WETLAND DELINEATION

Big Bend
(Jordan River Floodplain)
7800 S. to 9000 S. (approx. 800-1000 W.)
West Jordan, Utah

Section 2 T3S. R1W.

January 14, 2013
(Revised April 4, 2013)

Prepared for:

Utah Reclamation Mitigation and Conservation Commission
230 South 500 East
Salt Lake City, Utah 84102-2045

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Summary

Applicant – Utah Reclamation Mitigation and Conservation Commission (URMCC).

Property owner(s) – West Jordan City, US Federal Government, Utah Power & Light

Project Area – Approximately 80 acres.

Location – Primarily within Section 2, T3S. R1W. – 7800 to 9000 S. and 800 to 1000 W. West Jordan, Utah.

Directions – From I-15 at 9000 S. go west ¾ miles to the power substation entrance on the north side (700 ft. west of the river). The project is west and north of the substation.

Delineation method - The delineation was conducted according to the guidelines and procedures outlined in the US Army Corps of Engineers' *Wetlands Delineation Manual* (Technical Report Y-87-1) and the *2008 Arid West Regional Supplement*.

Existing field conditions – The project site is within the historic river valley which is now several feet above the active floodplain. Much of the project area has been irrigated intermittently for many years. Irrigation water is drawn from the North Jordan Canal west of the site and flows east/northeast across the site to the Jordan River on the east border of the project area. The historic river channel was realigned in the early 1950's to make room for Sharon Steel tailings ponds. This river segment is now known as Big Bend. South of the bend there are three square excavations, now the lowest areas on the site.

Vegetation – The most common species in uplands are Western Wheatgrass *(Pascopyrum smithii)* Slender Wild Rye *(Elymus trachycaulus)* Cheatgrass/Downy Brome *(Bromus tectorum)* Tall Wheatgrass *(Thinopyrum ponticum)* Kentucky Bluegrass *(Poa pratensis)* Coastal Salt Grass *(Distichlis spicata)* and Russian Olive *(Elaeagnus angustifolia).* The riverine floodway bordering the river bend is primarily vegetated with Tamarisk *(Tamarix chinensis)* Russian Olive *(Elaeagnus angustifolia)* and Fuller's Teasel *(Dispacus fullonum).* Where irrigation water ponds intermittently, dominant species include Red Goosefoot *(Chenopodium rubrum)* and Annual Ragweed *(Ambrosia artemisiifolia)*.

Soils – Soils throughout the site are silty clay loams most commonly with colors of 10YR 3/1 or 3/2 over 10YR 4/1 or 5/2 and no mottles. Point 8 is an exception with a color of 10YR 5/2 from the surface to at least 18 inches. Point 5 located inside one of the excavations, has sand with mottles. This is a historic riverine deposit and NRCS classifies the area nearest the river as mixed alluvium (Mu). The remainder of the site is Magna, Chipman and Bramwell (Mc/Ck/Bt) silty clay. All are classified as floodplain hydric soils but flooding no longer occurs in this area.

Hydrology – Depth to groundwater is typically greater than 3 feet below the surface except in the square excavations dug to approximately 3-5 feet below grade. The high water elevation of a 10-year flood event would produce standing water in two of these excavations. The 2-year flood level is below the bottom of the excavations. Aerial photographs show surface water at irrigation ditches, in the square excavations and in areas that are naturally slightly low. This is evident in an October, 2, 2011 photo which suggests irrigation flows are capable of saturating all of the low areas. High flows were released from Utah Lake throughout 2011 and were around the 2-year flood elevation. High flows may have contributed to prolonged ponding of irrigation water.

Wetland boundary justification – Based on hydrology data, documented evidence of irrigation, and soils largely lacking hydric indicators, no natural wetlands were identified on the site.

Potential navigable water or commerce connection – The Jordan River is a navigable water.

Wetland vegetation demonstrated to be present solely due to irrigation – Areas predominantly vegetated with wetland species are irrigated. They lack indicators of wetland soils or hydrology and would not exist in the absence of irrigation.

Natural wetlands/waters that appear to be isolated – No natural wetland present.

Acreage of wetlands and waters of the U.S. – Wetlands = 0.07 acres (small NW area at 7800S.). Open water = 0.5 acres (Jordan River including riverine floodway).

1. INTRODUCTION

This wetland delineation was conducted for the Utah Reclamation Mitigation and Conservation Commission (URMCC) on a portion of the Jordan River known as Big Bend located in West Jordan, Utah (Figure 1, Appendix A). The project area is approximately 80 acres, most of which is located north of a power substation on the north side of 90th South. There are also two separate small areas included in the project. On is a 0.4- acre area on the south side of 90th South and the other is a 2-acre area on the south side of 78th South (Figure 2, Appendix A). The purpose of this project was to delineate potentially jurisdictional wetlands and waters of the US as defined by Section 404 of the Clean Water Act (CWA).

The US Army Corps of Engineers (USACE) and the US Environmental Protection Agency (EPA) define wetlands as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Saturated soil conditions are further described as saturated to the surface at some time during the normal growing season.

2. SITE DESCRIPTION / EXISTING CONDITIONS

The project site is within the historic river valley which is now several feet above the active floodplain. Much of the project area has been irrigated for many years. Irrigation water is drawn from the North Jordan Canal west of the site and flows east/northeast across the site to the Jordan River. The site has been grazed by livestock. Cattle are most consistently in the west and northern parts on the non-federal land. On-site data was collected November 23-24, 2012 and supplemental data was collected April 3, 2013 to document spring season conditions. The site was free of snow and only slightly moist from recent precipitation. The approximate elevation is 4300 feet. The USGS 7.5 minute topographic map is included as Figure 1 in Appendix A to depict the general area location and provide basic topography.

Realignment and channelization activities increased channel depth and steepened channel slopes inducing bed and bank erosion and channel degradation *(Huffman & Carpenter, 2000).* Review of historical aerial photographs from 1937 – 1999 indicates as early as 1937 human activities, including Sharon Steel waste impoundments, altered the natural floodplain and the main channel migrated within a narrow meander belt of approximately 100 meters (330 ft.). However, abundant flood channels were evident in the 1937 aerial photo. The river channel was realigned in the early 1950's to make room for Sharon Steel tailings ponds. Standing water in former channels in the 1965 photo suggests the river had not yet significantly down cut. The channel was down cut and widened to approximately its current configuration during high flows in the 1980's. Point bars formed in the 1980's had revegetated by 1999 *(Huffman & Carpenter, 2000).* The realigned river segment south of Sharon Steel is now known as Big Bend. South of the bend there are three square excavations, now the lowest areas on the project site.

3. DELINEATION METHOD

This delineation was conducted according to the guidelines and procedures outlined in the US Army Corps of Engineers' *Wetland Delineation Manual (USACE, 1987)* and the *2008 Arid West Regional Supplement (USACE, 2008)*. The examination for wetlands was based on three parameters: vegetation, soils, and hydrologic features. At each data point, all of these parameters must exhibit wetland characteristics for that point to be within the wetland boundary. All areas that appeared to be potential wetlands were examined. Data was collected from wetland areas as necessary to generally characterize the wetland features.

Dominant vegetation species were identified at each data point. Percent cover for dominant species in each strata was noted based on visual estimation within a plot size representative of the data point. The sizes and shapes of plots can vary, as appropriate, to adapt to topography or other site conditions. They are typically a radius of 10 to 30 feet unless otherwise noted. The 50/20 dominance test was used by combining dominant species across strata and applying the dominance test to the combined list. Dominants are the most abundant species that individually or collectively account for more than 50 percent of the total coverage of vegetation in the stratum, plus any other species that, by itself accounts for at least 20 percent of the total. If two or more dominant species are equal in coverage they are all considered to be dominants. Each species was assigned a rating as to wetland status based on the National Wetland Plant List, version 2.4.0 *(Lichvar & Kartesz, 2009)* and using the U.S. Army Corps of Engineers, Arid West Final Draft Ratings List, published June, 2012. If more than 50 percent of the dominant plant species had a wetland indicator status (obligate [OBL], facultative wetland [FACW], or facultative [FAC]) the sample point met the criteria for wetland vegetation based on dominance. Each dominant species is treated equally. Thus, a plant community with seven dominant species across all strata would need at least four dominant species that are OBL, FACW, or FAC to be considered hydrophytic by this indicator. If the vegetation dominance test failed to meet the criteria, but soil and hydrology criteria were met at the data point, then a test of prevalence of wetland vegetation was calculated. If this test met qualifying conditions (an end calculation equal to or less than 3), the criteria for wetland vegetation was met based on prevalence and recorded on the data sheet. Data point locations and upland/wetland boundaries are presented on the Wetland Map (Figure 2, Appendix A). Vegetation at each data point, along with the estimation of cover for each species, is listed on the data forms included in Appendix B.

Soils were examined for hydric characteristics by digging a hole to approximately 18 inches (or as necessary to evaluate soil characteristics relevant to hydric conditions). Soil moisture, texture and color were observed, and any evidence of high organic content, redoximorphic features/mottles, gleyed matrix or other hydric indicators were noted. Soils were moistened and compared to *Munsell Color Charts (Macbeth, 1990)* for determination of value, chroma and hue. If soil characteristics fit those described as hydric indicators in the *Field Indicators of Hydric Soils in the US, Version 7.0 (NRCS, 2010)* the criteria for hydric soils was met and recorded on the data sheet.

Depth to groundwater and saturated soil within the excavated pit were documented after waiting an appropriate time to allow groundwater to reach a static level. These two features were considered the most significant indicators of the hydrologic condition taking into account irrigation and seasonal influences. If these features failed to indicate wetland hydrology (defined as seasonally or permanently saturated within the upper 12 inches) additional primary and secondary indicators were considered (sediment deposits, water marks, drainage patterns, etc.). If at least one primary, or two secondary, indicators were observed, the criteria for wetland hydrology was met and recorded on the data sheet.

Data points meeting all three parameters for classification as a wetland were mapped within the wetland boundary. The boundary line typically is positioned around areas with vegetation similar to the representative wetland data points. In some cases obvious and distinct changes in vegetation and/or topography are present and the wetland boundary follows these changes. In areas where these changes are not distinct, the wetland boundary is generally placed within an area where the plant species mix grades to a predominance of upland vegetation.

4. FIELD SURVEY RESULTS

Field data were collected November 23-24, 2012 and supplemental data was collected April 3, 2013 to document spring season conditions. Observations were recorded on attached data sheets (Appendix B). The extent of wetlands was determined based on broad observations of existing site conditions as well as specific vegetation, soils and hydrology data from each sample location. The locations of the data points are shown on the Wetland Map included as Figure 2 in Appendix A.

4.1. Vegetation

The most common species in uplands are Western Wheatgrass (Pascopyrum smithii) Slender Wild Rye (Elymus trachycaulus) Cheatgrass/Downy Brome (Bromus tectorum) Tall Wheatgrass (Thinopyrum ponticum) Kentucky Bluegrass (Poa pratensis) Coastal Salt Grass (Distichlis spicata) and Russian Olive (Elaeagnus angustifolia). The riverine floodway bordering the river bend is primarily vegetated with Tamarisk (Tamarix chinensis) Russian Olive and Fuller's Teasel (Dispacus fullonum). Where irrigation water ponds intermittently dominant species include: Red Goosefoot (Chenopodium rubrum) and Annual Ragweed (Ambrosia artemisiifolia). There are also small patches of dead Bulrush and Cattail. Common and dominant species found on site and their wetland status are listed in Table 1.

Table 1

Common Plant Species

Scientific Name	Common Name	Indicator Status**
Wetland Species		
Chenopodium Rubrum	Red Goosefoot	FACW
Dipsacus fullonum	Fullers Teasel	FAC
Distichlis spicata	Coastal Salt Grass	FAC
Elaeagnus angustifolia	Russian-Olive	FAC
Eleocharis palustris	Common Spike-Rush	OBL
Hordeum jubatum	Fox-Tail Barley	FAC
Juncus arcticus	Arctic Rush	FACW
Muhlenbergia asperifolia	Alkali Muhly	FACW
Pascopyrum smithii	Western-Wheat Grass	FAC
Phragmites australis	Common Reed	FACW
Plantago lanceolata	English Plantain	FAC
Poa pratensis	Kentucky Bluegrass	FAC
Salix exigua	Narrow-leaf Willow	FACW
Tamarix chinensis	Five-Stamen Tamarisk	FAC
Upland Species		
Ambrosia artemisiifolia	Annual Ragweed	FACU
Bromus tectorum	Cheatgrass	NA
Cirsium vulgare	Bull Thistle	FACU
Elymus trachycaulus	Slender Wild Rye	FACU
Grindelia squarrosa	Curly-Cup Gumweed	FACU
Populus fremontii	Freemont Cottonwood	NA
Taraxacum officinale	Common Dandelion	FACU
Thinopyrum ponticum	Tall Wheatgrass	NA

** Wetland indicator status – National Wetland Plant List, Arid West Final Draft Ratings, 2012
OBL – plants that always occur in standing water or in saturated soil
FACW – plants that nearly always occur in areas of prolonged flooding or require standing water or saturate soils but may, on rare occasions, occur in non-wetlands
FAC – plants that occur in a variety of habitats, including wetland and mesic to xeric non-wetland habitats but often occur in standing water or saturated soils.
FACU – plants that typically occur in xeric or mesic non-wetland habitats but may frequently occur in standing water or saturated soils
UPL – plants that almost never occur in water or saturated soils
NA – not listed/not a wetland plant

4.2. Soils

Upland soils throughout the site are silty clay loams most commonly with colors of 10YR 3/1 or 3/2 over 10YR 4/2 or 5/2. Point 8 is an exception with a color of 10YR 5/2 from the surface to at least 18 inches. At all data points within the upper 18 inches of the natural ground surface there are no mottles or any other distinct indicators of hydric soils. Point 5 is located inside one of the excavations approximately 4 feet below the natural ground surface. This soil is sandy 10YR 3/2 0-10" over 10YR 5/2 10-18" with mottles below 10 inches. The mottles were likely formed at depth before significant channelization and down cutting occurred. Point 5 is within the area of historic riverine deposits classified by NRCS as mixed alluvium (Mu). This accounts for the sandy texture uncharacteristic of data points farther from the active channel. The mottles occur at an elevation 4-5 feet below the natural ground surface. Point S4 observed April, 2013 is within a more shallow excavation. Mottled here occur below 13 inches. At S5 water ponds on the surface after rain. This soil was found to be stiff clay over gravel over clay. In April the surface was saturated the day following a rain storm but the lower clay layer (14-18") was completely dry.

Some of the aerial photos in Appendix C show standing water at data points 6 and 7. Hydrology data indicates these are areas of ponded irrigation water. Soils at these locations are stiff clay with dark brown color (10YR 3/1) to at least 14 inches overlying a mixed matrix color of 10YR 3/1 & 4/1 to at least 20 inches. The 4/1 depleted matrix color accounts for less than 30% of the matrix. These conditions nearly meet hydric indicator A12 depleted matrix below dark surface requiring 2.5/1 over 4/1 and these soils are slightly different from soil in non-irrigated areas. The depleted matrix of an A12 indicator assumes that if there were mottling above the depleted layer they are not evident in the dark soil matrix. Mottling indicates the elevation of periodic wetting and drying at the upper limit of the water table. A constantly depleted matrix is at an elevation below the area of mottling. In this case, mottles were identified at approximately 4 feet below the natural ground surface in one of the square excavations. However, the development of a 4/1 color at data points 6 and 7 occurs at less than 20 inches below the surface. This is above the elevation of mottling and would not have developed at this elevation naturally. Given that a color of 4/2 is typical, and the 4/1 color is present in less than 30% of the matrix, prolong ponding of irrigation water may account for this developing color change.

The remainder of the site is within NRCS soil series Magna, Chipman and Bramwell (Mc/Ck/Bt) silty clay as depicted in the illustration below. All of these soil series are classified as floodplain hydric soils even though flooding no longer occurs in this area due to channelization and down cutting.

Salt Lake Area, Utah (UT612)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Bt	Bramwell silty clay loam, hardpan variant	4.4	1.2%
Ch	Chipman silty clay loam, 0 to 1 percent slopes	17.0	4.6%
Ck	Chipman silty clay loam, saline, sodic, 0 to 1 percent slopes	61.0	16.5%
Du	Dumps	21.2	5.7%
HfA	Hillfield loam, 0 to 1 percent slopes	75.4	20.3%
HtF2	Hillfield-Taylorsville complex, 6 to 30 percent slopes	33.8	9.1%
KdA	Kidman very fine sandy loam, 0 to 1 percent slopes	18.0	4.9%
Mc	Magna silty clay, 0 to 1 percent slopes	60.9	16.4%
Mu	Mixed alluvial land	63.1	17.0%
Sd	Sandy alluvial lands	2.6	0.7%
W	Water	13.3	3.6%
Totals for Area of Interest		**370.6**	**100.0%**

Warning: Soil Map may not be valid at this scale.

You have zoomed in beyond the scale at which the soil map for this area is intende soils is done at a particular scale. The soil surveys that comprise your AOI were ma design of map units and the level of detail shown in the resulting soil map are deper

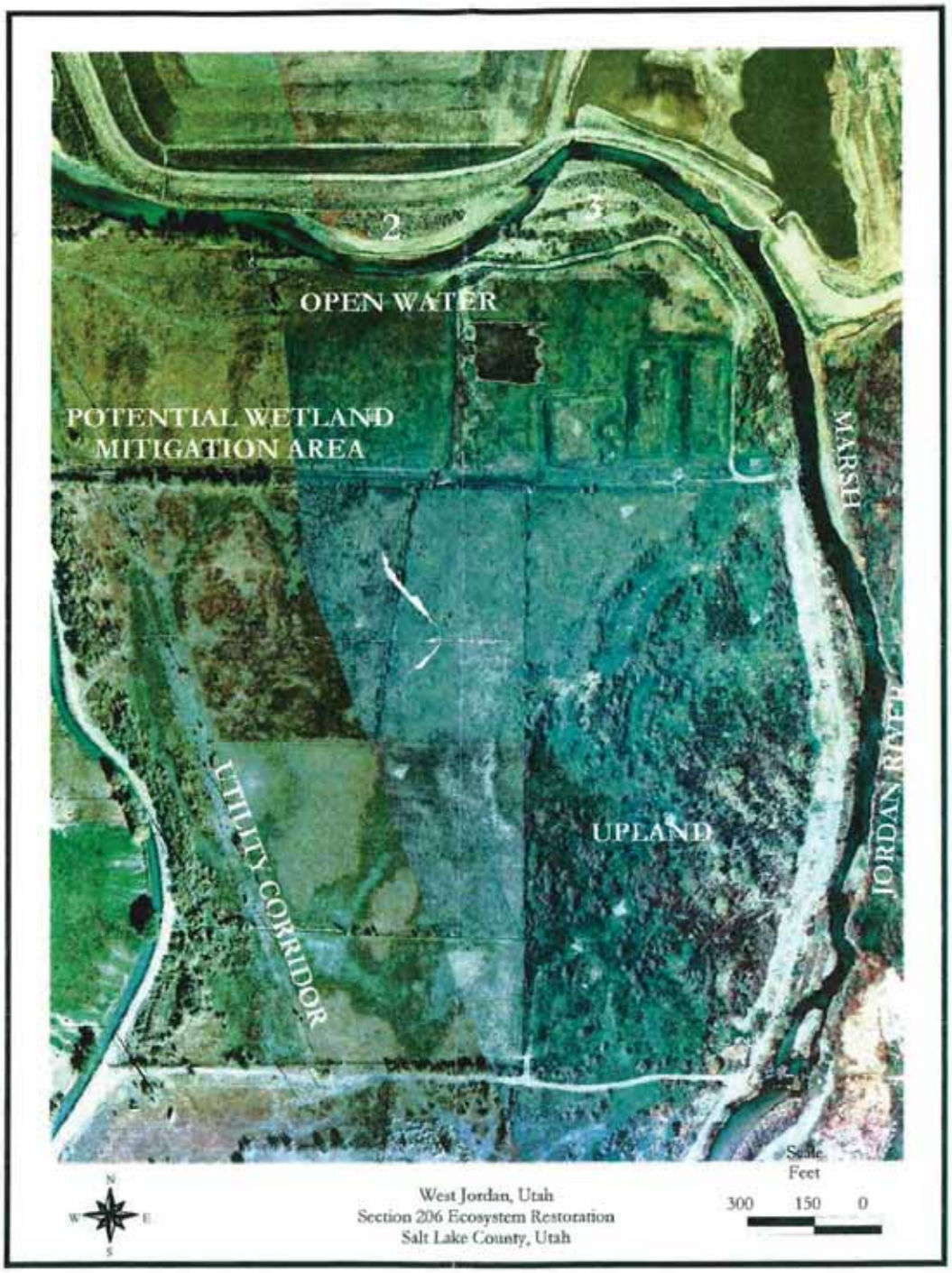
NRCS Soil Map – orange lines depict approximate boundary between soil units

4.3. Hydrology

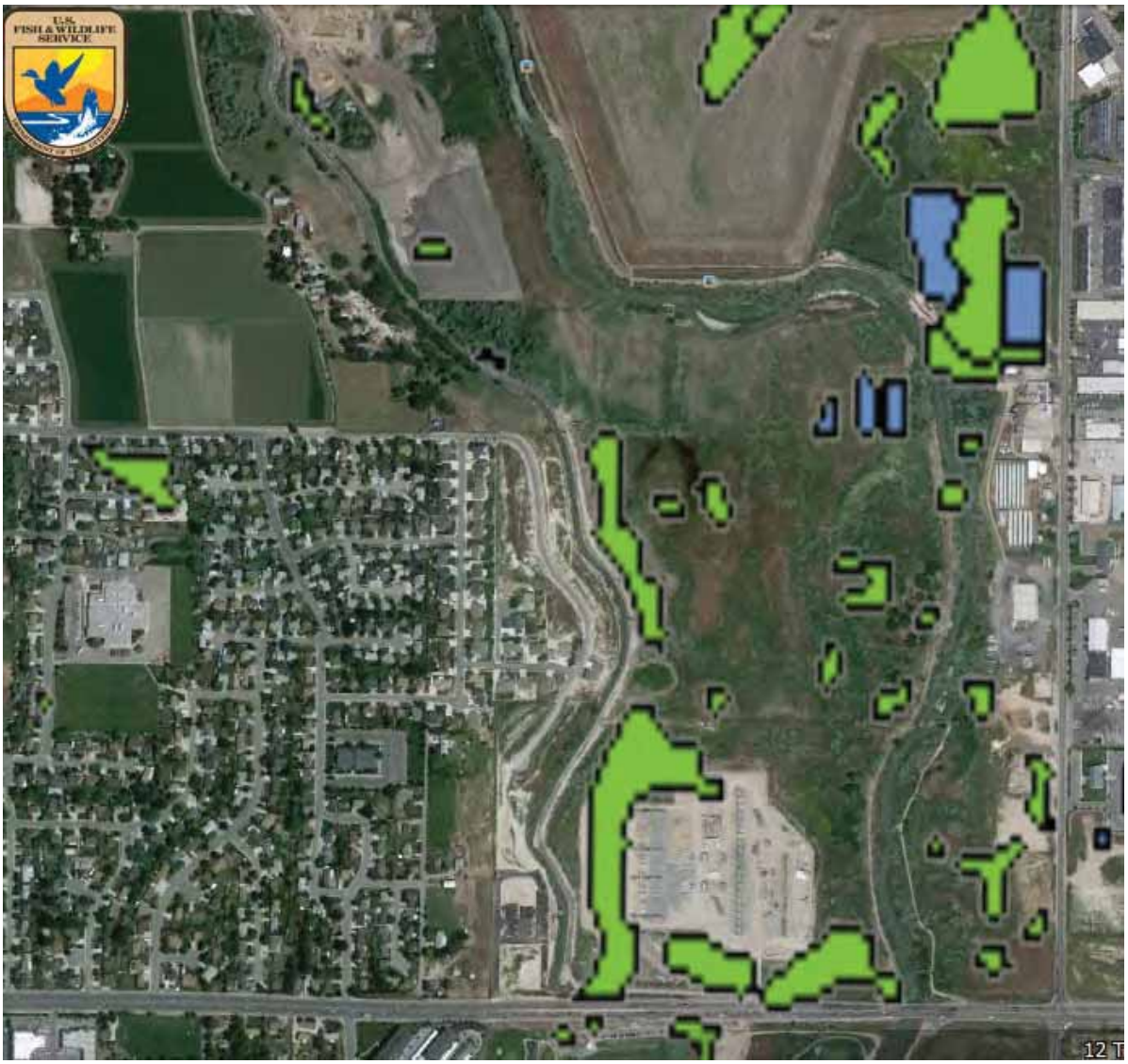
Depth to groundwater is typically greater than 3 feet below the surface except in the square excavations dug to approximately 3-5 feet below grade. The high water elevation of a 10-year flood event would produce standing water in two of these excavations. The 2-year flood level is below the bottom of the excavations. A cross section of topography and water surface elevations produced by Allred Restoration is included in Appendix C. No surface water was observed on site during field visits in November and April with the following three exceptions: 1) the Jordan River, 2) irrigation ditches and 3) a muddy area commonly driven through noted in data point S5. This location has tight clay on the surface that creates ponding even while subsoils are dry. The ponding is in the rutted area. Vegetation data was collected from adjacent to the mud hole but this vegetated area was not ponded.

Various aerial photographs show surface water at irrigation ditches, in the square excavations and in areas that are naturally low but well above the elevation of the square excavations. This is evident most recently in an October, 2, 2011 photo which suggests irrigation flows are capable of saturating all of the low areas showing up wet in various aerial photos. High flows were released from Utah Lake throughout 2011 and were around the 2-year flood elevation through September and early October. This does not account for surface water seen in the square ponds or the ponded channel but high flows may have contributed to prolonged ponding of irrigation water evident in the October 2, 2011 photo. Aerial photos from 1997, 2002, 2003, 2005, 2009, 2010 & 2011 are included in Appendix C.

The Huffman & Carpenter Technical Memo (2000) shows a project area larger than the project area of this report. The document notes a wetland delineation is attached, but the attachment is not available. However, the wetland map is included within the Technical Memo. The Huffman & Carpenter map shows no wetlands within the project area of this URMCC wetland delineation. It does show a square shaped area mapped as open water. The open water location is not in the obvious square excavations observed in 2012 and the field inspection found no evidence of this open water or a square depression. The aerial photos in Appendix C of this report also show nothing here after 2003 but there is a slight depression feature in the 1997-2003 photos where mapped as open water in 2000. The Huffman & Carpenter wetland map is presented on the following page.


2
3
OPEN WATER
POTENTIAL WETLAND
MITIGATION AREA
MARSH
JORDAN RIVER
UPLAND
UTILITY CORRIDOR
Scale
Feet
300
150
0
N
W
E
S
West Jordan, Utah
Section 206 Ecosystem Restoration
Salt Lake County, Utah

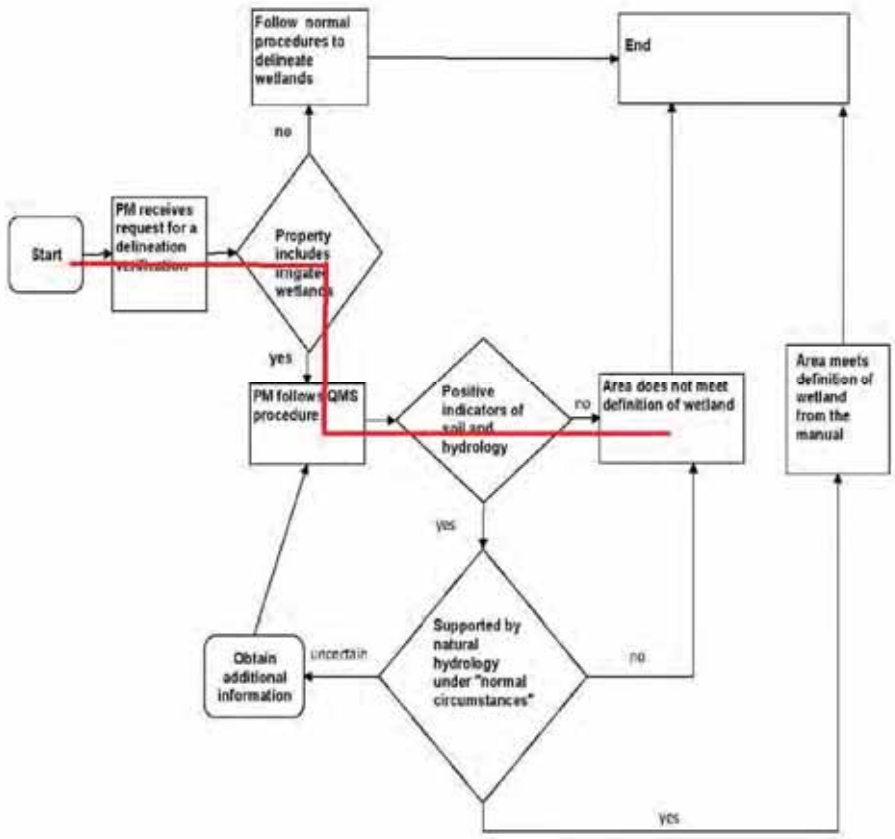
The US Fish and Wildlife Service (FWS) National Wetland Inventory (NWI) map shows several isolated areas of Palustrine Emergent Wetlands (PEMC) within the project area. Most of the NWI mapped wetlands do not correlate with observed site conditions or topographically low areas except for the excavated square ponds shown as open water. Areas of ponded irrigation water evident on aerial photos are (correctly) not depicted as wetlands on the NWI map.



USFWS National Wetlands Inventory Map on Google Earth Image 6/2010

Given that 1) the NWI map does not correlate with other wetland data, 2) the Huffman & Carpenter wetland delineation shows no wetlands,3) the elevation of the 2 year flood event is below the ground surface, and 4) there are no conclusive hydric soil indicators near the natural ground surface: Per Corps procedures for irrigated wetlands, this report concludes irrigated areas with qualifying wetland vegetation do not meet the soil and hydrology characteristics required for classification as wetlands.

Flow Chart - Delineation process for irrigated wetlands



5 CONCLUSIONS

Based on data collected November 23-24, 2012, the following conclusions are made:

Wetland boundary justification – Based on hydrology data, documented evidence of irrigation, and soils largely lacking hydric indicators, no natural wetlands were identified on the site.

Potential navigable water or commerce connection – The Jordan River is a navigable water.

Wetland vegetation demonstrated to be present solely due to irrigation – Areas predominantly vegetated with wetland species are irrigated. They lack indicators of wetland soils or hydrology and would not exist in the absence of irrigation.

Natural wetlands/waters that appear to be isolated – No natural wetlands present.

Acreage of wetlands and waters of the U.S. – Wetlands = 0.07 acres (small NW area at 7800 S.). Open water = 0.5 acres (Jordan River including riverine floodway).

6 REFERENCES

Huffman & Carpenter, 2000. *Task Two Technical Memo West Jordan Utah Section 206 Environmental Restoration.* Prepared for the City of West Jordan and the Army Corps of Engineers, July, 2000.

Lichvar, Robert W., and Kartesz, John T., 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC.

Macbeth, 1990. *Munsell Soil Color Charts.* Munsell Color, Gretag Macbeth, New Windsor, NY. 1990.

NRCS, 2011. Natural Resources Conservation Service (NRCS). *Field Indicators of Hydric Soils in the US, Version 7. National Hydric Soil List.* Available URL: http://soils.usda.gov/use/hydric/. Accessed: July 27, 2011.

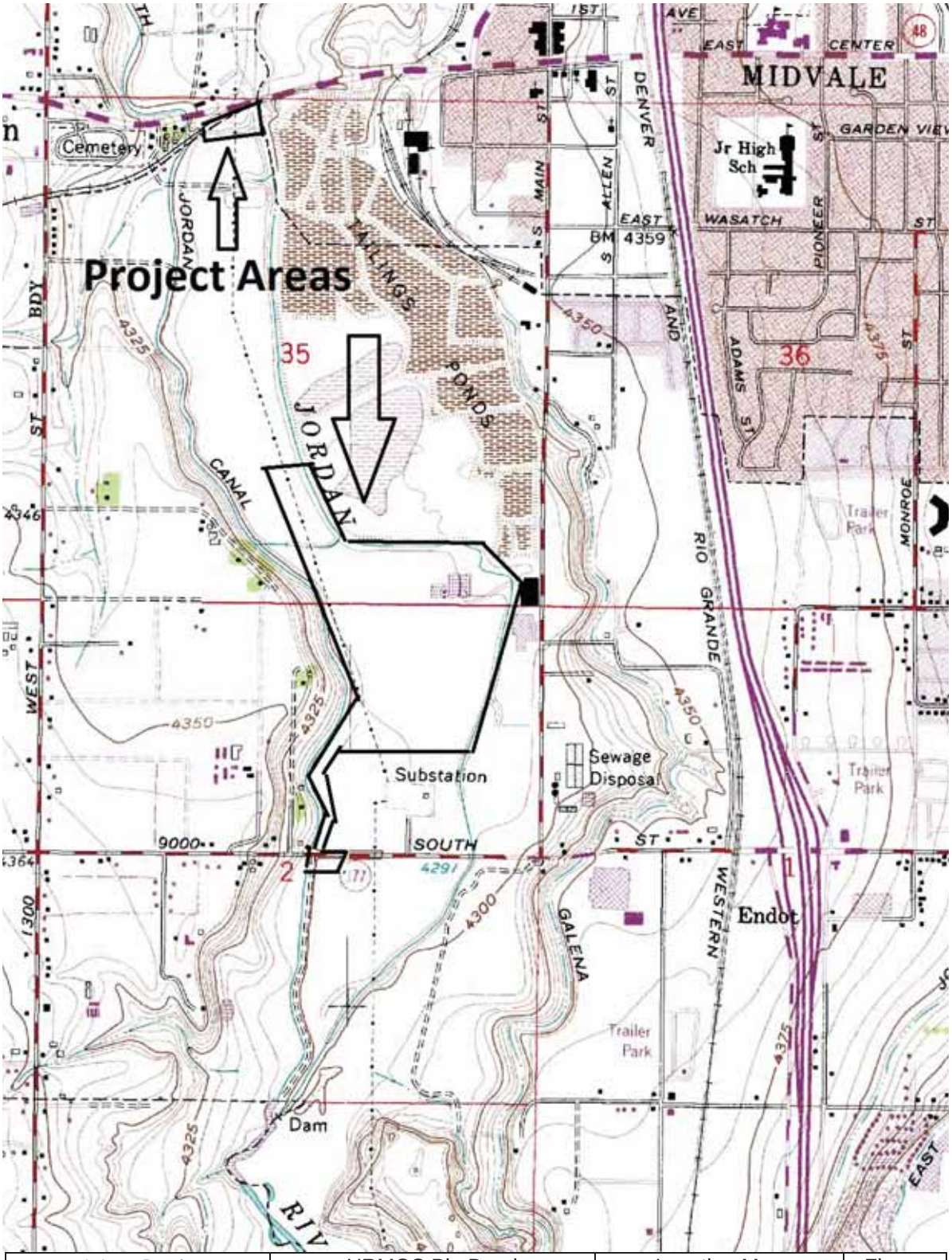
NRCS Web Soil Survey, accessed May 26, 2012, at www.websoilsurvey.nrcs.usda.gov.

USACE, 1987. U.S. Army Corps of Engineers (USACE) Environmental Laboratory. *Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S.* Army Engineer Waterways Experiment Station, Vicksburg, MS. Available URL: http://www.spk.usace.army.mil/organizations/cespk-co/regulatory/index.html

USACE, 2008. *Regional Supplement to the Corps of Engineers, Wetland Delineation Manual*: Arid West Region, (Version 2.0), Environmental Laboratory, September, 2008.

Appendix A

Maps



Wise Earth Wetlands & Soil Science	URMCC Big Bend Jordan River Restoration Site	Location Map	Figure
PO Box 980994	7800 S – 9000 S	USGS 7.5' Topo	1
Park City, Utah	800 W – 1000 W.		
(435) 901-1079	West Jordan, Utah	Sec 2 T3S R1W	1/2013

N

LEGEND

Data Points 1-15 Labels
text Labels
Project Area 83 ac
Areas
Wetlands (0.07 ac NW area)
Areas
Riverine/Floodway (0.5 ac)
Areas

0 >400 ft

Universal Transverse Mercator - Zone 12
Lon: 111°54'59" W
Lat: 40°35'55" N
Printed at: 4/11/2013

Wise Earth
Wetlands & Soil Science
PO Box 980994
Park City, Utah 84098
435-901-1079

WETLAND MAP

URMCC Jordan River
Restoration Project at Big Bend

Figure 2

Figure 3 - Map Book Key

Appendix B

Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 11/23/2012

Applicant/Owner: URMCC State: Utah Sampling Point: 1

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5874 Long: -111.9187 Datum: WGS84

Soil Map Unit Name: Chipman silty clay loam, saline, sodic (Ck) NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 _____	No X	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1. Elaeagnus angustifolia	5	yes	FAC
2.			
3.			
4.			
Total Cover:	5%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover:	%		
Herb Stratum			
1. Thinopyrum ponticum	40	yes	NA
2. Grindelia squarrosa	20	yes	FACU
3. Cirsium vulgare	20	yes	FACU
4. Phragmites australis	10		FACW
5.			
6.			
7.			
8.			
Total Cover:	90%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks:

SOIL

Sampling Point: 1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-18	10YR 4/2						Si C	this is likely fill

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X__ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** __X__

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

May receive runoff from adjacent golf tee. Slightly moist at time of observation.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 11/23/2012

Applicant/Owner: URMCC State: Utah Sampling Point: 2

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5908 Long: -111.9183 Datum: WGS84

Soil Map Unit Name: Chipman silty clay loam, saline, sodic (Ck) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 _____	No X	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1. Elaeagnus angustifolia	30	yes	FAC
2.			
3.			
4.			
Total Cover:	30%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover:	%		
Herb Stratum			
1. Thinopyrum ponticum	90	yes	NA
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	90%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks:

SOIL

Sampling Point: 2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 3/2						Si C	
12-18	10YR 3/2						C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X__ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** __X__

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

Dry soil, Clay layer slightly moist (all pits containing stiff clay were slightly moist at the time of the site inspection)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 11/23/2012

Applicant/Owner: URMCC State: Utah Sampling Point: 3

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5920 Long: -111.9172 Datum: WGS84

Soil Map Unit Name: Chipman silty clay loam, saline, sodic (Ck) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: This point is inside what appears to be an old detention area but there is no evidence of recent ponding or sedimentation and based on current topography it appears to have no drainage water source area.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1. Elaeagnus angustifolia	10	yes	FAC
2.			
3.			
4.			
Total Cover:	10%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover:	%		
Herb Stratum			
1. Juncus arcticus	20	yes	FACW
2. Hordeum jubatum	20	yes	FAC
3. Plantago lanceolata	20	yes	FAC
4. Poa pratensis	20	yes	FAC
5. Eleocharis palustris	10		OBL
6. Pascopyrum smithii	10		FAC
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks:

SOIL

Sampling Point: 3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-18	10YR 3/1						C	stiff clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X__ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** __X__

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

Slightly moist throughout (all pits containing stiff clay were slightly moist at the time of the site inspection)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 11/23/2012

Applicant/Owner: URMCC State: Utah Sampling Point: 4

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5933 Long: -111.9198 Datum: WGS84

Soil Map Unit Name: Chipman silty clay loam, saline, sodic (Ck) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 _____	No X	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: %			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover: %			
Herb Stratum			
1. Elymus trachycaulus	90	yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover: 90%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks:

SOIL

Sampling Point: 4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-11	10YR 3/2						Si C	
11-18	10YR 5/2						S	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X__ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** __X__

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

Slightly moist in clay layer

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 11/23/2012

Applicant/Owner: URMCC State: Utah Sampling Point: 5

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5953 Long: -111.9141 Datum: WGS84

Soil Map Unit Name: Mixed Alluvium (Mu) NWI classification: Open Warter

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: This point is in the bottom of an excavated area about 4 feet below the ground surface

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: %			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover: %			
Herb Stratum			
1. Chenopodium Rubrum	30	yes	FACW
2. Distichlis spicata	30	yes	FAC
3. Ambrosia artemisiifolia	20	yes	FACU
4. Hordeum jubatum	20	yes	FAC
5.			
6.			
7.			
8.			
Total Cover: 100%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	_____	x 1 = _____
FACW species	_____	x 2 = _____
FAC species	_____	x 3 = _____
FACU species	_____	x 4 = _____
UPL species	_____	x 5 = _____
Column Totals:	_____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks:

SOIL

Sampling Point: 5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-10	10YR 3/2						Si C	
10-18	10YR 5/2		10YR 3/4	5	C	M	S	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** **X***

Remarks: *The mottles here are at least 4 feet below the natural ground surface. They likely developed at depth when the river elevation fluctuated at this elevation before down cutting to its current level.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** **X**

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

River flow and elevation data shows the 2 year flood elevation would be about 1 foot below the bottom of this excavation. The 10 year event would pond in this area. This area has been flood irrigated in past years and aerial photos from several years show ponded water here. The area was reportedly not irrigated during 2012.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 11/23/2012

Applicant/Owner: URMCC State: Utah Sampling Point: 6

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5946 Long: -111.9164 Datum: WGS84

Soil Map Unit Name: Chipman silty clay loam, saline, sodic (Ch) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 _____	No X	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: This point is in a slightly low area where irrigation water ponds. This is evident in aerial photos

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: %			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover: %			
Herb Stratum			
1. Distichlis spicata	30	yes	FAC
2. Juncus arcticus	30	yes	FACW
3. Elymus trachycaulus	20	yes	FACU
4. Hordeum jubatum	10		FAC
5. Muhlenbergia asperifolia	10		FACW
6.			
7.			
8.			
Total Cover: 100%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks:

SOIL

Sampling Point: 6

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16	10YR 3/1						Si C	
16-18	10YR 3/1						C	stiff clay
18-22	10YR 3/1	80					C	stiff clay
	10YR 4/1	20						stiff clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** __X__

Remarks: This soil trends slightly to an A 12 description. However, if mottles are present at point 5 at 4 feet below the natural ground surface, this higher elevation soil likely is not trending lighter due to reduced conditions unless possibly due to irrigation which ponds at this location. (Normally mottling occurs at an elevation above the reduced layer). Also the 4/1 color is similar to natural upland colors in this area of 4/2 and 5/2.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X__ Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** __X__

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

Slightly moist below 18 inches (all pits containing stiff clay were slightly moist at the time of the site inspection)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 11/24/2012

Applicant/Owner: URMCC State: Utah Sampling Point: 7

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5944 Long: -111.9136 Datum: WGS84

Soil Map Unit Name: Magna silty clay (Mc) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: This point is in an obviously low area where irrigation water ponds. This is evident in aerial photos.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: %			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover: %			
Herb Stratum			
1. Chenopodium Rubrum	40	yes	FACW
2. Phragmites australis	20	yes	FACW
3. Juncus arcticus (dying)	20	yes	FACW
4. Ambrosia artemisiifolia	15		FACU
5. Schoenoplectus acutus (dead)	5		OBL
6.			
7.			
8.			
Total Cover: 100%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: The species most typically in stable wetlands are dying and being replaced by invasive species. This is likely because, according to the grazing leesee of the West Jordan property, there has been no irrigation here in 2012. Only the northwest corner of the West Jordan property has been irrigated this year.

SOIL

Sampling Point: 7

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14	10YR 3/1						Si C	
14-20	10YR 3/1	70					C	stiff clay
	10YR 4/1	30						stiff clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X__ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** __X__

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

Slightly moist below 18 inches (all pits containing stiff clay were slightly moist at the time of the site inspection)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 11/24/2012

Applicant/Owner: URMCC State: Utah Sampling Point: 8

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5928 Long: -111.9134 Datum: WGS84

Soil Map Unit Name: Mixed alluvium (Mu) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 _____	No X	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1. Populus fremontii	5	yes	NA
2. Elaeagnus angustifolia	5	yes	FAC
3.			
4.			
Total Cover:	10%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover:	%		
Herb Stratum			
1. Elymus trachycaulus	50	yes	FACU
2. Thinopyrum ponticum	30	yes	NA
3. Tamarix chinensis	20	yes	FAC
4.			
5.			
6.			
7.			
8.			
Total Cover:	100%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 % (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks:

SOIL

Sampling Point: 8

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16	10YR 5/2						LS	
16-20	10YR 5/2						LS	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X__ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** __X__

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

Dry

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 11/24/2012

Applicant/Owner: URMCC State: Utah Sampling Point: 9

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.6088 Long: -111.9223 Datum: WGS84

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 _____	No X	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: This point is adjacent to the mapped wetland which is in a small depression in the separated north section of the project area adjacent to 7800 South. The depression is 4 feet lower than this data point in a disturbed area. The depression is probably a manmade hole. The sample point appears to be at natural grade but also could be disturbed.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: %			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover: %			
Herb Stratum			
1. Bromus tectorum	60	yes	NA
2. Cirsium vulgare	30	yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover: 90%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: Also some other weeds and some patches of coyote willow.

SOIL

Sampling Point: 9

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12	10YR 5/2							possibly fill

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** __X__

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

Dry

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 11/24/2012

Applicant/Owner: URMCC State: Utah Sampling Point: 9b

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.6087 Long: -111.9222 Datum: WGS84

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No X	**Is the Sampled Area Within a Wetland?** **Yes X** **No _____**
Hydric Soil Present?	Yes X	No X	
Wetland Hydrology Present?	Yes X	No X	

Remarks: This point is adjacent to the mapped wetland which is in a small depression in the separated north section of the project area adjacent to 7800 South. The depression is 4 feet lower than this data point in a disturbed area. The depression is probably a manmade hole. The sample point appears to be at natural grade but also could be disturbed.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: %			
Sapling/Shrub Stratum			
1. Salix exigua	40	yes	FACW
2.			
3.			
4.			
Total Cover: 40%			
Herb Stratum			
1. Phragmites australis	60	yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover: 60%			
Woody Vine Stratum			
1.			
2.			
Total Cover: _____			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	_____	x 1 = _____
FACW species	_____	x 2 = _____
FAC species	_____	x 3 = _____
FACU species	_____	x 4 = _____
UPL species	_____	x 5 = _____
Column Totals:	_____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X** **No _____**

Remarks: .

SOIL

Sampling Point: 9b

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** __X__ **No** ____

Remarks: No soil data – site is inundated

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes __X__ No ____ Depth (inches): _____

Water Table Present? Yes ____ No ____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): _____

Wetland Hydrology Present? **Yes** __X__ **No** ____

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

Dry

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 4/3/2013

Applicant/Owner: URMCC State: Utah Sampling Point: 10

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5933 Long: -111.9174 Datum: WGS84

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Rain yesterday

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: %			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover: %			
Herb Stratum			
1. Juncus arcticus	30	yes	FACW
2. Poa pratensis	30	yes	FAC
3. Elymus trachycaulus	30	yes	FACU
4. Taraxacum officinale	5		FACU
5. Plantago lanceolata	5		FAC
6.			
7.			
8.			
Total Cover: 100%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	_____	x 1 = _____
FACW species	_____	x 2 = _____
FAC species	_____	x 3 = _____
FACU species	_____	x 4 = _____
UPL species	_____	x 5 = _____
Column Totals:	_____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks:

SOIL

Sampling Point: 10

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-8	10YR 2/2						C	
8-16	10YR 3/1						C	
16-18	10YR 3/1	70					C	
	10YR 4/1	30					C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X__ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** __X__

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

Dry to slightly moist

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 4/3/2013

Applicant/Owner: URMCC State: Utah Sampling Point: 11

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5943 Long: -111.9165 Datum: WGS84

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Rain yesterday Topo low spot near data point 6 – formerly irrigated

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: %			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover: %			
Herb Stratum			
1. Juncus arcticus	80	yes	FACW
2. Thinopyrum ponticum	5		NA
3. Taraxacum officinale	5		FACU
4.			
5.			
6.			
7.			
8.			
Total Cover: 90%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks: Also trace of Russian Olive and herbaceous plants

SOIL

Sampling Point: 11

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-18	10YR 3/1						L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No __X__

Remarks: slightly mixed with 4/1 below 15”

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X__ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No __X__

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

Dry to slightly moist

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 4/3/2013

Applicant/Owner: URMCC State: Utah Sampling Point: 12

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5946 Long: -111.9133 Datum: WGS84

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 _____	No X	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Rain yesterday Topo low spot near data point 7 formerly irrigated

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: %			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover: %			
Herb Stratum			
1. Ambrosia artemisiifolia	30	yes	FACU
2. Phragmites australis	30	yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover: 60%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	_____	x 1 = _____
FACW species	_____	x 2 = _____
FAC species	_____	x 3 = _____
FACU species	_____	x 4 = _____
UPL species	_____	x 5 = _____
Column Totals:	_____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** _____ **No** X*

Remarks: *Also dead bulrush *(Schoenoplectus acutus)* This area has long been ponded with irrigation water based on aerial photos.

SOIL

Sampling Point: 12

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-5	10YR 3/2						CL	
5-18	10YR 3/1						CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X__ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** __X__

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

Dry

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 4/3/2013

Applicant/Owner: URMCC State: Utah Sampling Point: 13

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5947 Long: -111.9134 Datum: WGS84

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Rain yesterday This point is near # 7 & 13 but on higher ground (about 2' higher)

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: %			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover: %			
Herb Stratum			
1. Pascopyrum smithii	80	yes	FAC
2. Taraxacum officinale	10		FACU
3. Juncus arcticus	5		
4. unknown herbaceous	5		
5.			
6.			
7.			
8.			
Total Cover: 100 %			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks:

SOIL

Sampling Point: 13

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-11	10YR 3/1						CL	
11-18	10YR 5/1						SC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X__ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** __X__

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

Dry

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 4/3/2013

Applicant/Owner: URMCC State: Utah Sampling Point: 14

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5959 Long: -111.9149 Datum: WGS84

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 _____	No X	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Rain yesterday. This area is a shallow excavation square shaped. It shows up full of water in previous report approx.. year 2000. That water source was irrigation from ditch to the south.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1. Elaeagnus angustifolia	5	yes	FAC
2.			
3.			
4.			
Total Cover:	5%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover:	%		
Herb Stratum			
1. Poa pratensis	20	yes	FAC
2. Cirsium (vulgare?)	20	yes	FACU
3. unknown grass*	20	yes	
4. unknown aster	10		
5.			
6.			
7.			
8.			
Total Cover:	70%		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: Unknown grass is probably a wheatgrass. Thistle could be scotch thistle – in any case, it doesn't appear to be a wetland species (tall)

SOIL

Sampling Point: 14

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-13	10YR 3/2						C	
13-18	10YR 4/2		10YR 4/6	3	C	M	C	Relic mottles?

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** __X__

Remarks: Possibly excavated far enough that naturally deeper mottles are near the surface, but this area is quite high above the river. Perhaps this is a relic feature.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X__ Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** __X__

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

Dry

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: URMCC Jordan River at Big Bend City/County: Salt Lake County Sampling Date: 4/3/2013

Applicant/Owner: URMCC State: Utah Sampling Point: 15

Investigator(s): Harriet Natter Section, Township, Range: Section 2, T3S. R1W.

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <3

Subregion (LRR): D – Western Range & Irrigated Regions Lat: 40.5919 Long: -111.9164 Datum: WGS84

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area Within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Rain yesterday. See hydrology note

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: %			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
Total Cover: %			
Herb Stratum			
1. Distichlis spicata	40	yes	FAC
2. Elymus trachycaulus	30	yes	FACU
3. Poa pratensis	30	yes	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover: 100%			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks:

SOIL

Sampling Point: 15

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	10YR 3/2						C	
4-14	10YR 3/2						xgr C	extremely gravelly
14-18	10YR 3/2						C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
[3]Texture: O=organic, L=loam, S=sand, C=clay, Si=silt, Subgroups: g=gravely, c=cobbly, r=weathered bedrock, p=plowed, f=fill

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ 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)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Plowed Soils (C6)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No __X*__ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No __X*__

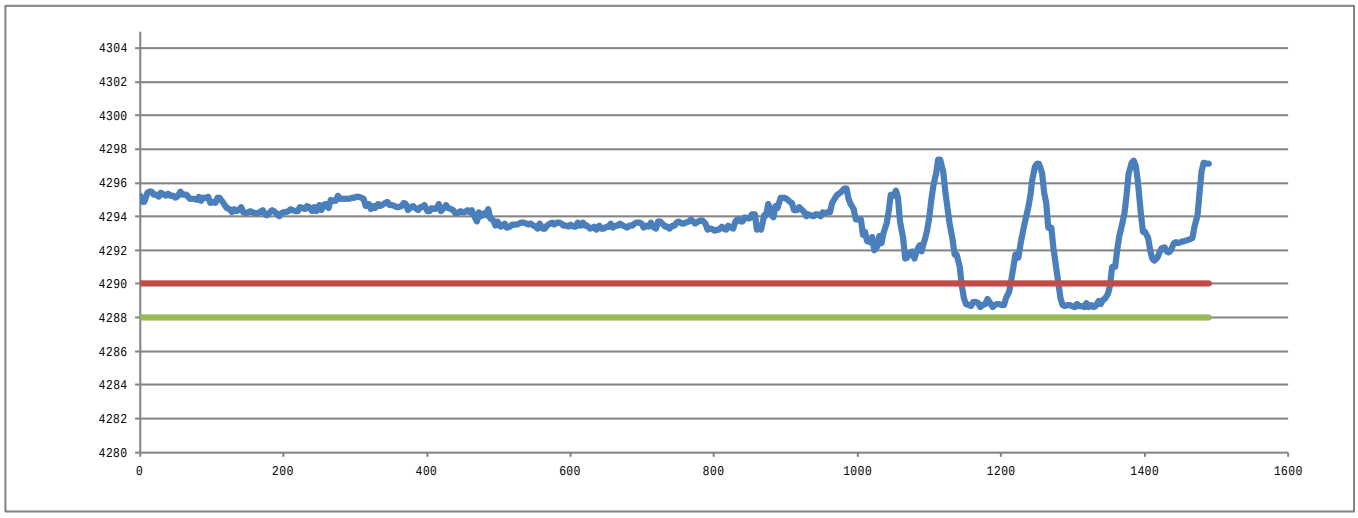
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

This point is adjacent to an area of bare soil heavily tracked by vehicles and obviously commonly ponded. The surface clay and clay/gravel layers were moist, the tracked surface was ponded in places and yet the subsoil was completely dry at 14 inches and below.

Appendix C

Hydrology Data & Aerial Photos

Aerial image showing the location of HEC-RAS cross sections for Alternatives 4 and 5. The cross section location highlighted in red was used to generate the cross section plot.



Cross section plot (blue) with water surface elevations of the 2-yr (green) and 10-yr (red) events.

Jordan River – Big Bend Aerial Photo History

10/2/2011

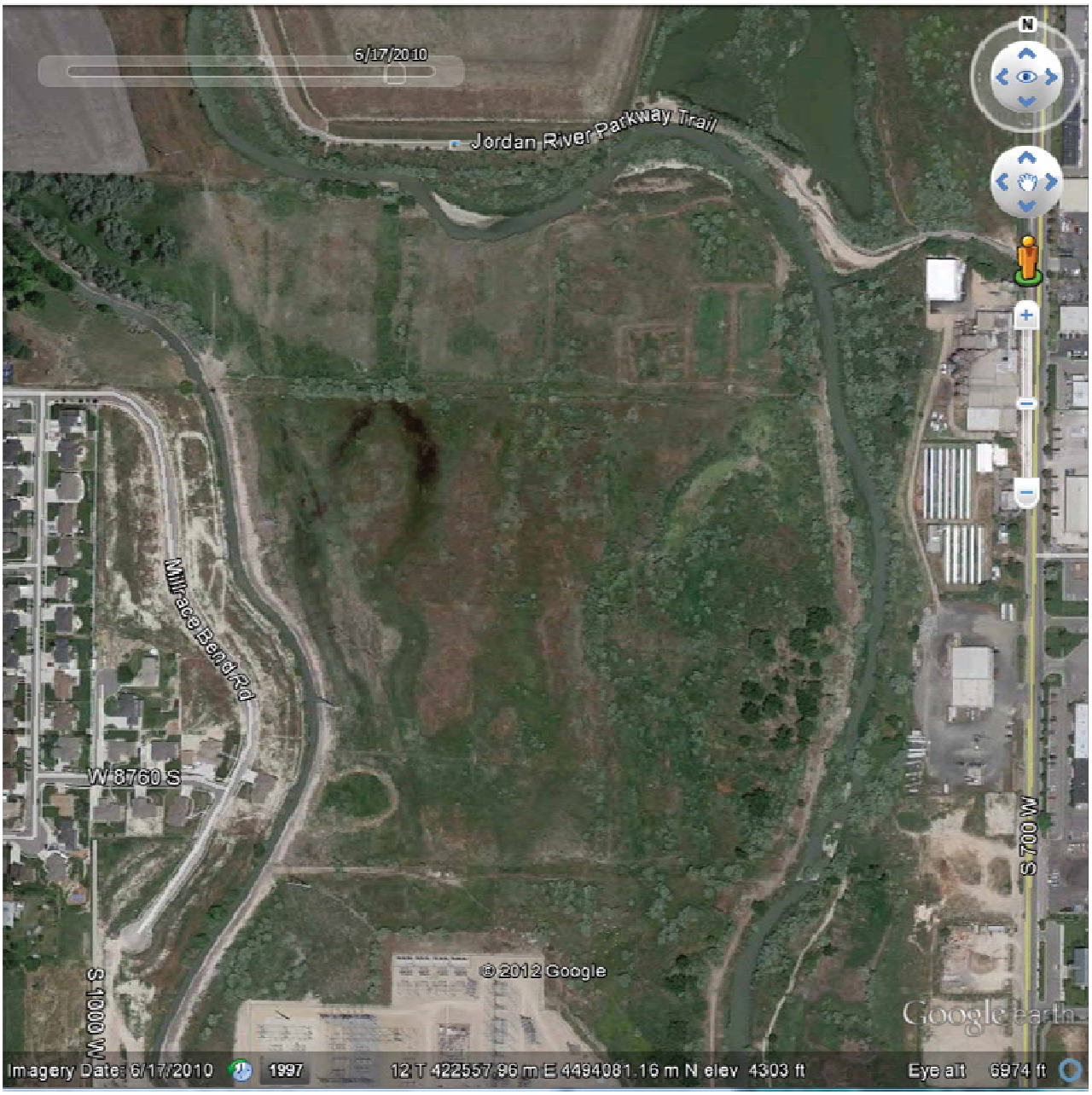
Water is evident in square ponds and the lowest (east) irrigated swale. The yellow line shows location of the main irrigation ditch that waters the federal land.

The leesee of the adjacent power company property said that the federal land was not irrigated in 2012. It was actively irrigated in recent years previous and more than 5 years ago it was only occasionally irrigated.

The areas showing wet on this 2011 photo were found to have very small patches of dead cattail and bulrush during the site inspection November, 2012. There was also bare ground and invasive upland species. Most likely the natural vegetation died during the year of standing water in 2011 and at the same time the small areas of cattail and bulrush were established. When the area returned to more typical drier conditions the cattail and bulrush died off and invasive species filled in the areas of bare soil left behind by the plant community that had drowned in 2011.

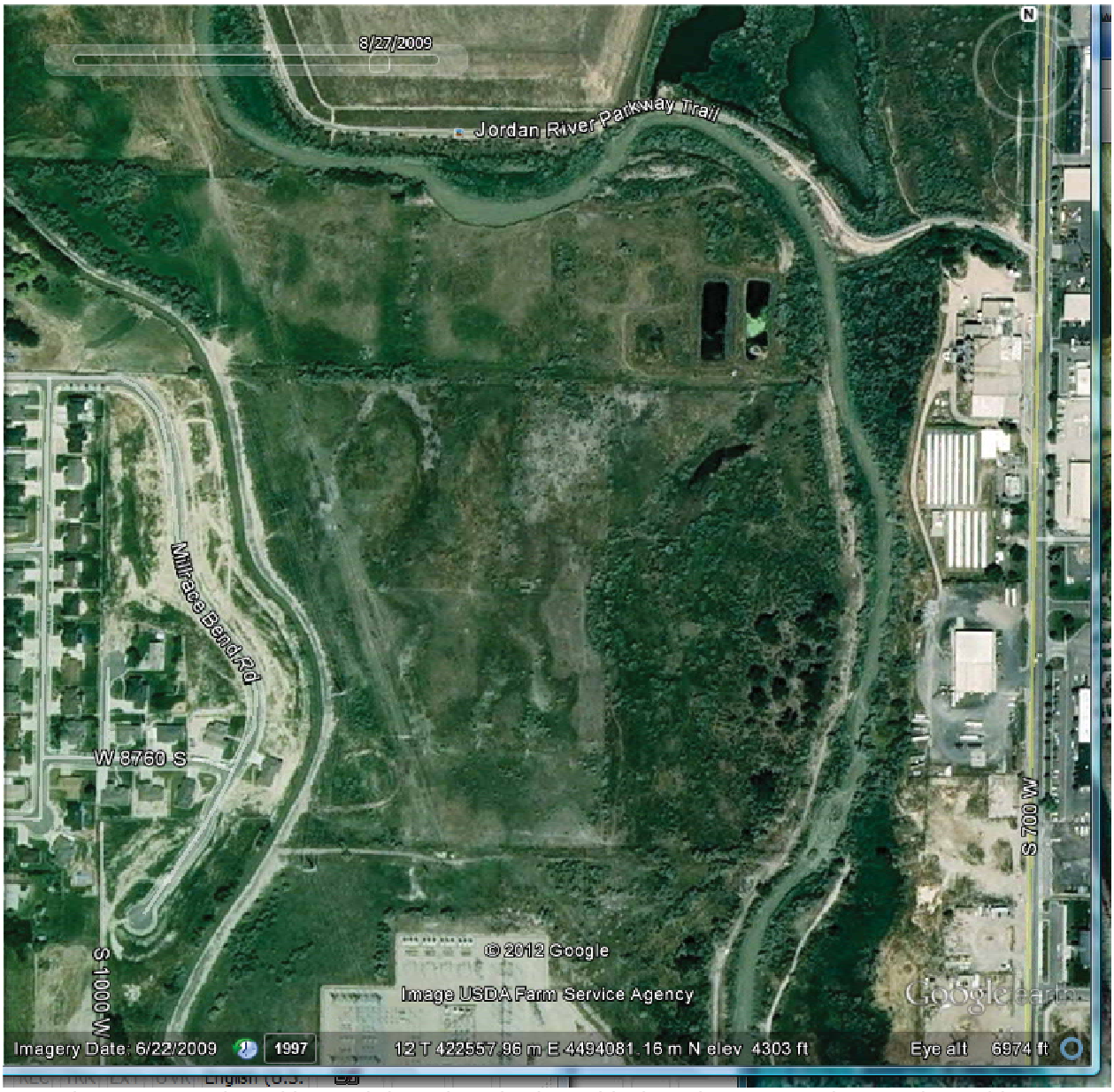
Soils were examined in the swale and in two of the square ponds as well as at data points throughout the site. Mottles were found below 10 inches in the square pond (data point 5). No other indicators of hydric soils were found throughout the site although the low areas have a somewhat darker surface soil color. Note there is also ponded irrigation water (black) in the upper left portion of this photo and a yellowish/gray color near the center of the photo may indicate saturated conditions. This yellow/gray irrigated area shows wet in the 2010 photo.

6/17/2010



If square ponds and lowest irrigated swale have water, the signature is different (green) from the black look of water in the irrigated channels near the west side.

8/27/2009



Water in square ponds and lowest irrigated swale shows black. Other saturated areas show white. These are greenish/gray in the 2011 photo.

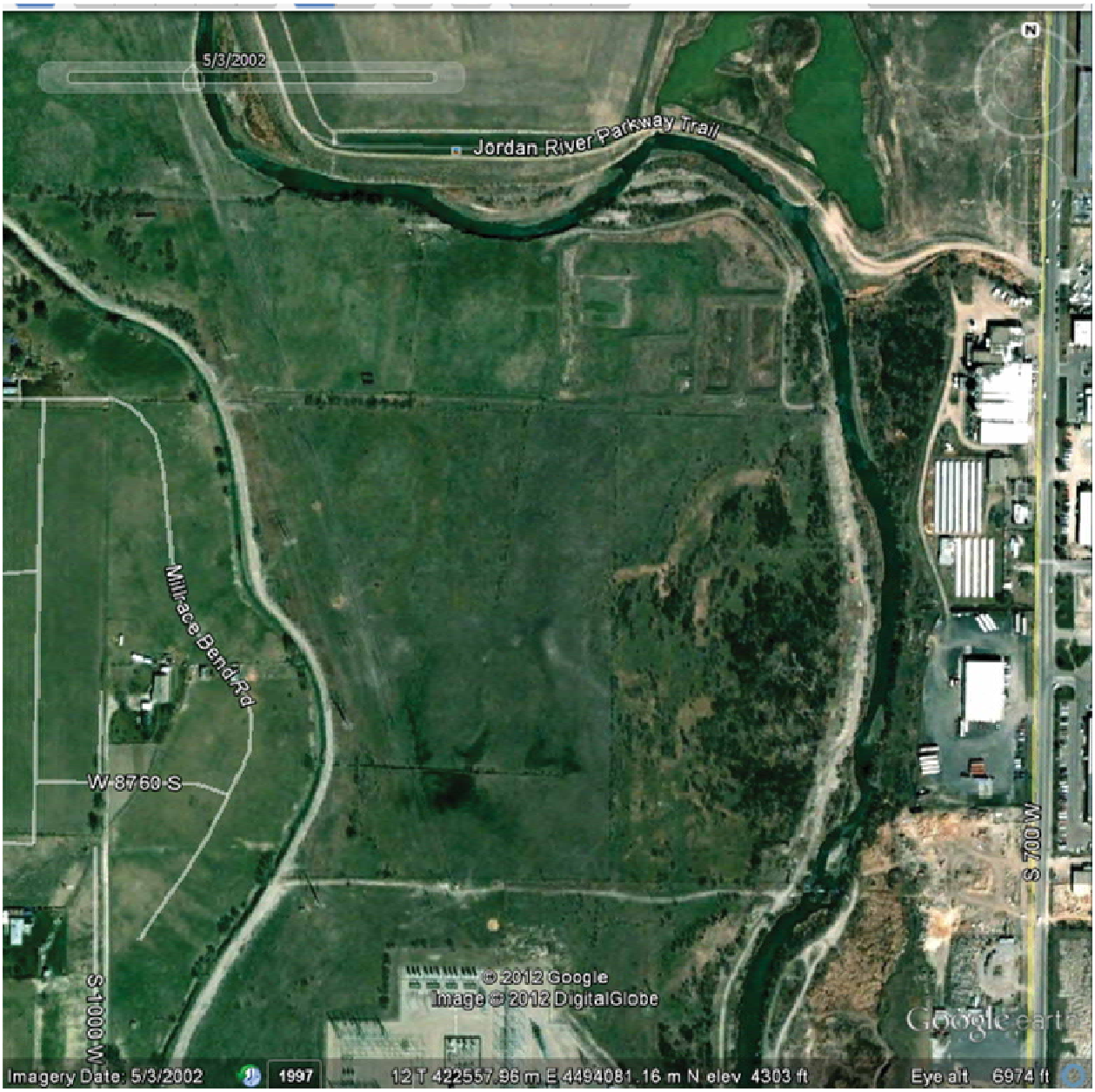
7/11/2005

All open water in this photo is black – It appears there was no irrigation water this year except in the upper left corner of the photo.

9/12/2003

This photo shows the north ditch was actively maintained watering much of the area north from the ditch. Note in the irrigated area there is slight evidence of a square pond with a light yellowish color which may indicate saturation. The water source is the functional ditch which apparently was not maintained in later years. Also note the south (federal) parcel was not irrigated. This may explain why the year 2000 delineation shows the NW irrigated square pond wet but not even any saturation in the others.

5/3/2002



The northwest square pond in this photo shows up exactly as mapped open water in the 2000 wetland map done by Huffman & Carpenter. The other square ponds are not noted as wet nor are any of the irrigated swales. The 3 irrigation discharge points off the main ditch on federal land are wet in this photo but the low swales are not. The water had likely recently been turned into the ditch initially ponding at the discharge points. In comparison, the 2010 photo likely shows irrigation water remaining ponded in low swales after the flow had been shut off.

10/3/1997

The NW square pond is also evident in this photo. The quality of the photo is not sufficient to comment on surface saturation.