil and gas projects along the Front Range of Colorado.
- **Threatened, Endangered and Candidate Species** – Grant trained with the leading expert, Robert Stoecker, PhD, in 1994 and 1995 to gain an understanding of the newly listed, federally-threatened species, the Preble's meadow jumping mouse; and since that time, he has completed numerous surveys, habitat assessments, and ESA consultations. He has also performed night-time Swift fox surveys at windfarm sites in southern CO and Boreal toad surveys in northern CO. Prior to relocating to CO Grant performed numerous surveys in N.J., including bobcat surveys to assist in protecting the Pyramid Rock Natural Area; Pine Barrens and gray tree frog surveys, and native Pine Barrens fish surveys with his mentor, Dr. Rudy Arndt; and Eastern box turtle surveys. He also assessed migration routes and alternative mitigation measures for sea turtles that were being impacted by the Garden State Parkway.

### **Wetland Mitigation and Habitat Restoration**

- **Front Range Mitigation and Habitat Conservation Bank** – ecos is assisting Restoration Systems, LLC (RS), the Bank Sponsor, with the assessment, planning and design of the Front Range Umbrella Bank for Aquatic Resource Mitigation & Habitat Conservation (Bank). This “umbrella” Bank is intended to provide habitat mitigation for projects along the entire Front Range of Colorado. The **ecos/RS Team** is in the process of securing viable sites in the major watersheds along the Front Range; and recently submitted the Draft Prospectus for the establishment of the Bank to the U.S. Army Corps of Engineers, Albuquerque District, Southern Colorado Regulatory Office and Omaha District, Denver Regulatory Office.
- **Lions Park Poudre River CWA and ESA Mitigation Site** - ecos assisted Greeley in developing and constructing an advance river and wetland mitigation site at Lions Park in LaPorte, Colorado that may be used for future CWA impacts in the Poudre River watershed. We also prepared a conceptual design for Preble's meadow jumping mouse habitat that will be used to support ESA consultation. ecos assessed the site, prepared the designs, and coordinated review with Greeley, Colorado Department of Parks and Wildlife, Larimer County Parks and Open Lands and Larimer County Engineering Department. The mitigation site provides compensatory mitigation for impacts to wetland and waters of the U.S. under the CWA and will also provide compensation for PMJM habitat under the ESA. This mitigation project entails development of mitigation measures including bioengineered streambank stabilization, fishery habitat enhancement, riparian and wetland habitat restoration and PMJM habitat enhancement.
- **Bellvue Transmission Line Project, Preliminary Compensatory Mitigation Plan (PCMP)** - Mr. Gurnée was the Project Manager for the preparation of the Preliminary Compensatory Mitigation Plan (PCMP) for the Bellvue Transmission Line Project. Built upon preferred strategies in the 2008 Corps Compensatory Mitigation Rules, the PCMP leverages a broad strategy to ensure mitigation success and employs a watershed approach to select and prioritize compensatory mitigation (CM) measures that will best mitigate adverse environmental effects. It is intended to support a Corps determination of minimal adverse effect and allow verification of the Northern Segment of the Project under Nationwide Permit 12. Grant led the Team during the watershed assessment of the Poudre River, identification and prioritization of potential CM and preservation sites, development of a Pilot Watershed Plan, and conceptual design of priority CM sites. The PCMP has been submitted to the Corps for review and approval.
- **Flatirons Parcel Riparian and Wetland Habitat Restoration Project** – Grant assisted Greeley in developing a multiple use project at the Flatirons Parcel, a gravel quarry site in Greeley, Colorado. The site is being decommissioned over the next decade and offers great potential to create a system of ponds connected via a naturalized stream that discharges into the Poudre. The concept design incorporates recreation opportunities that are tied into the Poudre River Trail, a passive park, and the development of wetland, riparian and wildlife habitat.
- **Ruby Pipeline Wetland, Riparian and Waterbody Mitigation and Restoration Plan, WY, UT, NV AND OR** - Mr. Gurnée was the lead restoration ecologist and wetland scientist for the 675-mile, Ruby Pipeline; a natural gas pipeline traversing four states. He was the lead for the preparation of Wetland Mitigation, Riparian and Waterbody Restoration Plans under the CWA, BLM regulations and state equivalent programs. The plans included regulatory

guidelines, requirements, and processes; and ecoregion specific restoration plans. The plans detailed specifications for the basis of design, construction, and revegetation; outlined performance criteria, maintenance and monitoring methods for the restoration of approximately 460 acres of temporary wetland impacts.

- **River Point, Sheridan, CO** - Mr. Gurnée was the project manager and lead restoration ecologist for the team that assessed, permitted and designed the natural and aesthetic features of this Brownfields project. The project included a naturalized water quality swale and riverfront improvements which complement the aesthetics and ecology of the South Platte River corridor. The swale was designed to mimic the form and function of a tributary stream, providing passive water treatment with native wetland and riparian vegetation, as well as flood attenuation with instream structures and grade control. The project utilized natural, “bio-engineering” and “bio-technical” techniques to repair and maintain channel and stream bank stability, and native vegetation to enhance and restore habitat. This project also addressed the interface of proposed restaurants, a regional greenway trail, and the river through planning and design of nature trails, interpretive nodes and overlooks/access features that will function to both stabilize banks and help connect people with the river.
- **Caribou Peat Bog Restoration, Nederland, CO** – Grant performed the impact assessment, prepared native plant community design, planting cost estimate, and on-the-ground oversight of restoration volunteers to restore a high-altitude peat bog disturbed by an illegal off-road-vehicle “mudfest”.
- **Opportunity Ponds Operational Unit, Anaconda, MT** - Mr. Gurnée was the project manager and lead restoration ecologist providing technical support to Atlantic Richfield/British Petroleum at a Superfund site in the Upper Clark Fork River basin in Montana between 1995 and 2008. Services included wetland delineation and functional assessment of over 3,000 acres of wetland, stream and pond habitat; design of stream and wetland habitat mitigation projects; and permitting/compliance services. The largest project within the Superfund site was the Opportunity Ponds, a 908-acre wetland, stream and wildlife habitat creation project. The project will result in the largest freshwater mitigation project in the U.S; and is intended to mitigate for historic wetland/waters impacts from Anaconda Mining Company operations and current impacts resulting from remedial actions associated with the Superfund cleanup process.
- **The Club at Flying Horse Golf Course, Colorado Springs, CO** – On behalf of Classic Communities, Grant and his Team assessed wetland habitat, recommended impact avoidance and minimization measures, and prepared the Section 404, CWA permit for a 1500-acre mixed use development and Weiskopf golf course. The project aesthetic and mitigation measures included the design of native prairie roughs, meandering stream channels and native wetland meadows within the golf course. Extra wetland mitigation was created to serve as a private mitigation bank for the client.
- **Maloit Park, Minturn, CO** - Grant was the project manager and restoration ecologist for the Maloit Park Restoration Project, which was necessitated by the accidental release of mine slurry that contaminated the soils and vegetation of critical wetland habitat at the confluence of Cross Creek and the Eagle River. The project included the assessment of the site, the collection of native wetland seed (that was adapted to site conditions); the selection of appropriate replacement soil; the design of the restoration grading and planting plans; and oversight during the soil replacement, grading and planting phases. Mr. Gurnée also provided follow-up monitoring and reporting to ensure the successful establishment of the wetland habitat.
- **Department of Energy, Private Mitigation Bank, Westminster, CO** - Mr. Gurnée provided the project assessment, design, permitting, mitigation banking instrument negotiation with the Corps and EPA, and construction supervision of a 12-acre wetland mitigation bank for the Department of Energy in Westminster, CO. The project provides compensatory mitigation for impacts associated with the Rocky Flats clean-up and remediation project. It should be noted that this was the first private mitigation bank negotiated in Colorado, and as such it assisted in setting the precedent for future negotiations.
- **Wetland Mitigation for the Stanley Lake Protection Project, Westminster, CO** - Grant and his Team provided assessment, design, permitting, and construction supervision of an 11-acre wetland and wildlife habitat mitigation project in Westminster, Colorado. The project provides compensatory mitigation for impacts associated with the construction of the Stanley Lake Protection Project.
- **Saudi Arabia Coastal Wetland Restoration** - Mr. Gurnée assisted in the restoration planning for 67 square kilometers (41 square miles) of high salt marsh (sabkha) impacted by Gulf War oil spills.

## Aquatic, Wetland, and Riparian Habitat Design

- **Saint Vrain Creek Breaches Restoration, Boulder County, CO** - ecos is part of the Design Team assisting Boulder County Parks & Open Space (BCPOS) with the restoration, repair and enhancement of the reach of the Saint Vrain Creek from Highway 36 downstream to Hygiene Road in rural Boulder County, which was damaged by the 2013 floods. Our role on the project includes: 1) desktop and field assessment to inventory and document the characteristics of the stream reach and riparian corridor (e.g. stream/in-stream features, vegetation, wildlife habitat); identify and locate significant habitat features within the areas of proposed construction; identify potential sources of native plant materials for restoration; and identify areas of opportunity within the breach repair work areas for native vegetation, wetland, PMJM, leopard frog and fishery habitat restoration; and delineate wetland habitat and waters of the U.S. in all areas of proposed/potential construction-related impact; 2) vegetation community and wildlife habitat restoration design; 3) permitting and compliance under the CWA, ESA and NHPA; 4) construction oversight for restoration construction; and 5) monitoring and reporting project success/establishment to BCPOS, stakeholders, the Corps, FWS and the State of Colorado Department of Local Affairs (DOLA) under the (the Grant funding agency under the Community Development Block Grant Disaster Recovery (CDBGDR) Resilience Planning Program grant.
- **Bohn Park Flood Recovery Design, Town of Lyons, CO** – ecos is part of the Design Team assisting the Town with the restoration, repair and enhancement of Bohn Park in Lyons, which was damaged by the 2013 floods. Ecos roles is to assess and design the natural restoration of the vegetation communities and habitat along St. Vrain Creek and riparian corridor; and to support the project design by acquiring permits/approvals and maintaining regulatory compliance under the CWA, ESA and National Historic Preservation Act (NHPA). The final design will address goals and priorities associated with the Parks Flood Recovery Planning Process, FEMA Project Worksheets and Project Scopes, the Lyons Recovery Action Plan (LRAP), associated Program Development Guides (PDG's), existing Town master plans, comprehensive plans and other relevant documentation and studies.
- **James Creek Post-Flood Restoration, Lefthand Watershed Oversight Group (LWOG), Jamestown, CO** – ecos was part of the LWOG and Boulder County Department of Transportation Team responsible for preparing the 30-60% design package for James Creek Reach 16 as identified in the Left Hand Creek Watershed Master Plan. ecos performed pre- and post-flood plant community assessment; developed revegetation goals and objectives, the basis of design, monitoring protocols, and revegetation plans in accordance with Colorado Department of Local Affairs (DOLA), Community Development Block Grant – Disaster Recovery (CDBG-DR) 30% Guidelines. Specific resources and issues of concern addressed by ecos, included federal and state listed candidate, threatened and endangered species, wildlife species of concern (including raptors), fisheries and fish passage, native plant communities, and management of noxious weeds, all in concert with geomorphic, hydrology and hydraulic analysis and design prepared by other team members.
- **Saint Vrain Creek Restoration and Floodplain Resiliency Plan, Lyons, CO** – ecos is part of the design-build team intent on restoring the St. Vrain Creek corridor in the Town of Lyons that was damaged during the September 2013 flood event. The goal of the project is to create a more resilient floodplain and natural channel condition that will alleviate future threats to the community, reestablish floodplain connectivity, stabilize banks, and restore aquatic, wetland and riparian habitat that was wiped out during the flood. Grant is responsible for CWA, ESA, Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act permitting; as well as developing the plant communities and revegetation strategies needed to restore aquatic and riparian structure and functions within the corridor that support fish, wildlife, recreation, and help the town regain the ecological benefits and economic value they receive from outdoor enthusiasts.
- **Bellvue Raw Water Ponds Riverbank Restoration, Bellvue, CO** – The 2013 flood on the Poudre River altered the course of the river and severely eroded a bank nearly causing a breach of the City of Greeley's raw water ponds – their main municipal water supply. The goal of the project was to stabilize the bank to protect the ponds and to create riparian habitat for the Preble's meadow jumping mouse, a federally listed threatened and endangered species. Jon was responsible for preparing bioengineering design plans and specifications that include soil/cobble encapsulated lifts, stream barbs to deflect flows away from the bank, and harder, biotechnical design of soil/riprap and stream bed scour protection measures to prevent erosion and further undermining and sloughing of the bank. Design plans included specification of native plant materials and various techniques to restore cottonwood forest and willow habitat to further stabilize the bank.

- **Poudre River Pipeline Crossing at Kodak, Windsor, CO** – ecos role on the project was to assess restoration potential, techniques, and prepare design plans and performance specifications to reclaim a pipeline corridor across the lower Poudre River where the City of Greeley had to replace 3 major water supply lines. ecos also provided oversight during the construction of site and riverbank stabilization and restoration measures following installation of the pipelines.
- **Lions Park Poudre River Restoration Plan, Laporte, CO** – ecos role on the project was to assess habitat conditions; gather, compile and analyze field survey data; and to prepare the mapping and mitigation design plans for the Lions Park PMJM habitat and the Poudre River Bank Stabilization Plans. We designed and executed the technical drawings for the structural components of the habitat, ensuring that the proposed riparian plant community, habitat structures (brush piles), and bioengineered streambank stabilization measures will create the conditions that alleviate the current habitat fragmentation; support the life requisites of the PMJM; and enhance the overall health of the Poudre River fishery.
- **C Lazy U Ranch, Willow Creek Fishery Enhancement Plan, Granby, CO** - Mr. Gurnée was the lead fisheries biologist and wetland ecologist for the assessment and design of this project. The project entailed 2 miles of instream and riparian cover habitat aimed at enhancing water quality through increased bank stability, improving aquatic habitat and angling opportunities, and providing long-term stability to the reach given existing land-use constraints, and ongoing ranching activities. Bank-side improvements included wetland mitigation design to support ranch impacts, detailed seeding and planting plans indicating site-specific plant and seed locations, life zones, and species palettes according to hydrologic, soil, and aspect conditions. Grant was the regulatory lead, consulting with the Corps under Section 404 of the CWA.
- **Edwards Eagle River Restoration Project, Edwards, CO** – Grant was the senior wetland ecologist and fisheries biologist for the Edwards Eagle River Restoration Project (Project); which is roughly 1.5 miles long covering an area of 168 acres of floodplain along the Eagle River in the heart of the Edwards community. The project utilized indigenous materials and methods to naturally integrate habitat structure in the landscape context. He provided grant funding support; stream, riparian, wetland and fisheries habitat assessment, planning and design; and construction oversight services to the Eagle River Watershed Council for the Project. He assisted the ERWC in facilitating the public process associated with developing stakeholder support and gaining funding through the Eagle Mine Natural Resources Damage Fund. The Project was awarded over \$2,000,000 in grant funding; \$1,400,000 of which was from the Eagle Mine NRDF. The total project cost is projected at \$4,300,000.
- **Gypsum Creek Fisheries Enhancement, Gypsum, CO** - Mr. Gurnée was the lead fisheries biologist and restoration ecologist for the instream and riparian habitat assessment, design, permitting and implementation of habitat improvements along Gypsum Creek. Project treatments included both instream and bankside treatments. Instream treatments served to improve deep-water habitat, create flow separation or concentration zones, increase low flow sinuosity, provide instream cover, improve adult fish habitat, create nursery areas, and enhance spawning opportunities. Bankside treatments for aquatic habitat improvements included creation or enhancement of overhead cover; provision of protective cover; and enhancing shading, cooling, and nutrient cycling functions. Bank protection treatments served to correct localized bank instabilities and reduce bank erosion and the potential for sediment deposition downstream. The Colorado Division of Wildlife (CDOW) commented that, “The Gypsum Creek project was implemented in such a low impact manner that you cannot tell that construction had occurred in the area.”
- **Cache La Poudre River Removal Action, Fort Collins, CO** - On behalf of the City of Fort Collins, Mr. Gurnée led negotiations between the EPA, stakeholders and the City regarding riverine, riparian and wetland regulatory and restoration design standards during the removal and remediation of a contaminated reach of the Poudre River. He also provided design review and revision, as well as construction oversight to ensure successful implementation of the instream and streambank restoration along the 0.50 mile, highly visible reach of the river near downtown Fort Collins.
- **TZ Ranch, Elk Hollow Creek Fishery Habitat Enhancement Plan, Saratoga, WY** - ecos performed the assessment and design of the Elk Hollow Creek Project, which included instream and riparian habitat improvements aimed at increasing bank stability, improving aquatic habitat and angling opportunities, and providing long-term stability to the reach. Instream improvements included drop structures, plunge pools, deep pools, riffles and spawning habitat. Bank improvements included seeding and planting plans for native wetland and riparian species. Grant was the

regulatory lead, consulting with the Corps under Section 404 of the CWA and the Wyoming Department of Fish and Game. ecos also provided construction oversight and native plant installation services to ensure the successful implementation of the Project.

- **Brush Creek Fishery Enhancement Plans, Saratoga, WY** – Grant assisted in the preparation of access and staging plans, design plans and details, and performed on-site construction oversight of instream and riparian habitat enhancements and bioengineered bank stabilization for a 3-mile reach of Brush Creek. The purpose of the project is to enhance fish, bird and wildlife habitat and use these resources to facilitate education and improve the recreational experience of Ranch guests.
- **Brush Creek Ranch Pond Creation Plans, Saratoga, WY** – ecos provided design-build services including site optimization selection; excavation, grading, drainage and revegetation plans; and construction oversight for a 0.30-acre fishing pond. The pond design included an innovative undercut bank design incorporating a framework of trees supporting transplanted, native sod; which provided excellent fish habitat.
- **Boulder Creek Fishery Enhancement and Pond Creation Project, Boulder, CO** - Grant was the lead fisheries biologist and restoration ecologist for this project along a private reach of South Boulder Creek adjacent to City of Boulder, Eldorado Canyon Open Space. His tasks included instream and riparian habitat assessment, design of instream and pond fishery habitat and riparian enhancement measures and permitting and consultation. Grant was also the regulatory lead, consulting with the FWS regarding PMJM habitat and with the Corps under Section 404 of the CWA.
- **Stream and Floodplain Restoration at A.T. Massey Coal Mining Facility, KY** - Grant was the Project Manager, fisheries biologist and restoration ecologist for the technical team tasked with assessment and restoration of 26 miles of stream corridor following the accidental release of 250 million gallons of coal slurry into two separate drainages in eastern Kentucky. He was the first ecologist to respond after the spill to ensure that fisheries, stream and riparian habitat restoration objectives were incorporated into the selected cleanup measures. As such, Grant devised a “triage” categorization and remediation system for all affected reaches that minimized impacts to sensitive aquatic and riparian habitat based on the site-specific level of cleanup and remediation required. In addition to instream and bank restoration and stabilization, comprehensive riparian corridor restoration was a major component of the project. Grant was the regulatory and permitting lead and coordinated permits and approval with EPA, Corps and State agencies.
- **Roaring Fork Golf and Fishing Club, Basalt, CO** - Mr. Gurnée was the lead fisheries biologist and restoration ecologist for the assessment, design, permitting and construction supervision of a native trout stream (1 mile) with associated wetland complexes (3 acres). The trout stream was created as an amenity and functional fly-fishing challenge for this fishing component of the Roaring Fork Club; and the associated wetland and riparian habitat were created to naturalize the stream and provide compensatory mitigation for impacts associated with the development of the club facilities. Grant was the regulatory and permitting lead and coordinated permits and approval with Corps and CDOW.
- **Spring Creek Wetland Mitigation, Colorado Springs, CO** – Grant and his team generated wetland and creek creation plans that integrated required mitigation into a high density, “new urban” development. The design emphasized re-utilization of urban storm water to sustain wetlands, use of indigenous plants, construction materials, and natural geomorphic relationships.
- **Tobacco Island Project, Kansas City, MO** - Grant was the lead fisheries biologist and restoration ecologist for the Corps, Tobacco Island Project - a portion of the Missouri River Bank Stabilization and Navigation, Fish and Wildlife Mitigation Project. Project tasks included assessment and conceptual design of measures aimed at reconnecting floodplain and riparian habitat to a reach of the Missouri River near Kansas City. He prepared preliminary designs of channel and backwater wetlands; provided regulatory analysis under Section 404 of the CWA; and assisted in the preparation of an Environmental Impact Statement.
- **San Miguel River Corridor Restoration Plan** - Mr. Gurnée was the lead restoration ecologist, planner and designer for phase 1 of the San Miguel River Corridor Restoration Plan, which included a 1-mile reach through Town. He and his team assisted the Town of Telluride in applying for and winning approximately \$500,000 in Natural Resource Damage Assessment Fund money from the State of Colorado. The money, along with other funding, was utilized for final design and construction of the project which included instream habitat, streambank restoration, riparian and wetland restoration, trails and parks. Grant was responsible for leading all public meetings, regulatory negotiation and permitting; assisted the Town with grant funding; and provided construction oversight services.

- **High Altitude Stream Restoration at Copper Mountain Resort, CO** - Grant was the lead ecologist for the restoration of an alpine stream and enhancement of associated wetland and riparian habitat situated within tundra habitat atop Union Peak at Copper Mountain Resort. Grant performed the assessment, design, permitting, and construction oversight for one of the highest altitude stream restoration and wetland mitigation projects in Colorado (approximately 11,500 feet above sea level). Innovative bioengineering and construction techniques were designed and adapted to this sensitive environment to minimize construction-related impacts and maximize environmental benefits.

#### **Threatened & Endangered Species Consultation & Habitat Restoration**

- **The Farm (formerly Allison Valley Ranch), Colorado Springs, CO** – Mr. Gurnée performed the habitat assessment and mapping; and prepared ESA, Section 7 and CWA, Section 404 consultation documents as required by the FWS and Corps, including mitigation construction documents, specifications, on-site layout of plant communities and construction supervision aimed at restoring wetland and riparian habitat occupied by Preble's meadow jumping mouse. Ecos is currently assisting the owner with construction oversight for habitat restoration and native planting.
- **Advance Mitigation for PMJM Habitat** – ecos is assisting a private client in identifying, assessing, prioritizing and designing advance mitigation sites for PMJM habitat in the North Fork and main stem of the Cache la Poudre River.
- **TriView Metropolitan District ESA and CWA Permit Resolution, Monument, CO** - Mr. Gurnée represented the TriView Metropolitan District (TriView) and Phoenix Bell as the lead consultant to resolve outstanding compliance issues related to a joint ESA, Section 7 Consultation and CWA, Section 404 Permit. Grant lead negotiations amongst the various landowners, TriView and the Town to resolve compliance issues related to PMJM and wetland habitat, such that development may proceed in this core area of the town. Upon resolution and agreement of the stakeholders, he lead the negotiations with the FWS and Corps to formally amend the Biological Opinion and 404 Permit. Once the approvals were amended, Grant lead the planning and design of PMJM and wetland habitat to meet mitigation requirements under the ESA and CWA.
- **Bernardi Residential Property, Eldorado Canyon, Boulder, CO** – ecos consulted with the Corps and FWS to document and fulfill regulatory requirements for a residential home construction project in PMJM, wetland and riparian habitat. Mr. Gurnée coordinated with the FWS and Corps and obtained approvals under ESA, Section 7 and CWA, Section 404. He prepared all consultation documents, including the Biological Assessment, mitigation plan, and construction documents and specifications. Grant is leading the on-site layout of plant communities and construction supervision, aimed at restoring wetland and riparian habitat occupied by the PMJM.
- **Northgate Boulevard Realignment, Colorado Springs, CO** – Mr. Gurnée performed the habitat assessment and mapping; and coordinated and prepared ESA, Section 7 and CWA, Section 404 consultation documents as required by the FWS and Corps, including mitigation construction documents, specifications, on-site layout of plant communities and construction supervision aimed at restoring wetland and riparian habitat occupied by Preble's meadow jumping mouse.
- **Jefferson County Highways and Transportation Department Gunbarrel Bridge Replacement, Oxyoke, CO** - ecos staff consulted with the Corps, FWS, CDOT, and the FHWA to document regulatory requirements for a bridge replacement project in PMJM, wetland and riparian habitat. He and his Team produced a CDOT Wetland Finding Report, Biological Assessment, acquired a Section 404 Permit and Biological Opinion (Section 7 of the ESA), and then implemented habitat mitigation improvements at the site.
- **Northgate Project, Colorado Springs, CO** - As project manager, Mr. Gurnée led the team in the assessment, permitting and regulatory negotiation (Section 404 of the CWA and Section 7 of the ESA) for the project which included the planning, design and construction supervision of a precedent setting, “joint” mitigation plan for 60 acres of wetland, riparian and PMJM habitat.

#### **Ecological Master Planning**

- **Sundance Trail Guest Ranch, Larimer County, CO** – ecos is currently assisting a local guest ranch in the assessment of natural resources and site features, and the development of site plans to balance natural habitat and aesthetic values with the expansion of guest facilities and services.

- **Sand Creek Channel Improvements Stability Analysis at Indigo Ranch, Colorado Springs, CO** - ecos was retained to perform an analysis of channel stability under proposed development conditions for a 1.17-mile reach of Sand Creek. Ecos utilized existing vegetation composition data, density and height within the Project reach as a basis; and compared the 10-year and 100-year storm event modelling data (specifically flow velocity, flow depth and shear stress) to reference literature to provide a professional opinion regarding the future stability of the channel under developed conditions. The analysis of channel stability for the proposed Project assumes a bioengineering and biotechnical approach that preserves and enhances the existing vegetation, as well as substrate cohesion and stability, within the channel and its streambanks. The Stability Analysis will likely serve as a benchmark study for the City of Colorado Springs to use to preserve other naturally stable channels.
- **Uncompahgre River Corridor Master Plan, Montrose, CO** – Grant and his Team assessed the character, condition and quality of aquatic, wetland and riparian habitat along a 10-mile rural and urban corridor of the Uncompahgre River through the City of Montrose. Habitats were then rated, ranked, prioritized and master planned for their preservation potential and integration in to the parks, recreation and trail system. The master plans form the foundation for the City to focus environmental stewardship, tourism and generate riverfront economic development with a focus on the river – the major asset of the Community.
- **Brush Creek Stewardship and Enhancement Plan, Saratoga, WY** – Mr. Gurnée managed the assessment of a 12,000-acre, private ranch near Saratoga, Wyoming and the preparation of the Ranch Stewardship Plan (Plan). The Plan includes land and resource stewardship goals, objectives, and implementation action items; including ranch-wide master planning of the trail and recreational systems, design of the Brush Creek riparian corridor trail, and restoration/fisheries habitat enhancement of Brush Creek. Trail and recreation planning and design focused on universal access, habitat sensitivity, environmental education, and wildlife observation opportunities and unique landscape experiences.

#### **Environmental Assessment and Impact Studies**

- **NEPA EA for Eagle County Airport Runway Expansion, Eagle County, CO** - Grant was project manager and senior ecologist for an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) for a proposed 1000-foot runway expansion and ILS installation at the Eagle County Airport, west of Vail, Colorado. Critical issues addressed included noise, ecological, and public opinion considerations. Grant conducted the work under FAA guidance requirements for EAs.
- **NEPA EA for the Avon Interstate 70 Interchange** - Mr. Gurnée was project manager and senior ecologist for this NEPA EA. He performed environmental assessment and data compilation work for construction of a new CDOT interchange and associated development on Interstate 70. This included evaluating T&E Species; a wetlands inventory; a cultural/archeological resources survey; noise and air pollution modeling and studies; and reviewing soils, meteorology, geologic hazards, and other impacts.
- **Raritan River Wetland Inundation Impact Study, N.J.** - Grant's work on the preparation and processing of the first Individual Permit under the New Jersey Freshwater Wetlands Protection Act of 1987 included a precedent setting wetland inundation study. This study shaped the N.J. Department of Environmental Protection's policy regarding the need to assess hydrologic impacts during wetland permit reviews.

#### **Construction Oversight and Plant Installation**

- **2013 Flood and 2014 Runoff Events, Damage Restoration, Cache la Poudre River, CO** - ecos performed the construction oversight of 3 flood and runoff damage restoration projects along the Cache la Poudre River.
- **Lions Park CWA and ESA Mitigation Site** - ecos performed the construction oversight for an advance river and wetland mitigation site at Lions Park in LaPorte, Colorado.
- **TZ Ranch, Elk Hollow Creek Fishery Habitat Enhancement Plan, Saratoga, WY** - ecos performed the construction oversight for the Elk Hollow Creek Project.
- **Brush Creek Ranch Fishery Enhancement Plans, Saratoga, WY** – Mr. Gurnée assisted in the construction oversight for a 3-mile reach of Brush Creek to improve fisheries and outdoor recreation experiences for guests of the Ranch.
- **C Lazy U Ranch, Willow Creek Fishery Enhancement Plan, Granby, CO** - Grant assisted in the construction oversight for this fishery habitat, channel stabilization and streambank restoration project.

- **Standley Lake Protection Project, Westminster, CO** – Mr. Gurnée performed construction oversight of a 12-acre created emergent wetland that he and his Team designed to fulfill CWA mitigation requirements and bring closure to the City's drinking water protection project.
- **Caribou Peat Bog Restoration, Nederland, CO** – Grant prepared native plant community design, planting cost estimate, and on-the-ground oversight of volunteers to restore a high-altitude peat bog disturbed by an illegal four-wheel drive "mudfest".
- **Department of Energy Wetland Mitigation Bank, Westminster, CO** – Mr. Gurnée provided construction supervision of the grading and planting of a 12-acre wetland mitigation bank that he and his Team designed for the Department of Energy.
- **ARCO Lower Area One and Butte Reduction Works, Butte, MT** – Grant performed construction observation and supervision of temporary labor crews to plant a passive treatment wetland designed to absorb heavy metals from groundwater.

#### **Natural Treatment System Design**

- **Natural Treatment Wetlands, Butte, MT** - Mr. Gurnée and his Team performed the assessment and design of the ARCO Lower Area One and Butte Reduction Works passive treatment wetlands. These natural treatment systems were situated within two units of a reclaimed superfund site to treat heavy metals in surface and groundwater.
- **Natural Treatment Wetlands, Avondale, AZ** – Grant and his Team performed the assessment and design of a constructed wetland system to treat surface water and inject/recharge the municipal well system for the City of Avondale, AZ. This system successfully alleviated a well moratorium necessitated by a contaminated groundwater aquifer.

#### **PUBLICATIONS:**

- Giordanengo, John H., Randy Mandel, William Spitz, Matthew Bossler, Michael Blazewicz, Steven Yochum, Katie Yagt, William LaBarre, Grant Gurnée, Robert Humphries and Kelly Uhing. 2016. Living Streambanks, A Manual of Bioengineering Treatments for Colorado Streams. Submitted to the State of Colorado, Colorado Water Conservation Board Denver, Colorado. Submitted by AloTerra Restoration Services, LLC, and Golder Associates, Inc.
- Gurnée, Grant E. 1998. Wetland Revegetation Techniques chapter in Native Plant Revegetation Guide for Colorado, Caring for the Land Series, Volume III; a joint publication of the Colorado Natural Areas Program, Colorado State Parks, and Colorado Department of Natural Resources. Denver, Colorado.
- Gurnée, Grant E. 1995. Optimizing Water Reclamation, Remediation and Reuse with Constructed Wetlands. Environmental Concern Wetland Journal, Summer 1995 Issue. Environmental Concern, Inc. St. Michaels, Maryland.

#### **PRESENTATIONS:**

- Gurnée, Grant E., 2016. Clean Water Act, Section 404 Permits for Flood Recovery Projects. Presented at the Colorado Stream Restoration Network (CSRN) conference in Longmont, CO on March 23, 2016.
- Gurnée, Grant E., 2016. Endangered Species Act Consultation for Flood Recovery Projects. Presented at the Colorado Stream Restoration Network (CSRN) conference in Longmont, CO on March 23, 2016.
- Gurnée, Grant E., 2010. Stream Corridor/Bioengineering Round Table. Presented at the Colorado Riparian Association (CRA) Sustaining Colorado Watersheds Conference on October 5 - 7, 2010 in Vail, Colorado.
- Gurnée, Grant E. and Greg A. Fenchel, 2009. Stream Corridor/Bioengineering Workshop. Presented at the Colorado Riparian Association (CRA) Sustaining Colorado Watersheds Conference, October 7 - 9, 2009 in Vail, Colorado.
- Gurnée, Grant E. and Scott J. Franklin, 2008. Section 404 Individual Permits: Negotiating the Application and Follow-up Process. Presented at the CLE International, Colorado Wetlands Conference, May 8 – 9, 2008 in Denver, Colorado.
- Gurnée, Grant E. and Julie, E. Ash, P.E., 2007. Edwards Eagle River Restoration Project. Presented at the Colorado Riparian Association (CRA) Sustaining Colorado Watersheds Conference, October 5 - 7, 2009 in Breckinridge, Colorado.
- Gurnée, Grant E. 2000. Natural Treatment Alternatives for Surface Discharges, Surface Runoff, and Mined Land Reclamation. Presented at the International Mining Technology Seminar, September 13 – 15, 2000 in Belo Horizonte, Minas Gerais, Brazil.
- Gurnée, Grant E. 1999. Wetland Mitigation: Considering Mitigation Requirements in the Project Planning Process. Presented at the Continuing Legal Education (CLE) Wetlands & Mitigation Banking Conference, October 21 & 22, 1999 in Denver, Colorado.

Hoag, Chris, Hollis Allen, Craig Fisheneck and Grant Gurnée. Bioengineering Workshop sponsored by the U.S. Army Corps of Engineers Waterways Experiment Station and the U.S. Department of Agriculture – Aberdeen Plant Materials Center. Presented September 1998 in Carson City, Nevada.

Hoag, Chris and Grant Gurnée. 1998 Glancy Riparian Demonstration Project. Assistant instructor for a hands-on bioengineering workshop on the Carson River. September 1998 near Dayton, Nevada.

Gurnée, Grant E. 1998. Stream and Wetland Restoration Successes and Failures: The Good, the Bad, and the Ugly. Presented at the Colorado Riparian Association (CRA) Restoring the Greenline Conference. October 16, 1998. Salida, Colorado.

Gurnée, Grant E. 1998. Save Our Streams, Wetland Conservation and Sustainability Workshop. Lead Instructor of wetland assessment and restoration course presented with the Izaak Walton League. April 21 & 22, 1998. Boulder, Colorado.

Windell, Jay, and Grant Gurnée. 1998. Creation of a Stream, Riparian and Wetland Ecosystem: Tributary to the Roaring Fork River, Basalt, Colorado. Presented at the American Society of Civil Engineers, Wetlands Engineering & River Restoration Conference, March 23 – 27, 1998 in Denver, Colorado.

Gurnée, Grant E. 1998 A Case Study: Department of Energy's Wetland Mitigation Bank at Standley Lake. Presented at the Continuing Legal Education (CLE) International, Colorado Wetlands Conference, January 27 – 29, 1998 in Denver, Colorado.

Gurnée, Grant E. 1997. Wetland Mitigation: Design and Implementation via the Design/Build/Grow Process. Presented at the International Erosion Control Association, Erosion & Sediment Control Workshop, November 19, 1997 in Northglenn, Colorado.

Gurnée, Grant E. 1997. Wetland Mitigation: Design and Implementation via the Design/Build/Grow Process. Presented at the International Erosion Control Association, Erosion & Sediment Control Workshop. November 19, 1997. Northglenn, Colorado.

Gurnée, Grant E. and Gary Bentrup. 1996. Wetland and Riparian Protection Strategies. Presented at the Sierra Club, Regional Growth Strategies Conference, "New Perspectives and Strategies to Preserve Mountain Communities." February 16 – 17, 1996. Glenwood Springs, Colorado.

Gurnée, Grant E. 1994. How to Recognize and Deal with Wetland Regulation Issues. Presented at the Continuing Legal Education (CLE) International, 3rd Annual Western Agricultural and Rural Law Roundup. June 23-25, 1994. Fort Collins, Colorado.

#### **AWARDS:**

- Colorado Landscape Contractors Award, Sand Creek Enhancement Project – 2000

#### **PROFESSIONAL ASSOCIATIONS:**

- Association of State Wetland Managers (ASWM)
- Society of Wetland Scientists (SWS)
- Environmental Concern (EC)



RESUME



## Jon Dauzvardis, M.L.A, P.W.S.

*Owner/Managing Partner  
Senior Restoration Ecologist  
Landscape Architect  
Wetland Ecologist*

### AREAS OF EXPERTISE:

- Vegetation Inventories and Mapping
- Habitat Assessment, Functional Assessment and Wetland Delineation
- Aquatic, Wetland, and Riparian Restoration Ecology, Planning and Design
- Landscape Ecology, Planning and Landscape Architecture
- Conservation and Resource Mitigation Bank Support Services
- Grant Funding Support for Conservation and Restoration Projects
- Open Space and Trail Planning, Design and Habitat Management
- Construction Oversight & Best Management Practices
- AutoCAD, Mapping, Presentation Graphics

### EDUCATION:

- Master of Landscape Architecture, Texas A&M University, College Station, Texas, 1995
- Bachelor of Science, Environmental Design, University of Missouri, Columbia, 1991
- Architecture Study, Harvard University Graduate School of Design, Cambridge, Massachusetts, 1989

### EMPLOYMENT HISTORY:

- 2008-Present, Owner/Manager and Senior Restoration Ecologist, Ecosystem Services, LLC, Erie Colorado
- 2000 - 2011, Senior Restoration Ecologist, Walsh Environmental Scientists and Engineers, LLC, Boulder, Colorado
- 1997 - 2000, Restoration Ecologist, Construction Supervisor, Aquatic and Wetland Company, Boulder, Colorado
- 1996-1997, Landscape Architect, Design Studios West, Denver, Colorado
- 1995-1996, Landscape Architect, Wenk Associates, Denver, Colorado
- 1994-1995, Graduate Researcher, ALCOA - Texas A&M University, College Station, Texas
- 1994, Johnson County Parks and Recreation Department, Shawnee Mission, Kansas
- 1992-1994, Grounds Maintenance Superintendent, Brazos County, Texas

### CONTINUING EDUCATION:

- Stream Functions Pyramid Workshop, Denver, CO - 2014
- Colorado Natural Heritage Program, Wetland Plant Identification - 2014
- Colorado Natural Heritage Program, Ecological Integrity Assessment for Colorado Wetlands - 2013
- FACWet - Functional Assessment of Colorado Wetlands - 2010, 2012 and 2013
- ESRI, ARC View Geographic Information System (GIS) Training, 1996
- Bicycle Planning and Facilities Training, 1994
- AutoCAD Drafting and Design, Self-taught, 1991

### CERTIFICATIONS:

- Professional Wetland Scientist Certification (# 1699), Society of Wetland Scientists Certification Program, 2004

## **EXPERIENCE SUMMARY:**

Mr. Dauzvardis is a founder and managing partner of Ecosystem Services, LLC (ecos), a small, ecological planning and design business dedicated to the restoration, enhancement and creation of aquatic, wetland and riparian habitat. Jon is a certified Professional Wetland Scientist with over 23 years of experience working in the fields of landscape architecture, ecological restoration, and wetland science in Colorado, Wyoming, Texas, Kansas and the Intermountain West. Jon's academic, professional and work history in housing design, community planning, architecture, landscape architecture, ecological planning and restoration is unique and makes him a valuable asset to his company, clients and their projects. His diverse knowledge and skills in landscape planning, habitat design, bioengineering, and hands-on experience demonstrate that he can easily negotiate between art and science, man-made and natural systems, generalities and detail, and concepts and landscape construction. Jon takes a practical and realistic approach to generating ideas that solve problems, concentrating on broad scale ecological master planning simultaneously with fine scale design of aquatic, wetland, riparian and terrestrial habitats. As a restoration ecologist, Jon specializes in restoring and enriching habitat structure, stability and health and how to manage landscapes and natural systems so that they function, change, and respond positively over time. Jon's strengths are rooted in his understanding of natural and landscape processes; finding design solutions that integrate the needs of people, wildlife, and visual quality; sustaining ecosystem goods and services; and integration of nature-based recreation and environmental education programs and facilities.

## **RELEVANT PROJECT EXPERIENCE:**

### **Habitat Assessment and Regulatory Compliance**

Mr. Dauzvardis routinely performs ecological site and resource impacts assessments, jurisdictional wetland determinations and functional assessments to assist clients in site planning, design, and permitting processes. Assessment methods established by the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and Colorado Department of Transportation among others are used to assess habitat elements and screen sites for threatened and endangered plants and animals, wetlands, migratory birds and other wildlife. Jon stresses habitat impact avoidance and minimization to preserve a site's ecological benefits and to minimize regulatory constraints, timing and permitting costs. Jon has performed a multitude of site assessments, delineations and prepared permits, including but not limited to the following notable projects as well as others listed throughout this resume:

- **Bellvue Pipeline Project, Larimer County, CO** - ecos was retained by the City of Greeley as Best Management Practices (BMP) Facilitators to provide pre-construction documentation post-construction oversight of pipeline reclamation processes. Essential responsibilities include meeting with landowners prior to construction to facilitate project understanding and post-construction outcomes; to document landowner needs and wants relative to project goals and land use; and to document and monitor pre- and post-construction reclamation and maintenance requirements.
- **Georgetown Lake, Georgetown, CO** - ecos was hired to prepare an office level assessment report of ecological resources to describe the physical/ecological characteristics of the Project area and evaluate the potential effects of the construction of a loop trail project on environmental issues and species of concern to support a GOCO grant application. Items evaluated and documented, include site location/ownership, general site characteristics, current land use, proposed impacts, possible effects on Federal- and State-listed T&E animal and plant species, unique or important wildlife, water quality, water bodies, wetlands, and floodplains, stormwater runoff, sedimentation, soil erosion, and invasive species. The assessment report also included mitigation measures, project benefits, and environmental compliance recommendations under applicable regulatory programs.
- **Appraisal Support Documentation Report for the 1st Bank Parcel, Colorado Springs, CO** - ecos was retained by 1st Bank Holding Company to perform a Preble's meadow jumping mouse (PMJM) habitat assessment, mitigation cost analysis, and conceptual lot layout for the approximate 9.4-acre Parcel located adjacent to the Northgate Open Space along Smith Creek. Jon was responsible for preparing the lot layout, existing habitat aerial photo interpretation/delineation, proposed conceptual mitigation, and quantification of impacts and associated mitigation to ascertain appraisal value of the site if it were to be developed.
- **Encana Oil and Gas (USA), Denver Julesburg Basin, CO** - Encana hired ecos to assess their ecological constraints, recommend means and methods to avoid, minimize and permit impacts; and to mitigate,

restore and prepare ecological management plans for their drilling and pipeline operations in the Denver Julesburg basin. Jon's role on the team is to perform site assessments, research background data, and prepare assessment reports and mapping data that can be utilized by Encana's project managers and geographic information systems (GIS) department to proactively track ecological resources before issues arise. In addition to client consultation, Jon is responsible for tracking drill site schedules, constraints, restoration and management efforts in a data base and reporting said information to Encana's project manager on a regular basis.

- **Tollgate Creek Riparian and Wetland Habitat Assessment, Aurora, CO** - Jon performed high level aerial photo interpretation and delineation of riparian and wetland habitat along Toll Gate Creek and East Toll Gate Creek from confluence with Sand Creek upstream to East Hampden Avenue. The delineation was performed in Google Earth and imported into AutoCAD by digitizing riparian and wetland habitat zones. Once complete, the data was turned over to the project engineer to incorporate into a Drainage Master Plan for the Urban Drainage and Flood Control District (UDFCD).
- **Eagle River Meadows Ecological Inventory and Strategic Wetland Action Plan, Edwards, CO** - Mr. Dauzvardis delineated, assessed, and provided an analysis of potential adverse effects to wetlands within a complex site adjacent to the Eagle River. Jon also developed a strategic process and decision making tool to determine avoidance, minimization, low impact development (LID), and mitigation measures in support of a County Sketch Plan application for a Multi-use Health Care Community.
- **Mesa County Colorado Riverfront Trail, Grand Junction, CO** - Jon performed wetland delineation, jurisdictional determination, Section 404 Permitting; and prepared wetland mitigation plans to construct approximately two miles of regional trail along the north side of the Colorado River between the James M. Robb and the Colorado River State Park at Corn Lake.
- **ARCO Upper Clark Fork River Basin Superfund Site Functional Wetland Assessment, MT** - Between 2000 and 2008, Jon managed the assessment team and performed extensive wetland delineation, GPS surveying, functional assessments, and impact mapping and analysis covering a 200 square mile Superfund Site affected by historic mining practices. Assessments were done in preparation for soil remediation of heavy metals, capping of tailings ponds, sediment and dam removal, and implementation of compensatory wetland mitigation plans required under a consent decree. Assessment areas included the Anaconda Smelter, Old Works, Opportunity Ponds, and Milltown Reservoir.
- **Jefferson County Highways & Transportation Department Gunbarrel Bridge Replacement, Oxyoke, CO** - Jon consulted with the USACE, USFWS, CDOT, and the FHWA to document regulatory requirements. Produced a CDOT Wetland Finding Report, Biological Assessment, Preble's meadow jumping mouse and wetland mitigation plans, and helped acquire a Section 404 Permit and Biological Opinion.
- **Pole Canyon Wind Farm, Babcock and Brown, Huerfano County, CO** - Assessed and prepared critical issues analysis and County 1041 Permit application for a 125-megawatt wind farm and associated transmission lines located on a 5,800-acre site. The project included detailed site assessments to document the presence or absence of potential development constraints and site-specific ecological conditions as well as preparation of permit maps, plot plans, and environmental analyses, alternatives analysis, and mitigation measures.
- **Dalton Property Wetland Assessment, Longmont, CO** - Provided site assessment, regulatory analyses, and developed a restoration plan for critical riparian and wetland habitat along Left Hand Creek in Boulder County, CO.
- **Colowyo Coal Mine Wetland Delineation, Meeker, CO** - Delineated 1.5 miles of jurisdictional waters and wetlands in preparation for wetland mitigation design along West New Goodspring Creek.
- **Lafarge Northbank Resources Gravel Pit Wetland Assessment, Rifle, CO** - Delineated and acquired a jurisdictional determination from the USACE for complex tailwater and riparian wetlands along the Colorado River. Prepared gravel pit reclamation plans aimed at providing suitable shallow-water lake edge wetlands to serve as compensatory wetland mitigation.
- **Jefferson County Highways & Transportation Department Highway 73 Expansion, Conifer, CO** - Performed presence/absence study, habitat assessment and documentation of wetlands, Migratory Birds, State Species of Concern, and federally listed T&E Species including Bald eagle, Preble's meadow jumping mouse, the Pawnee montane skipper butterfly and Colorado butterfly plant along a one-mile corridor of highway.

- **Flying Horse Ranch and the Club at Flying Horse Golf Course, Colorado Springs, CO** - Conducted an assessment of wetland habitat, impact avoidance and minimization and Section 404 of the Clean Water Act permitting for a 1500-acre mixed use development and Weiskopf golf course design being implemented by Neiber Golf.
- **C-Lazy-U and Horn Ranch Environmental Assessments, Granby, CO** - Performed site assessment of ecological opportunities and constraints of aquatic, riparian, wetland and threatened and endangered species habitat along the Colorado River for the development and enhancement of fishing/resort ranch amenities.
- **Village at Avon, Avon, CO** - Delineated wetlands and prepared a Section 404 Permit for the town center expansion and low-density ranchette development.
- **Residential Developers and Realtors** - Performed numerous wetland and T&E species habitat ecological assessments, wetland delineations, and prepared Clean Water Act Section 404 Permits and mitigation plans for residential developers and realtors, including: Equinox Land Group, DR Horton, Melody Homes, Standard Pacific Homes, Gateway American Properties, Zephyr Real Estate Company, Lowell Development Partners, and Palmer-McAlister, Classic Communities, Stoll Properties, Karen Bernardi, Colorado Commercial Builders, Terra Visions, Smith Creek Holdings, Picolan, Realty Development Services, Northgate Properties.
- **Commercial and Industrial Developers** - Performed numerous wetland and T&E species habitat ecological assessments, wetland delineations, and prepared Clean Water Act Section 404 Permits and mitigation plans for commercial and industrial developers, including: Atira Group, Leadership Circle, Ridgeway Valley Enterprises, Morley Companies, HF Holdings, Regency Centers, Miller-Weingarten, Gulf Coast Commercial Development, Traer Creek, Mountain Property Associates, Morley Golf, Executive Consulting, Inc.
- **Architectural and Engineering Companies** - Performed numerous wetland and T&E species habitat ecological assessments, wetland delineations, and prepared Clean Water Act Section 404 Permits and mitigation plans for A&E firms, including: Classic Consulting Engineers, Del-Mont Consultants, JW Nakai and Associates, Nolte and Associates, JR Engineering, Hydrosphere, Executive Consulting Engineers, Muller Engineering, Farnsworth Group.
- **Counties, Municipalities, Metro Districts and Quasi-Public Institutions** - Mr. Dauzvardis has performed numerous wetland and T&E species habitat ecological assessments, wetland delineations, and prepared Clean Water Act Section 404 Permits and mitigation plans for counties, municipalities, and quasi-public institutions, including: City of Louisville Highway 42 and 96<sup>th</sup> Street realignment, City of Westminster Jim Baker Reservoir and Standley Lake Protection Projects, Jefferson County Highway 73 and 67 Improvement Projects, Todd Creek Village Metro District, Town of Monument/Triview Metro District, Boulder Community Hospital, and City of Fort Collins Regulatory Fact Sheets Preparation Project, Todd Creek Village Metro District on-call consultant, Three-lakes Water and Sanitation District, City of Greeley,
- **Educational Institutions** - Performed numerous wetland and T&E species habitat ecological assessments, wetland delineations, and prepared Clean Water Act Section 404 Permits and mitigation plans for educational institutions, including: Colorado Mountain College - Steamboat Springs, The Classical Academy - Colorado Springs, and Coal Ridge High School - Rifle.
- **Wind Energy Developers** - Performed numerous wetland and T&E species habitat ecological assessments, wetland delineations, and critical issues analyses for wind development projects, including: Cedar Creek Windfarm - Weld County, CO, Wheatland Windfarm - Platte County, WY, Silver Mountain Windfarm - Huerfano County, CO, Pole Canyon Windfarm, Huerfano Count, CO.
- **Mining Companies** - Performed wetland and T&E species habitat ecological assessments, wetland delineations, and critical issues analyses for mining companies, including: Lafarge and Kennecott Coal.

#### **Ecological Master Planning**

- **Front Range Umbrella Mitigation Bank, CO** - ecos was retained by Restoration Systems, a nationally renowned wetland mitigation banking firm, to help identify and prepare conceptual design plans for mitigation banking sites to establish the Front Range Umbrella Mitigation Bank (Bank). The purpose of the Bank is to provide compensatory mitigation credits for unavoidable, permitted impacts to aquatic, wetland, riparian, upland, wildlife, and threatened and endangered (T&E) species habitat regulated under the Clean Water and Endangered Species Acts; and to restore, enhance and preserve valuable

natural resource functions at degraded mitigation sites within multiple watersheds along Colorado's Front Range. Currently, the Bank is developing banks sites that serve the Cache la Poudre, St. Vrain, Upper South Platte, Fountain and Upper Arkansas watersheds. Jon's primary role on the team is to perform functional habitat assessments; prepare mapping and graphics of baseline and future conditions; grading and plant community design based on hydrologic, hydraulic, and geomorphic modelling and engineering; and communicate with landowners and stakeholders regarding the process, technicalities, and outcomes.

- **Sand Creek Channel Improvements Stability Analysis at Indigo Ranch, Colorado Springs, CO** - ecos was retained to perform an analysis of channel stability under proposed development conditions for a 1.17 mile reach of Sand Creek. Ecos utilized existing vegetation composition data, density and height within the Project reach as a basis; and compared the 10-year and 100-year storm event modelling data (specifically flow velocity, flow depth and shear stress) to reference literature to provide a professional opinion regarding the future stability of the channel under developed conditions. The analysis of channel stability for the proposed Project assumes a bioengineering and biotechnical approach that preserves and enhances the existing vegetation, as well as substrate cohesion and stability, within the channel and its streambanks. The Stability Analysis will likely serve as a benchmark study for the City of Colorado Springs to use to preserve other naturally stable channels.
- **Brush Creek Ranch Stewardship Plan, Saratoga, WY** - Brush Creek Ranch Stewardship Plan, Fishery Enhancement and Bank Stabilization, Saratoga, WY - Mr. Dauzvardis managed the organization, generation and graphic design of the Ranch Stewardship Plan. Jon assessed and prepared stewardship goals, objectives, and implementation action items, including ranch-wide master planning of the trail and recreational systems and design of the Brush Creek riparian corridor trail. Trail and recreation planning and design focused on universal access, habitat sensitivity, environmental education, wildlife observation opportunities and unique landscape experiences. Simultaneously with the master plan, Jon developed revegetation plans to support geomorphic stream alterations and bank stabilization to enhance the creek fishery. Jon was responsible for the design and supervised construction of a cold-water pond to be used by novice anglers to learn the art and experience the pleasure of catching trout.
- **Town of Erie, Comprehensive Plan, Parks Recreation Open Space and Trails Master Plan, and Natural Areas Inventory, Erie, CO** - As a former 8-year Member, Chair, and Vice Chair of the Town Erie Open Space and Trails Advisory Board (OSTAB) and an Erie resident and small business owner, Jon has an intimate knowledge of Erie's political and physical landscape and public processes. During his tenure on OSTAB, Jon actively participated in the writing and development of the Town's guiding documents. Jon authored the Open Space Chapter of the Comprehensive Plan which eventually was codified in the Town's Unified Development Code (UDC). Jon was the key commenter on the content, analysis and synthesis of the Open Space and Trail Chapters and Mapping that was adopted with the Town's first Parks Recreation Open Space and Trails Master Plan (PROST). Jon guided the process used in the development of the Erie Natural Areas Inventory (ENAI) to identify and design a habitat condition, quality and restoration rating and ranking system of significant natural areas throughout the Town's 49-square mile planning area.
- **Uncompahgre River Corridor Master Plan, Montrose, CO** - Jon was responsible for the development of an ecological master plan focusing on the Uncompahgre River as a natural asset for eco-tourism and the generation of riverfront economic development. Mr. Dauzvardis was responsible for assessing the character, condition and quality of aquatic, wetland and riparian habitat; and developing a rating, ranking, land acquisition prioritization system, and associated mapping aimed at the preservation and integration of open space and habitat within the City's parks, recreation and trail system.
- **Ruby Pipeline Wetland, Riparian and Waterbody Mitigation and Restoration Plan, WY, UT, NV and OR** - Jon was responsible for assisting with the generation of a Comprehensive Wetland Mitigation Plan outlining Clean Water Act regulatory guidelines, requirements, and processes. Jon developed an eco-region specific restoration plan for a 675-mile natural gas pipeline specifying the basis of design, construction, revegetation, maintenance, performance criteria, and monitoring means and methods for restoring approximately 460 acres of temporarily impacted riparian and wetland habitat.
- **Dry Creek Regional Urbanization Area, Weld County, CO** - Mr. Dauzvardis performed an ecological inventory and prepared the assessment report for a 6,000-acre Regional Urbanization Area (RUA); and a 1000-acre multi-use site development in un-incorporated Weld County. Subsequent phases included

establishing ecological policy, goals, and objectives for the study area that will assist the County in the refining their first ever Comprehensive Plan.

- **City of Broomfield I-25 Subarea Environmental Guidelines**, Broomfield, CO - Jon drafted development sensitivity design and ecological sustainability standards.
- **McStain Development Corporation, Mountain Village III Master Plan**, Loveland, CO - Conducted concept planning for recreational and environmental interpretation facilities focusing on lake and wetland habitat features of the community.
- **Estes Park Comprehensive Land Use Plan**, Estes Park, Larimer County, CO - Teamed with town planning staff in producing a county-wide land use plan using GIS as a public involvement/participation tool.
- **San Miguel River Park Corridor Master Plan**, Telluride, CO - Prepared park, trail, wetland and riparian corridor master plan and design for the San Miguel River Park Corridor. Jon prepared illustrative plan graphics that assisted the Town in applying for and winning approximately \$500,000 in Natural Resource Damage Assessment Fund money from the State of Colorado, which was used for final design and implementation.
- **South Platte River Wildlife and Recreation Corridor Plan**, Denver, CO - Designed the Zuni Riverfront Park and planned the wildlife and recreation corridor between I-25 and 8<sup>th</sup> Street near Mile High Stadium. Prepared, steered and presented graphics that the City and County of Denver Mayor's Commission (Wellington Webb) and the Urban Drainage and Flood Control District used to help sell the project to the public and federal funding sources in Washington D.C.
- **Historic Arkansas River Walk**, Pueblo, CO - Coordinated and steered the design and presentation of riparian, aquatic, and palustrine wetlands in the HARP Natural Area. Designed environmental Education Park to include outdoor classroom, access, and multi-thematic interpretive nodes.
- **Pueblo Natural Resources and Environmental Education Council Plan**, Pueblo, CO - Designed the identity and jointly produced strategic natural resource based environmental education plan for Pueblo County (PNREEC). The plan helped build consensus among multiple private and governmental agencies and stakeholders on funding, conservation, restoration, and enhancement priorities throughout the County.
- **Aluminum Company of America (ALCOA) Huisache Cove Master and Design Plan Master of Landscape Architecture Thesis**, Port Lavaca, TX - Served as environmental consultant in researching and generating wildlife habitat restoration plan and multi-functional landfill cap redesign incorporating coastal prairie, lacustrine, palustrine, estuarine wetlands, passive recreation, bird watching and ecological interpretation facilities on an industrial superfund clean-up site.

#### Aquatic, Wetland, and Riparian Habitat Design:

- **Saint Vrain Creek Breaches Restoration, Boulder County, CO** - ecos is part of the Design Team assisting Boulder County Parks & Open Space (BCPOS) with the restoration, repair and enhancement of the reach of the Saint Vrain Creek from Highway 36 downstream to Hygiene Road in rural Boulder County, which was damaged by the 2013 floods. Our role on the project includes: 1) desktop and field assessment to inventory and document the characteristics of the stream reach and riparian corridor (e.g. stream/in-stream features, vegetation, wildlife habitat); identify and locate significant habitat features within the areas of proposed construction; identify potential sources of native plant materials for restoration; and identify areas of opportunity within the breach repair work areas for native vegetation, wetland, PMJM, leopard frog and fishery habitat restoration; and delineate wetland habitat and waters of the U.S. in all areas of proposed/potential construction-related impact; 2) vegetation community and wildlife habitat restoration design; 3) permitting and compliance under the CWA, ESA and NHPA; 4) construction oversight for restoration construction; and 5) monitoring and reporting project success/establishment to BCPOS, stakeholders, the Corps, FWS and the State of Colorado Department of Local Affairs (DOLA) under the (the Grant funding agency under the Community Development Block Grant Disaster Recovery (CDBGDR) Resilience Planning Program grant.
- **Bohn Park Flood Recovery Design, Town of Lyons, CO** - ecos is part of the Design Team assisting the Town with the restoration, enhancement and stabilization of Bohn Park which was damaged by the 2013 floods. Ecos role is to assess, design, and prepare design-bid-build specifications for the natural restoration of the vegetation communities and habitat along South St. Vrain Creek and riparian corridor in collaboration with the landscape architect designing the parks and recreation facilities and the water

resource engineer designing instream hydraulic and fish habitat structures. ecos is also; supporting the project design by acquiring permits/approvals and maintaining regulatory compliance under the CWA, ESA and National Historic Preservation Act (NHPA).

- **James Creek Post-flood Restoration, Lefthand Watershed Oversight Group (LWOG), Jamestown, CO** - ecos was part of the LWOG and Boulder County Department of Transportation Team responsible for preparing the 30-60% design package for James Creek Reach 16 as identified in the Left Hand Creek Watershed Master Plan. ecos performed pre- and post-flood plant community assessment; developed revegetation goals and objectives, the basis of design, monitoring protocols, and revegetation plans in accordance with Colorado Department of Local Affairs (DOLA), Community Development Block Grant - Disaster Recovery (CDBG-DR) 30% Guidelines. Specific resources and issues of concern addressed by ecos, included federal and state listed candidate, threatened and endangered species, wildlife species of concern (including raptors), fisheries and fish passage, native plant communities, and management of noxious weeds, all in concert with geomorphic, hydrology and hydraulic analysis and design prepared by other team members.
- **Saint Vrain Creek Restoration and Floodplain Resiliency Plan, Town of Lyons, CO** - ecos is part of a design-build team tasked with restoring the St. Vrain Creek corridor in the Town of Lyons that was damaged during the September 2013 flood event. The goal of the project is to work with the Town and affected land-owners to create a more resilient floodplain and natural channel condition that will help alleviate future threats to the community, reestablish floodplain connectivity, stabilize banks, and restore aquatic, wetland and riparian habitat that was wiped out during the flood. Mr. Dauzvardis is responsible for developing the plant communities and revegetation strategies needed to restore aquatic and riparian structure and functions within the corridor that support fish, wildlife, recreation, and help the Town regain the ecological benefits and economic value they receive from outdoor enthusiasts.
- **Plum Creek Mitigation Bank, Sedalia, CO** - ecos was retained by Restoration Systems to prepare conceptual design plans for the Plum Creek Mitigation Bank Site that is currently under consideration by the Chatfield Reservoir Mitigation Company (CRMC). The purpose of the Site is to provide compensatory mitigation credits for unavoidable, permitted impacts to wetland, PMJM and bird (target resources) habitat regulated under the CWA and ESA; and to restore, enhance and preserve natural resource functions. Jon has guided agency and CRMC staff on tours of the Site; performed plant community mapping, baseline EFU assessment for PMJM, and FACWet assessment of wetlands. Jon was responsible for mapping, interpretation, and quantification of historic and existing habitat on the site. Jon prepared Conceptual Design Plans for resource mitigation including channel geomorphology, PMJM and wetland habitat setting the stage for post-mitigation calculations of EFU's.
- **Bellvue Raw Water Ponds Riverbank Restoration, Bellvue, CO** - The 2013 flood on the Poudre River altered the course of the river and severely eroded a bank nearly causing a breach of the City of Greeley's raw water ponds - their main municipal water supply. The goal of the project was to stabilize the bank to protect the ponds and to create riparian habitat for the Preble's meadow jumping mouse, a federally listed threatened and endangered species. Jon was responsible for preparing bioengineering design plans and specifications that include soil/cobble encapsulated lifts, stream barbs to deflect flows away from the bank, and harder, biotechnical design of soil/riprap and stream bed scour protection measures to prevent erosion and further undermining and sloughing of the bank. Design plans included specification of native plant materials and various techniques to restore cottonwood forest and willow habitat to further stabilize the bank.
- **Poudre River Pipeline Crossing at Kodak, Windsor, CO** - Jon's role on the ecos team was to assess restoration potential, techniques, and prepare design plans and performance specifications to reclaim a pipeline corridor across the lower Poudre River where the City of

Greely had to replace 3 major water supply lines. Flooding on the Poudre River in 2013 and 2014 temporarily suspended construction of the pipeline. Jon will oversee site stabilization and restoration measures once all 3 pipelines have been installed.

- **Lions Park Poudre River Restoration Plan, Laporte, CO** - Jon's role on the ecos team was to assess habitat conditions; gather, compile and analyze field survey data; and to prepare the mapping and mitigation design plans for the Lions Park PMJM habitat and the Poudre River Bank Stabilization Plans. Jon simultaneously designed and executed the technical drawings for the structural components of the habitat, ensuring that the proposed riparian plant community, habitat structures (brush piles), and bioengineered streambank stabilization measures will create the conditions that alleviate the current habitat fragmentation; support the life requisites of the PMJM; and enhance the overall health of the Poudre River fishery.
- **St. Vrain River Riparian Corridor Enhancement, Lyons, CO** - Jon designed, managed and led the construction of the Preble's Meadow Jumping Mouse Habitat (PMJM) enhancement project along the St. Vrain River. Jon worked in coordination with the project sponsor and Director of the Town of Lyons, Parks, Recreation and Cultural Events Department to implement required mitigation within a passive greenway park along the St. Vrain. Jon's role included riparian/PMJM mitigation site identification and habitat assessment; and design; and implementation of riverbank stabilization and riparian habitat enhancement measures.
- **Brush Creek Fishery Enhancement Plan, Saratoga, WY** - Prepared access, staging and design plans, details and performed on-site construction oversight of instream and riparian habitat enhancements and bioengineered bank stabilization along a 3-mile reach of Brush Creek. The purpose of the project is to enhance fish, bird and wildlife habitat and use these resources to facilitate education and improve the recreational experience of Ranch guests. Access routes were planned so that they can be easily converted to trails to avoid repetitive impacts to high quality habitat and productive pastures.
- **St. Vrain River Riparian Corridor Enhancement, Lyons, CO** - Jon is the lead Landscape Architect for the restoration and enhancement of Preble's Meadow Jumping Mouse Habitat (PMJM) along the St. Vrain River. Jon and ecos are working in coordination with the Town of Lyons, Parks, Recreation and Cultural Events team to implement this restoration project within a passive park area along the St. Vrain. Jon's tasks include riparian/PMJM habitat assessment; PMJM site location and habitat design; and implementation of riverbank stabilization and riparian habitat enhancement measures.
- **Brush Creek Ranch Pond Creation Plan, Saratoga, WY** - Prepared below grade pond excavation, grading, drainage and revegetation plan for a 0.30-acre fishing pond, followed by on-site field layout and surveying, wetland sod transplanting, submerged aquatic habitat and construction support of heavy equipment operators. The pond was designed to be a self-sustaining, cold water fishery that supports all components of the aquatic food-chain and incorporates all necessary life requisites for trout; and provide fishing opportunities during high water in Brush Creek.
- **Edwards Eagle River Restoration Project, Edwards, CO** - Assessment, planning, native plant community design and construction oversight of aquatic, wetland, riparian habitat along 1.5 mile reach and 168-acres of floodplain along the Eagle River utilizing indigenous materials and methods that naturally integrate habitat structure in the landscape context. Planning and design included trails, boat launch, boardwalks, overlooks, and interpretive sign systems and thematic content.
- **Boone Property, Boulder Creek Fishery Enhancement Project, Boulder, CO** - Performed site assessment and identified instream and overhead cover habitat to enhance fish habitat along a short reach of Boulder Creek adjacent to City of Boulder, Eldorado Canyon Open Space.
- **C-Lazy-U Ranch Willow Creek Fishery Enhancement Plan, Granby, CO** - Assessed and prepared design plans for 2 miles of instream and overhead cover habitat aimed at enhancing water quality through increased bank stability, improving aquatic habitat and angling opportunities, and providing long-term stability to the reach influenced ongoing ranching activities. Bank-side improvements include detailed seeding and planting plans indicating site-specific plant and seed locations, life zones, and species palettes according to hydrologic, soil, and aspect conditions.
- **Colowyo Coal Mine Wetland Creation Plan, Meeker, CO** - Performed wetland mitigation site feasibility assessment and design of 2.2-acres of created wetland benches along a 1.5-mile reach of the West New Goodspring Creek.

- **Uncompahgre River Wetland Creation and Streambank Stabilization, Montrose, CO** - Mr. Dauzvardis developed a Clean Water Act Individual Section 404, alternatives analysis and mitigation plans that successfully defrayed public descent and offset unavoidable impacts related to the River Landing Retail Development Project. Once approved by the USACE, the project turned a degraded, gravel-mined portion of the floodplain into functional and aesthetic riparian habitat that is now enjoyed by the public via a segment of trail that Mr. Dauzvardis designed. Two acres of riparian and “backwater” wetland habitat were strategically created along the Uncompahgre River to ensure reliable hydrologic connectivity and support of the designed wetland plant community. Nearly 350 lineal feet of severely degraded stream bank was stabilized using a naturalized bio-engineering approach that incorporated soil, native seed, erosion control blanket, shrubs, trees, and strategically located river boulders and logs to restore the riparian habitat, create fish habitat and redirect scouring flows away from the once barren bank.
- **River Point at Sheridan Brownfield Redevelopment, Sheridan, CO** - Designed and oversaw the construction of a “bio-engineered” and “bio-technical” vegetative landfill cap system and water quality swale that drains to the South Platte River. Jon was responsible for integrating the swale in to the River Point at Sheridan commercial redevelopment and the City of Englewood Golf Course renewal - renamed to the Broken Tee Golf Course.
- **Broken Tee Golf Course Flood Protection, City of Englewood, CO** - Oversaw the construction of a biotechnical subsurface stabilization and flood protection system (under-armor) designed to ensure that the woodland golf course tees, fairways and greens in the South Platte River floodplain are not compromised by flood scour. Designed and implemented bioengineered bank stabilization and under-armor on Bear Creek that was essential for protecting tees and greens. Jon was responsible for disproving the jurisdictional status of artificially supported wetlands via a groundwater monitoring system.
- **Lafarge Northbank Resources Gravel Pit Wetland Design, Rifle, CO** - Jon asses DMG requirements and prepared gravel pit reclamation plans aimed at providing suitable shallow-water wetlands and islands within the pit closure area to serve as compensatory mitigation for wetland impacts associated with mine operations adjacent to the Colorado River.
- **Leach Creek Stream Enhancement, Grand Junction, CO** - Designed stream corridor enhancements for a ½-mile section of Leach Creek that was channelized and used as an irrigation canal. Enhancements were designed to restore natural channel form and function, improve the aquatic environment, and provide mitigation for jurisdictional impacts permitted under the Nationwide Permit program. This project is being used as a model and replicated along other reaches of Leach Creek
- **Castro Property Wetlands and Wildlife Ponds, Beulah, CO** - Performed the site assessment, feasibility analysis, water resource and minor dam design, native plant design, landscape architecture, and supported the water rights application needed to create shallow water wetland habitat for amphibians, waterfowl, migrating bird and ungulates, and deep water habitat for trout at a sub-alpine elevation of 9000 feet. Project included development of a spring, creation of a creek and a mechanical water circulation and aeration system to support the aquatic, wetland, and riparian ecosystem. Organized, supervised and participated in a volunteer planting effort.
- **Jefferson County Gunbarrel Bridge Replacement, Oxyoke, CO** - Developed construction plans and specifications and oversaw construction of wetland and Preble’s mouse habitat mitigation to enhance weedy and degraded wetland and Preble’s mouse habitat along Gunbarrel Creek, a tributary to the upper South Platte River near Deckers, CO.
- **Coal Creek Bank Stabilization, Erie, CO** - Assessed, permitted, designed and performed construction oversight of bio-engineered/bio-technical bank stabilization and wetland creation associated with the Vista Parkway bridge crossing over Coal Creek in Erie, CO. The project involved pulling back vertical banks and restoring native wetland, riparian, and short grass prairie habitat.
- **Spring Creek Wetland Mitigation, Colorado Springs, CO** - Generated wetland and creek creation plans that integrated required mitigation into a high density, “new urban” development. The design emphasized re-utilization of urban storm water to sustain wetlands, use of indigenous plants, construction materials, and natural geomorphic relationships.

- **Sulphur Gulch, Parker, CO** - Developed a naturalized sculpted concrete drop structure design, planting and bio-engineering plans for a highly visible, urbanizing reach of a sandy creek through the center of the Town of Parker.
- **Skylark Creek Restoration Plan, Kremmling, CO** - Designed and performed construction oversight of aquatic, wetland and riparian plant community, and trail system along a historic side channel of the Upper Colorado River on a private fishing ranch.
- **ARCO Opportunity Ponds Wetland Mitigation Design, Anaconda, MT** - Jon generated the design of a 908-acre complex of wetlands and terrestrial habitat required to meet the Consent Decree and the functional assessment criteria established during the wetland assessment process mentioned previously. The design is currently being implemented. Once complete, the grading, drainage, hydrology, and revegetation strategy used to create wetlands from massive soil borrow pits will potentially be the largest inland, freshwater wetland mitigation project in the United States.
- **Northgate Boulevard Realignment, Colorado Springs, CO** - Coordinated and prepared ESA Section 7 and CWA Section 404 consultation documents as required by the USFWS and USACE, including mitigation construction documents, specifications, on-site layout of plant communities and construction supervision aimed at restoring wetland and riparian habitat occupied by Preble's meadow jumping mouse.
- **Northgate PMJM and Wetland Mitigation Plan, Colorado Springs, CO** - Mr. Dauzvardis was an instrumental member of multidisciplinary team responsible for delineating wetlands, preparing ESA Section 7 and CWA Section 404 assessment, impact analysis and consultation documents as required by the USFWS and USACE. As the lead designer, Jon was responsible for the design of over 80 acres of wetland, riparian, and grassland habitat utilized as primary and secondary habitat for Preble's Meadow Jumping Mouse, a Federally-listed threatened species. Jon prepared mitigation construction documents, specifications, onsite layout of plant communities and supervised construction for this precedent setting mitigation plan designed to offset impacts to critical habitat over a 1200-acre site.
- **Martin County Coal Corporation, Inez, KY** - Mr. Dauzvardis bioengineered and performed on-the-ground triage of two stream corridors, consisting of 26 miles, impacted by a coal slurry spill that originated from a mountaintop mine reservoir used to hold liquefied coal dust. Jon identified and documented critically imperiled stream banks and human settlements, and then designed, coordinated, led and supervised local crews during the implementation of specified floodplain, bioengineered bank stabilization, and reforestation efforts.
- **Uncompahgre River Restoration and Park Corridor, Ouray, CO** - Jon designed and performed construction oversight of the restoration and reclamation of one mile of upland, riparian and wetland habitat left barren by historic placer mining. The major challenge presented by this project was a lack of soil, organic matter and nutrients to sustain vegetation. This constraint was addressed by amending the soil with humate and planting and seeding riparian vegetation to initiate natural succession and bioaccumulation of matter, assisted by an irrigation system that injected organic fertilizer and microbes (mycorrhizae) in to the substrate.
- **Burlington Mine Remediation, Jamestown, CO** - Preparation and management of specification package, best management practices (BMPs), and revegetation design for mine waste capping and closure.
- **Powder River Coal Company - Porcupine Creek Restoration, Douglas, WY** - Designed and supervised the construction of this post mine wetland/creek restoration project. Following the pit closure, reclamation specialists reestablished the original location and geomorphic relationships of the creek using historic aerial photography using a trapezoidal channel cross-section design. Jon adapted the design creating grading and wetland planting plans that mimic the landform, natural lateral and longitudinal channel tilt, and plant communities that are indigenous to ephemeral creeks in the shortgrass prairie landscapes of eastern Wyoming.
- **Sand Creek Corridor Habitat Enhancement at Bluff Lake, Denver, CO** - Prepared plant community, bioengineering and bank stabilization design. Prepared visualization graphics to present and receive design approval.
- **Intrawest Resort Development, West Ten Mile Creek, Copper Mountain Village, CO** - Prepared vegetation community and village base streamside amenity concept design.

#### **Construction Oversight and Plant Installation:**

- **St. Vrain River Riparian Corridor Enhancement, Lyons, CO** - Jon managed construction and implementation of the restoration and enhancement of 0.60-acre of riparian Preble's Meadow Jumping Mouse Habitat (PMJM)

along the St. Vrain River.

- **Standley Lake Protection Project, Westminster, CO** - Designed and performed construction oversight of a 0.50-acre created emergent wetland to fulfill final mitigation requirements of the USACE and bring closure to the City's drinking water protection project.
- **Caribou Peat Bog Restoration, Nederland, CO** -Prepared native plant community design, planting cost estimate, and on-the-ground oversight of volunteers to restore a high altitude peat bog disturbed by an illegal four-wheel drive "mudfest".
- **Department of Energy (DOE) Wetland Mitigation Bank, Westminster, CO** - Construction supervision of grading and planting plans of a 12-acre wetland mitigation bank design for the Department of Energy.
- **ARCO Lower Area One and Butte Reduction Works, Butte, MT** - Performed construction observation and supervision of temporary labor crews to plant a passive treatment wetland designed to absorb heavy metals from groundwater.
- **Colorado Department of Transportation Mitigation Bank, Limon, CO** - Performed in-field planting design and supervised local labor to complete a 10 acre wetland mitigation bank designed by CDOT to offset future wetland impacts in the transportation region.
- **Irvine Ranch Water District - San Joaquin Wetland Treatment System, Irvine, CA** - Planting superintendent of a wetland designed to be a used as tertiary wastewater treatment facility and waterfowl refuge.

#### **PRESENTATIONS:**

Dauzvardis, Jonathan B. 2008. Preserving the Ecological Services of Willow Cuttings. Research presented at the Colorado Riparian Association (CRA) Sustaining Colorado Watersheds Conference. October 2, 2008. Vail, Colorado.

Dauzvardis, Jonathan B. 2004. Wetland and Wildlife Habitat Restoration, Opportunity Ponds, Anaconda, Montana. Poster Presentation at Ecological Restoration Conference. October, 2003. Orlando, Florida.

Dauzvardis, Jonathan B. 2003. Application of Landscape Ecology Principles to Mine Remediation and Wetland Creation: An Ecological Restoration Seminar using a Case Study of the Opportunity Ponds Wetlands Plan, Anaconda, Montana. Presented at the University of Colorado, Denver. November, 2003. Denver, Colorado.

Dauzvardis, Jonathan B. 2000. Endangered Species Act Issues: Incorporating the ESA into Mitigation Projects. Presented at the Continuing Legal Education (CLE, International) Colorado Wetlands Conference. September 18, 2000. Denver, Colorado.

#### **AWARDS:**

- Colorado Landscape Contractors Award, Sand Creek Enhancement Project - 2000
- Colorado Landscape Contractors Award, Skylark Creek Restoration Project - 1998
- Colorado American Society of Landscape Architects, Research, and Communications - 1997
- Texas American Society of Landscape Architects Honor Award - 1995
- Texas A&M Landscape Architecture Faculty Award - 1995

#### **PROFESSIONAL ASSOCIATIONS:**

- Town of Erie, Colorado Open Space and Trails Advisory Board (OSTAB) - As a former member and chair of the Town of Erie Open Space and Trails Advisory Board (OSTAB), Mr. Dauzvardis routinely collaborated with Town Administrator, Community Planning, Public Works, and Parks and Recreation Directors and Staff, and advised the Board of Trustees on all matters related to the goals, objectives, prioritization, acquisition, conservation, and the management of open space and trails throughout a 49-square mile planning area. Jon's 8-year experience on the OSTAB translates to an intimate knowledge of public processes.
- Society of Wetland Scientists (SWS)