SUPPLEMENTAL DELINEATION OF WETLANDS AND OTHER WATERS OF THE UNITED STATES

CIMARRON WIND ENERGY PROJECT – PHASE 1
GRAY COUNTY, KANSAS

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ACRONYMS AND ABBREVIATIONS

CPV	CPV Cimarron Renewable Energy Company, LLC
CWA	Clean Water Act
EO	Executive Order
˚F	degrees Fahrenheit
FACU	facultative upland
GIS	geographic information system
GPS	global positioning system
KDA	Kansas Department of Agriculture
met tower	meteorological tower
MW	megawatt
NCDC	National Climatic Data Center
NHD	National Hydrography Dataset
NI	no wetland indicator status
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWS	National Weather Service
NWP	Nationwide Permit
O&M	operations and maintenance
PEM	palustrine emergent
PPA	Power Purchase Agreement
Project	Cimarron Wind Energy Project – Phase 1
Tetra Tech	Tetra Tech EC, Inc.
TNW	traditional navigable waters
TVA	Tennessee Valley Authority
UPL	upland
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

1.0 INTRODUCTION

CPV Cimarron Renewable Energy Company, LLC (CPV) is developing plans to build the Cimarron Wind Energy Project – Phase 1 (Project) near the City of Cimarron in Gray County, Kansas. The Project will generate up to 165.6 megawatts (MW) of renewable energy for sale to the Tennessee Valley Authority (TVA) through a Power Purchase Agreement (PPA).

On behalf of CPV, Tetra Tech EC, Inc. (Tetra Tech) performed initial wetland delineations for the Project from September 22 to 28, 2009 with the purpose of guiding the Project design and layout to avoid and minimize impacts to federal jurisdictional resources (Tetra Tech 2010). Upon further refinement of the Project, Tetra Tech conducted additional routine, on-site wetlands delineations from April 30 to May 7, 2011 within the Project study corridor, the results of which were presented in the Delineation of Wetlands and Other Waters of the United States report (Tetra Tech 2011).

Since completion of the Delineation of Wetlands and Other Waters of the United States, CPV has made necessary modifications to the Project layout, which resulted in approximately 57.7 acres of new Project study corridor that had not been previously surveyed for wetlands. Therefore, this Supplemental Delineation of Wetlands and Other Waters of the United States was required of the approximately 57.7 acres of private land under easement agreement with CPV within the Project study corridor (Supplemental Survey Area) and presents the results of the September 28 to 29, 2011 on-site field verification and delineation of wetlands and other waters of the United States (U.S.). Project layout changes that comprise the Supplemental Survey Area include (Figure 1):

- A new substation and operations and maintenance (O&M) building location (to the south of the original substation location) in T25S R28W Section 24 = 10 acres;
- Relocated underground homerun collection lines in T25S R28W Section 24 and T25S R27W Sections 18, 19 and 20 = 33.8 acres;
- Circular set back areas around two existing transmission towers in T25S R27W Sections 18 and 16 = 11.4 acres;
- Laydown area extension = 1.5 acres; and
- Meteorological (met) tower spur road widening in T25S R27W Sections 9, 27 and 29 = 1 acre.

A comprehensive discussion of the Project, regulatory framework, methodology, and results of previous field delineations are presented in the original two reports (Tetra Tech 2010; Tetra Tech 2011). Purpose and Regulatory Framework including federal and state jurisdiction, as well as regional conditions, are unchanged from Section 1.2 of the original delineation report (Tetra Tech 2011).

2.0 SITE DESCRIPTION AND LOCATION

The proposed Project is located in Gray County in southwestern Kansas in Natural Resources Conservation Service (NRCS) Region 5 (Central Plains) and in NRCS Major Land Resource Areas 72 (Central High Tableland) and 73 (Rolling Plains and Breaks). All of Gray County lies within the Arkansas River Lowlands and High Plains Physiographic Provinces of Kansas (KGS 2008). The Supplemental Survey Area is situated on seven separate sections of land, as summarized in Table 1.

Table 1. Townships, Ranges, and Sections within the Supplemental Survey Area

Township	Range	Sections
25S	R27W	9, 16, 18, 19, 20, 27, 29
25S	R28W	24

The High Plains Physiographic Province is characterized by gently sloping topography, which is excellent for farming; the Arkansas River Lowlands province is defined by irregular hills and sand and gravel deposits which are evident in the extreme southern portion of the Project Area. Land use in the Supplemental Survey Area is characterized by farming and ranching and soils are variants of loams, silty loams, and silty clay loams.

Precipitation data from the National Weather Service Center for Dodge City, Kansas (the closest center with archived data, located approximately 12 miles southeast of the Project Area) were examined from the initial wetland delineation in September 2009, April and May 2011, and this supplemental delineation in September 2011 (NWS 2009; NWS 2011a, NWS 2011b). These data were compared to characterize the climate-sourced hydrology for the water resources examined during the survey periods. The Water Year in Kansas is the period measured from January 1 to December 31. Recent climate information is compared with normal, or average, climate information, based on records from the years 1971 to 2000 (NCDC 2000). Recent climate data available on-line for Dodge City are summarized as follows[1]:

- Normal Water-Year-to-Date:
  - through end of September 2009: 19.12 inches
  - through end of April 2011: 5.37 inches
  - through end of September 2011: 18.17 inches
- Observed Water-Year-to-Date:
  - as of September 22, 2009: 20.63 inches
  - as of April 30, 2011: 2.34 inches
  - as of September 28, 2011: 5.14 inches
- Water-Year-to-Date departure from normal:
  - September 2009: 1.51 inches above normal (or 8 percent above normal)
  - April 2011: 3.03 inches below normal (or 56 percent below normal)
  - September 2011: 13.03 inches below normal (or 71 percent below normal)
- Normal monthly precipitation:
  - September: 1.7 inches
  - April: 2.25 inches

[1] Totals are based on precipitation (i.e., reported as rainfall) and do not include snow.

- Observed Month-to-Date rainfall:
  - through September 22, 2009: 2.50 inches
  - through April 30, 2011: 1.01 inches
  - through September 28, 2011: 0.54 inches
- Departure from normal precipitation:
  - September 2009: 0.8 inches above normal
  - April 2011: 1.24 inches below normal
  - September 2011: 1.04 inches below normal
- Normal average monthly temperature:
  - September: 69.3 degrees Fahrenheit (˚F)
  - April: 53.9 ˚F
- Observed average monthly temperature:
  - September 2009: 65.9 ˚F
  - April 2011: 55.8 ˚F
  - September 2011: 67.8 ˚F
- Departure from normal average monthly temperature:
  - September 2009: 3.4 ˚F below normal
  - April 2011: 1.9 ˚F above normal
  - September 2011: 1.4 ˚F below normal

Wetland hydrology observed in the Project Area during the September 2011 survey period was abnormally dry for the region. For the month of September 2011, Gray County was under a drought warning issued by the Kansas Water Office, with the county being under moderate to severe drought conditions as of September 30, 2011 (Kansas Water Office 2011). Daily temperature and precipitation amounts for the field investigation period and preceding days are provided in Table 2. Average monthly precipitation and average monthly temperatures for Gray County, as listed by the National Climatic Data Center (NCDC) for Dodge City, are presented in Table 3 (NCDC 2000). Precipitation year-to-date during the survey periods were approximately 8 percent above normal during September 2009; 56 percent below normal during April 2011; and 76 below normal during September 2011, respectively. These drought conditions likely had an effect on the examination of hydrophytic vegetation indicators during the wetland delineation, discussed in Section 4.0.

Table 2. Daily Precipitation Summary for the Project Area

Date	Temperature (°F)				Precipitation (inches)
	Maximum	Minimum	Average	Departure from Normal Average	
2009					
Sep-1	87	55	71	-3	0.00
Sep-2	86	59	73	-1	0.00
Sep-3	87	59	73	-1	Trace
Sep-4	78	55	67	-6	Trace
Sep-5	80	58	69	-4	0.00
Sep-6	87	59	73	0	0.00
Sep-7	93	66	80	8	0.00

Table 2. Daily Precipitation Summary for the Project Area

Date	Temperature (°F)				Precipitation (inches)
	Maximum	Minimum	Average	Departure from Normal Average	
Sep-8	80	61	71	-1	2.24
Sep-9	78	61	70	-2	Trace
Sep-10	77	61	69	-2	0.00
Sep-11	81	58	70	-1	0.00
Sep-12	70	60	65	-6	0.22
Sep-13	77	59	68	-2	0.00
Sep-14	73	54	64	-6	0.00
Sep-15	76	56	55	-4	0.00
Sep-16	77	55	66	-3	0.00
Sep-17	76	54	65	-4	0.00
Sep-18	73	54	64	-4	Trace
Sep-19	77	50	64	-4	0.00
Sep-20	87	59	73	5	0.00
Sep-21	71	51	61	-6	0.04
Sep-22	**62**	**45**	**54**	**-13**	**Trace**
Sep-23	**63**	**44**	**54**	**-13**	**Trace**
Sep-24	**65**	**42**	**54**	**-12**	**0.00**
Sep-25	**65**	**43**	**54**	**-12**	**Trace**
Sep-26	**83**	**45**	**64**	**-2**	**0.00**
Sep-27	**92**	**53**	**73**	**8**	**0.00**
Sep-28	**70**	**42**	**56**	**-9**	**0.00**
2011					
Apr-10	77	46	62	10	0.00
Apr-11	68	42	55	3	0.00
Apr-12	81	38	60	7	0.00
Apr-13	76	46	61	8	0.00
Apr-14	53	34	44	-9	0.31
Apr-15	54	33	44	-10	0.09
Apr-16	72	27	50	-4	0.00
Apr-17	83	46	65	11	0.00
Apr-18	75	46	61	6	0.00
Apr-19	63	39	51	-4	Trace
Apr-20	60	34	47	-8	0.00
Apr-21	71	37	54	-2	0.00
Apr-22	76	50	63	7	0.00
Apr-23	60	42	51	-5	0.00
Apr-24	63	41	52	-5	Trace
Apr-25	51	40	46	-11	0.19
Apr-26	61	34	48	-9	0.03
Apr-27	57	40	49	-9	0.39
Apr-28	73	40	57	-1	0.00
Apr-29	88	48	68	10	0.00
Apr-30	**66**	**41**	**54**	**-4**	**0.00**

Table 2. Daily Precipitation Summary for the Project Area

Date	Temperature (°F)				Precipitation (inches)
	Maximum	Minimum	Average	Departure from Normal Average	
May-1	**58**	**42**	**50**	**-9**	**0.00**
May-2	**62**	**36**	**49**	**-10**	**Trace**
May-3	**72**	**35**	**54**	**-5**	**0.00**
May-4	**82**	**44**	**63**	**3**	**0.00**
May-5	**71**	**41**	**56**	**-4**	**0.00**
May-6	**88**	**44**	**66**	**6**	**0.00**
May-7	**87**	**47**	**67**	**6**	**0.00**
1-Sep	107	78	93	18	0.00
2-Sep	103	73	88	13	0.00
3-Sep	92	63	78	4	0.03
4-Sep	78	52	65	-9	0.00
5-Sep	79	44	62	-12	0.00
6-Sep	84	51	68	-5	0.00
7-Sep	75	60	68	-5	Trace
8-Sep	82	53	68	-4	0.00
9-Sep	80	46	63	-9	0.00
10-Sep	85	51	68	-4	0.00
11-Sep	89	56	73	2	0.00
12-Sep	99	64	82	11	0.00
13-Sep	88	62	75	5	Trace
14-Sep	73	53	63	-7	Trace
15-Sep	54	44	49	-21	0.04
16-Sep	71	46	59	-10	0.09
17-Sep	70	58	64	-5	0.29
18-Sep	79	54	67	-1	0.02
19-Sep	87	51	69	1	0.00
20-Sep	79	54	67	0	0.00
21-Sep	69	51	60	-7	0.07
22-Sep	76	49	63	-3	0.00
23-Sep	83	51	67	1	0.00
24-Sep	95	51	73	7	0.00
25-Sep	75	43	59	-6	0.00
26-Sep	82	49	66	1	0.00
27-Sep	85	48	67	3	0.00
28-Sep	**96**	**57**	**77**	**13**	**0.00**
29-Sep	**79**	**47**	**63**	**0**	**0.00**

Source: NWS 2009; NWS 2011a; NWS 2011b
Bolded text indicates dates in which wetlands were delineated in the Project study corridor.

Table 3. Average Precipitation and Temperature for the Project Area

Month	Average Precipitation (Inches)	Average Monthly Temperatures
January	0.62	30°F
February	0.66	36°F
March	1.84	44°F
April	2.25	54°F
May	3.00	64°F
June	3.15	74°F
July	3.17	80°F
August	2.73	78°F
September	1.70	69°F
October	1.45	57°F
November	1.01	42°F
December	0.77	33°F

Source: NCDC 2000

Information on Regional Wetland Ecosystems is unchanged from Section 2.2 of the original report (Tetra Tech 2011).

3.0 METHODS

3.1 Pre-field Survey Data Review

Prior to initiating supplemental on-site field surveys, desktop analysis for the Supplemental Survey Area was conducted to assess the potential presence of jurisdictional wetlands, playas, and streams. Subsequent refinement of the Project layout and study corridor necessitated an additional desktop analysis and evaluation of the findings of previous delineation efforts (Tetra Tech 2009; Tetra Tech 2011). Prior to conducting supplemental on-site field surveys, desktop analysis for the Supplemental Survey Area was conducted using data sets such as 2009 aerial imagery (NAIP 2009), National Wetlands Inventory (NWI) maps (USFWS 2009), the National Hydrography Dataset (NHD) (USGS 2010), Playa Lakes Geographic Information System (GIS) Data (KGS 2004), and the NRCS soil survey (NRCS 2011b). In addition, information derived from the preceding wetland delineation reports was studied and a preliminary conservative assessment was made of those wetlands and water resources that might require delineation. This assessment was based on either the clear placement of the Supplemental Survey Area within or near to a likely wetland or water of the U.S.

3.2 Field Analysis

The Supplemental Survey Area was defined as revised areas of the Project study corridor since the May-April 2011 delineation, including expansion of earlier Project study corridors to address minor adjustments in design, as well as the allocation of new areas of Project study corridors for relocated facilities. The field analysis was conducted over the approximate 57.7 acres of Supplemental Survey Area.

All wetlands were delineated according to the routine methodology described in the United States Army Corps of Engineers' (USACE) *Wetlands Delineation Manual* (USACE 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (USACE 2010a). The wetland indicator status of vegetation observed in the Supplemental Survey Area was determined for each dominant plant species based on the *Region 5: Central Plains* addendum to Reed's *1988 National List of Plant Species that Occur in Wetlands* (USACE 2010b).

Pairs of soil test pits, placed in areas of readily discernable wetland plant communities, and a companion soil pit was placed nearby in upland, were dug at each of the sample plots to a maximum depth of 20 inches and evaluated for the presence of hydric soil indicators. Parameters evaluated included soil color, texture, and saturation. The soil hue, value, and chroma were examined and defined using the *Munsell Soil Color Charts* (Macbeth 1994).

Hydrology was analyzed for primary and secondary wetland indicators at each wetland. All data were recorded on the Wetland Determination Data Forms (Appendix A). Sample plots that exhibited qualifying characteristics of hydrophytic vegetation, hydric soils, and wetland hydrology were identified as wetlands.

The field investigation also included an examination of NWI- and United States Geological Survey (USGS)-mapped streams ("blue lines"), as well as other drainages that were not mapped by the NWI or USGS. The USACE regulates streams that have a surface water connection with navigable waters. Tetra Tech evaluated wetlands and surface waters in the Supplemental Survey Area following guidance provided in the USACE Jurisdictional Determination Form Instruction Guidebook and joint USEPA and USACE guidance regarding the Clean Water Act (CWA) jurisdiction after Rapanos (USEPA and USACE 2007).

3.3 Mapping

The boundaries of wetlands within the Supplemental Survey Area were recorded using a Geo® XH™ Global Positioning System (GPS) in the field. The field-collected data were plotted as a map layer using GIS software and are displayed in Figure 4. Supporting information for the delineation – wetland forms and site photographs – is presented in Appendices A and B, respectively.

4.0 RESULTS AND DISCUSSION

4.1 Vegetation

This region of Kansas is mixed grass prairie and actively cultivated sorghum (*Sorghum bicolor)* and winter wheat (*Triticum aestivum*) cropland. The commonly observed native grassland species include buffalo grass (*Bouteloua dactyloides*) and blue grama (*Bouteloua gracilis*). Big bluestem (*Andropogron gerardii*), switchgrass (*Panicum virgatum*), sideoats grama (*Bouteloua airoides*), little bluestem (*Schizachyrium scoparium*), western wheatgrass (*Agropyron smithii*), and bluegrass (*Poa sp.*) are also common in the area. Introduced plant species include cheatgrass (*Bromus tectorum*) and smooth brome (*Bromus arvensis*) and forbs such as field bindweed (*Convolvulus arvensis*) and curly dock (*Rumex crispus*).

Most land in the Supplemental Survey Area is recently harvested sorghum and winter wheat with one small area of recently tilled and planted cropland; therefore native grassland species were not observed during the September 2011 supplemental survey period. In addition, drought conditions described in Section 2.1, may have affected recruitment, vigor, and diversity of common forbs and grasses anticipated in agricultural environments. An evaluation of existing data, cues from aerial imagery and topographical changes observed within the landscape, and site-specific experience adequately enabled the field team to delineate wetlands from upland features.

Table 4 provides a list of plant species observed in the Supplemental Survey Area during the supplemental survey period. A more complete list of the dominant regional plants listed in the previous section, and species observed during previous survey periods are presented in previous delineation reports (Tetra Tech 2009; Tetra Tech 2011).

Table 4. Common Dominant and Subdominant Plant Species Observed within the Supplemental Survey Area

Type	Scientific Name	Common Name (USDA, NRCS 2010)	Indicator Status[1]
	Sorghum bicolor	Sorghum (crop)	NI
	Triticum aestivum	Winter wheat (crop)	NI
	Conyza canadensis	Horseweed	UPL
	Kochia scoparia	Kochia	FACU
	Salsoa iberica	Russian thistle	FACU

USDA = United States Department of Agriculture
[1] Indicator Status is defined as follows (USACE 2010b):

Code	Indicator Status	Occurrence
FACU	Facultative Upland	Usually occurs in non-wetlands (estimated probability 67%-99%), but occasionally found on wetlands (estimated probability 1%-33%).
UPL	Obligate Upland	May occur in wetlands in another region, but occurs almost always (estimated probability 99%) under natural conditions in non-wetlands in the regions specified.
NI	No indicator	Insufficient information available to determine an indicator status.

4.2 Soils

A total of two soil units mapped by the NRCS occur within the Supplemental Survey Area and are described in Table 5. Both of these soil units are designated by the NRCS as hydric (NRCS 2011a).

Hydric soils are defined as soils that are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (*Federal Register* 1994). The hydric indicators for soils in the Great Plains Region have been revised in the Great Plains Supplement (USACE 2010a) resulting in additional areas that may meet hydric soil criteria. Although hydrophytic vegetation and wetland hydrology indicators must be confirmed before a wetland determination can be made, hydric soils information is useful in determining the potential presence of wetlands. In particular, if vegetation is removed by farming and wetlands are delineated in the drier seasons, hydric indicators become especially important in determining the wetland-upland boundary.

Table 5. NRCS Mapped Soil Units within the Supplemental Survey Area

NRCS Map Unit	NRCS Soil Series Description
2714 – Ness clay	Slopes are 0 to 1 percent; typically on depressions on uplands (playas); is poorly drained. Clayey alluvium and/or eolian parent material. This soil is not flooded but is frequently ponded. A seasonal zone of water saturation is at the surface during March to June. Typical profile: 2.5Y 3/1 or 4/1 silty clay to 20-inch depth. NRCS-listed as hydric.
2801 – Spearville silty clay loam, 0 to 1 percent slopes	On plains on tablelands; deep well drained and moderately well drained uplands. Loess parent material. Not flooded or ponded; lacks water saturation zone within a 72-inch depth. Typical profile: A horizon to 7-inch depth is 10YR 2/2; silty clay loam. Bt1 horizon to 12-inch depth differs only in having a silty clay texture. Typical Bt2 layer is 10YR 3/2 silty clay to 20-inch depth. NRCS-listed as hydric.

Soils across the Project study corridor are typically mollisols, a productive agricultural soil common to grasslands and savannas characterized by a dark surface layer of mineral soil high in organic matter with a low chroma (1 or 2) matrix in both upland and wetland soils. Often, soils with low value and low chroma are considered hydric. The soils within the Supplemental Survey Area matched the loams, silt loams, and clay loams mapped by the NRCS for the area. The soils were generally dark brown to black (10YR 2/1) or very dark grayish brown (7.5YR 3/1), and occasionally dark brown chroma (3). Soils were exceptionally dry during the supplemental survey period and were typically hardened and impenetrable six inches below the surface in both the upland and wetland sample locations.

A combination of agricultural practices and local hydrology contribute to the soil profile characteristics exhibited during the survey period. Hydrological events, such as rainfall or irrigation, interact with cropped upland areas to produce runoff and sediment erosion. Tractors or vehicular traffic utilized during cultivation compact, suspend, and transport soil particles; and high wind velocity transport soils devoid of permanent vegetation into nearby basins and depressions (Zartman et al. 2010). In addition, wetlands occurring in the Project study corridor are seasonal in nature and often go dry for extended periods due to their small, closed watersheds dependent on localized and highly variable patterns of precipitation. Hydrology in wetlands often cycles through seasonal drawdown periods when water levels recede and the underlying clay layer consolidates into a virtually impermeable surface. The soils of cultivated wetlands in the Project are often dark brown to black and continue to meet the criteria for hydric soil indicator F6: Redox Dark Surface. Evidence of hydric soils indicators, combined with hydrophytic vegetation and hydrology, suggests on-site environmental conditions are appropriate for contemporary hydric soils to form. Detailed information from NRCS descriptions of each mapped soil unit within the Supplemental Survey Area is presented in Table 5 and Figure 3.

4.3 Hydrology

Review of topographic maps and hydrography data indicates that surface water flows from southwest to northeast across the Project Area, and that most streams occur in the east and northeast sections of the

Project Area. The Project Area is entirely bounded within the Buckner watershed (Kansas Hydrologic Unit Code 11030006), which flows to the Arkansas River. The South Fork Buckner Creek, a tributary to Buckner Creek surveyed during the April-May 2011 survey period (Tetra Tech 2011), occurs inside the Project Area. The hydrological regime of the drainages in the Project Area are ephemeral and lack a continuous defined channel; however, these drainages exhibit channel characteristics (bed and bank) for stretches of several yards beyond which the channel features disappear into a barely defined erosional features or swales. Additionally, many USGS mapped streams were found to be "non-stream" features, or relict streams, where stream features had been lost by decades of plowing, cropping, and contour-smoothing. These relict drainages typically lacked any indication that flow is concentrated for more than a few yards; rather precipitation directly infiltrates or is conveyed to lower areas by sheet flow. Some of the relict drainages exhibit swale-like morphology but lack a surface water connection with other waters.

4.4 Wetlands

The Cowardin classification system categorizes wetlands by vegetative community and hydrologic regime (Cowardin et al. 1979). The Cowardin classification of the wetlands within the Supplemental Survey Area are palustrine (i.e., freshwater) emergent (non-woody plants rooted in soils that are saturated at least part of the time) wetlands. Tetra Tech evaluated all surfaces waters that would be crossed by the Project within the Supplemental Survey Area. Table 6 lists one palustrine emergent (PEM) wetland (wetland AAA) identified in the Supplemental Survey Area during this supplemental delineation. Wetland AAA is an isolated NWI-mapped cultivated wetland. No playa lakes were observed during the September 2011 supplemental survey period.

Table 6. Wetlands Identified within or Proximal to the Supplemental Survey Area

Wetland ID	Figure No.	Cowardin Class	Size within Supplemental Survey Area (acre)	Estimated Temporary Impacts (acre)	Estimated Permanent Impacts (acre)	Project Component with Impact to Wetland	NRCS Mapped Soil Type (majority of polygon)	Hydric (Yes / No)
Wetlands Identified within the Supplemental Survey Area								
AAA	4	PEM	0.43	0.43	0.00	Homerun collection line	Spearville silty clay loam, 0 to 1 percent slopes	Yes
			Total	**0.43**	**0.00**			

Notes:
(1) Appendix B contains photographs of wetland AAA.
(5) Temporary (construction) and permanent (operation) footprint estimates assume Project Layout v4.2.

The Project footprint, as currently designed, could temporarily affect up to 0.43 acre of isolated, non-jurisdictional wetlands during construction of the homerun collection line (Table 6). The wetland and adjacent cultivated croplands would be restored following construction.

4.5 Playas

Playa lakes, not true lacustrine systems, are typically formed in shallow circular basins. Water is typically held at the surface by a clay-rich layer, forming shallow ponds and vegetated wetlands. Playas across the site vary in their development of hydrophytic vegetation community and hydric soils and thus may be classified as either dry (non-wetland) playas or wetland playas. The wetland playas are inundated periodically and for variable durations. The non-wetland playas are shallow depressions with both dominant upland and hydrophytic plant species but with non-hydric soils and weak wetland hydrology indicators.

A review of all mapped playas on the Kansas Geological Survey (KGS 2004) was evaluated prior to on-site field verification during the September 2011 survey period. No mapped playas were identified as having the potential to occur in the Supplemental Survey Area and on-site field verification corroborates these data (Figure 2).

4.6 Streams

The drainages occurring in the Project are typically ephemeral features that do not meet USACE criteria for waters of the U.S. These drainages lack a continuous defined channel and are largely defined erosional features or swales. A review of all mapped "blue lines" on the USGS NHD (USGS 2010) and the NWI were evaluated prior to on-site field verification during the September 2011 survey period. No mapped drainages were identified as having the potential to occur in the Supplemental Survey Area and on-site field verification corroborates these data (Figure 2).

5.0 WETLAND FUNCTIONS AND VALUES

In compliance with Executive Order (EO) 11990 and to support TVA's role as lead federal agency, all wetlands present in the Supplemental Survey Area were delineated in the field to determine the types and extent of wetlands present. This section presents wetland functions and values in support of TVA's EO 11990 compliance.

The Project is located in the Playa Lakes wetlands region of the U.S. Playa Lakes are unique wetlands features, providing ephemeral reservoirs of water in parts of the southern Great Plains that are primarily active cropland and that can receive less than 20 inches of rain a year (USEPA 2009). The Playa Lakes Region is rich in isolated, temporarily inundated depressional wetlands and playas. These playas and seasonal wetlands typically occur in cultivated fields and are perceived as nuisance areas by agricultural producers who continue to till, plant, and harvest that land when conditions are ideal. While no playas were observed in the Supplemental Survey Area, one seasonal wetland was delineated in an actively cultivated agricultural field.

The individual wetland delineated in the Project footprint may not appear ecologically important; however farmed wetlands make up a valuable part of the landscape. When considering the large-scale landscape, these wetlands provide important stopover sites for migrating shorebirds and other avian species. Farming operations can reduce vegetation cover and bury plant matter, which benefits shorebirds, while promoting moist-soil plants that are used by ducks for food and cover (NRCS 2006). Farming practices in farmed wetlands may benefit some wetland-dependent birds, particularly shorebirds and ducks. Cultivation operations (e.g., mowing, tilling) prevent successional patterns of vegetation on playa wetlands and result in little or no vegetation. Reduction of vegetation is important for shorebirds, because it allows them to see distant predators and increases their foraging efficiency (Rivers et al. 2001).

During previous survey periods, many species of wildlife were observed using playas or are generally known to benefit by this wetland habitat. Several bird species observed during 2010 avian surveys for the Project are known to use playa lake wetlands, including red-winged blackbird (*Agelaius phoeniceus*), western meadowlark (*Sturnella neglecta*), sandhill crane (*Grus canadensis*), and Canada goose (*Branta canadensis*), and raptors such as Swainson's hawk (*Buteo swainsoni*) and Northern harrier (*Circus cyaneus*). Additionally, two reptile observations were made during the previous wetland surveys, including the prairie rattlesnake (*Crotalus viridus*) and plains garter snake (*Thamnophis radix*). These species observations demonstrate the wildlife functions and recreational values that playa habitats provide. These observations suggest wetland and playa features in the Project Area may provide a beneficial contribution to the regional ecology.

6.0 CONCLUSIONS AND RECOMMENDATIONS

One mapped-NWI wetland (wetland AAA) was observed, evaluated, and delineated within the designated Supplemental Survey Area during this field assessment. Based on careful examination in the field, wetland AAA does not appear to have a hydrologic connection (i.e., significant nexus) to traditional navigable waters (TNW). For this reason, Tetra Tech has concluded that based on current USACE and the United States Environmental Protection Agency (USEPA) guidance, wetland AAA is not federally jurisdictional. No streams were observed in the Supplemental Survey Area; therefore no additional USACE or Kansas Department of Agriculture (KDA)-jurisdictional stream features were delineated during the field effort. Tetra Tech concludes that no USACE-jurisdictional wetlands or waters of the U.S are present in the Supplemental Survey Area, according to current USACE and USEPA guidance. Furthermore, Tetra Tech has reviewed the current USACE regional permit conditions on its Nationwide Permit (NWPs) and has concluded that none of the conditions would be prohibitive to construction or operation of the Project.

Discussion of recent draft regulations and guidance by federal agencies is unchanged from that presented in Section 5.0 and Appendix C of the original delineation report (Tetra Tech 2011).

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FIGURES

Figure 1
Supplemental Survey Area

Cimarron Wind Energy Project - Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

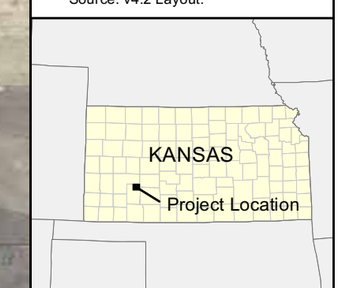
Legend

- Project Area
- Non-Leased Area
- 4 Sections
- Proposed Turbine
- Proposed Permanent Met Tower
- Project Study Corridor (v4.2)
- Supplemental Survey Area = Project Study Corridor (v4.2) Not Previously Surveyed

N

0 0.25 0.5 Miles

Source: v4.2 Layout.



TETRA TECH EC, INC.

Laydown

Substation and O&M Building

T25S R28W

T25S R27W

T25S R27W

T25S R26W

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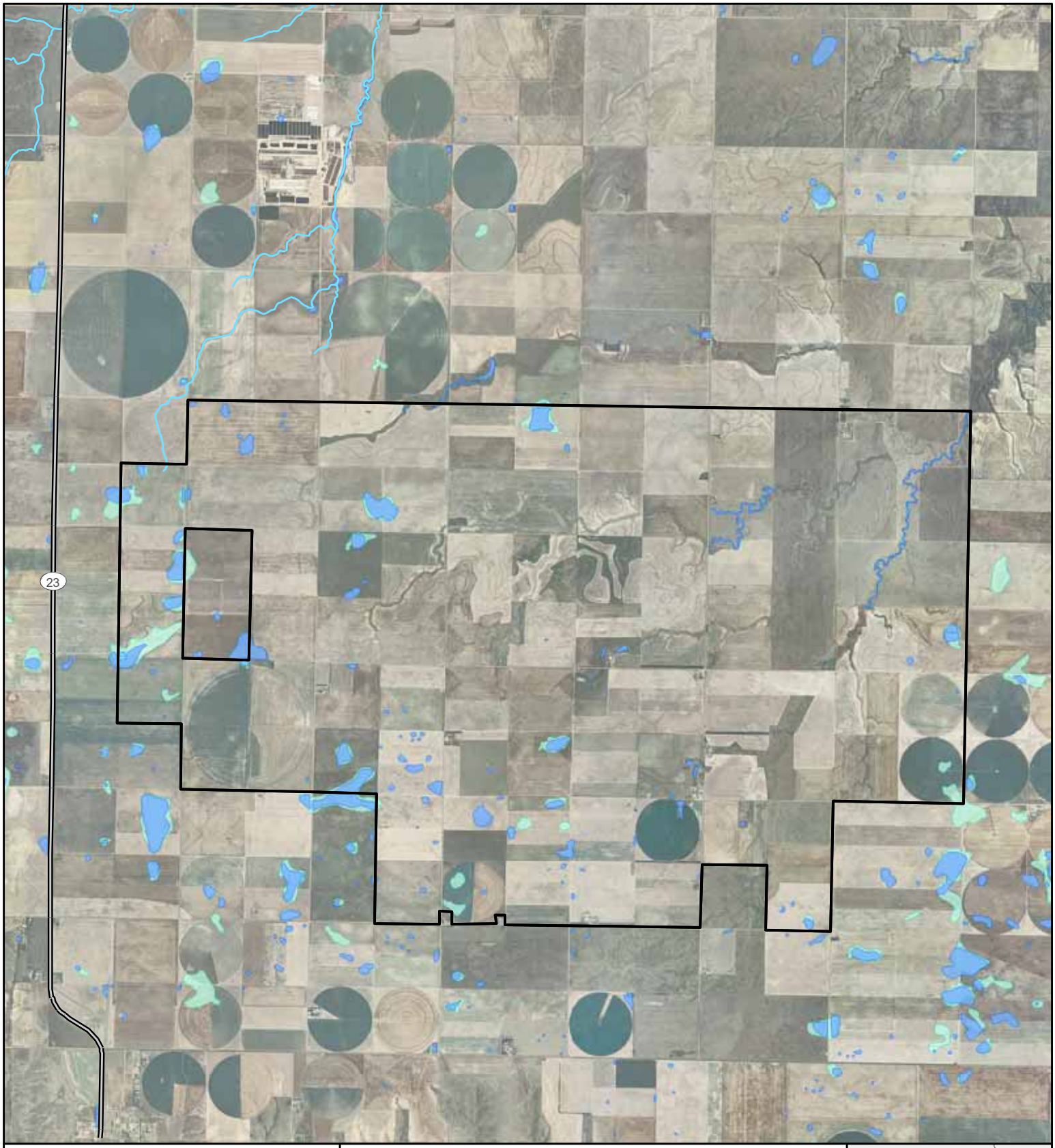

Figure 2
Project Area Waters Overview

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Project Area
Major Road
NHD Stream
NHD Waterbody
NWI Wetlands
Playa Lake

N

0 0.5 1 Miles

Sources: ESRI, NHD, NWI, KSGIS.

KANSAS

Project Location

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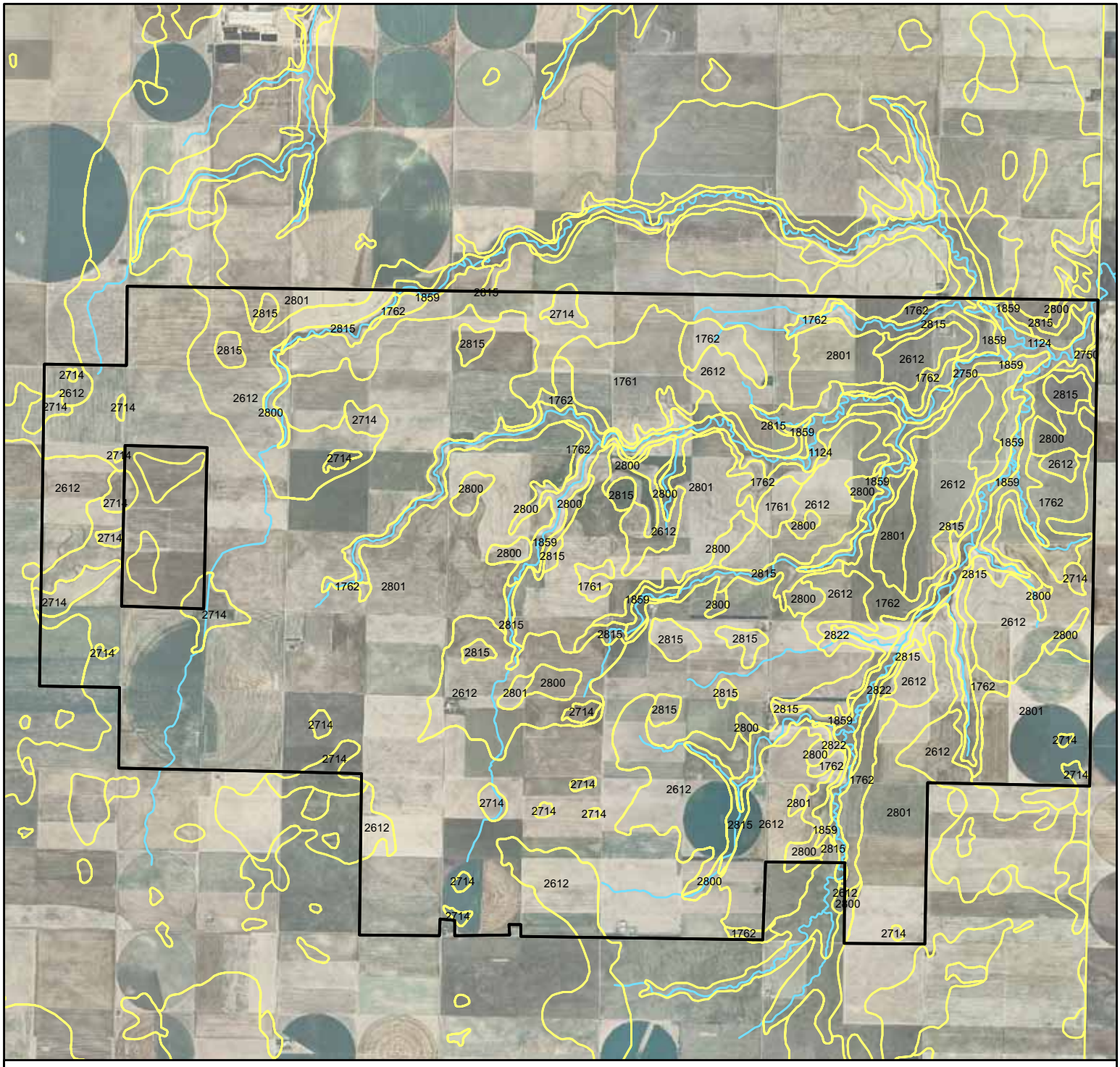


NRCS Soil Units within Project Area

1124: Bridgeport silt loam, channeled
1761: Richfield silt loam, 0 to 1 percent slopes
1762: Richfield silt loam, 1 to 3 percent slopes
1859: Ulysses silt loam, 3 to 6 percent slopes
2612: Harney silt loam, 0 to 1 percent slopes
2714: Ness clay
2750: Penden clay loam, 7 to 15 percent slopes
2800: Spearville complex, 1 to 3 percent slopes, eroded
2801: Spearville silty clay loam, 0 to 1 percent slopes
2815: Uly silt loam, 1 to 3 percent slopes
2822: Uly-Coly silt loams, 3 to 6 percent slopes, eroded

Figure 3
Project Area Soils Overview

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Project Area
NHD Stream
Soil Unit Boundary

N

0 0.5 1 Miles

Sources: NHD, NRCS.

KANSAS
Project Location

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reeport_October_2011\Figure3_Soils_Overview.mxd

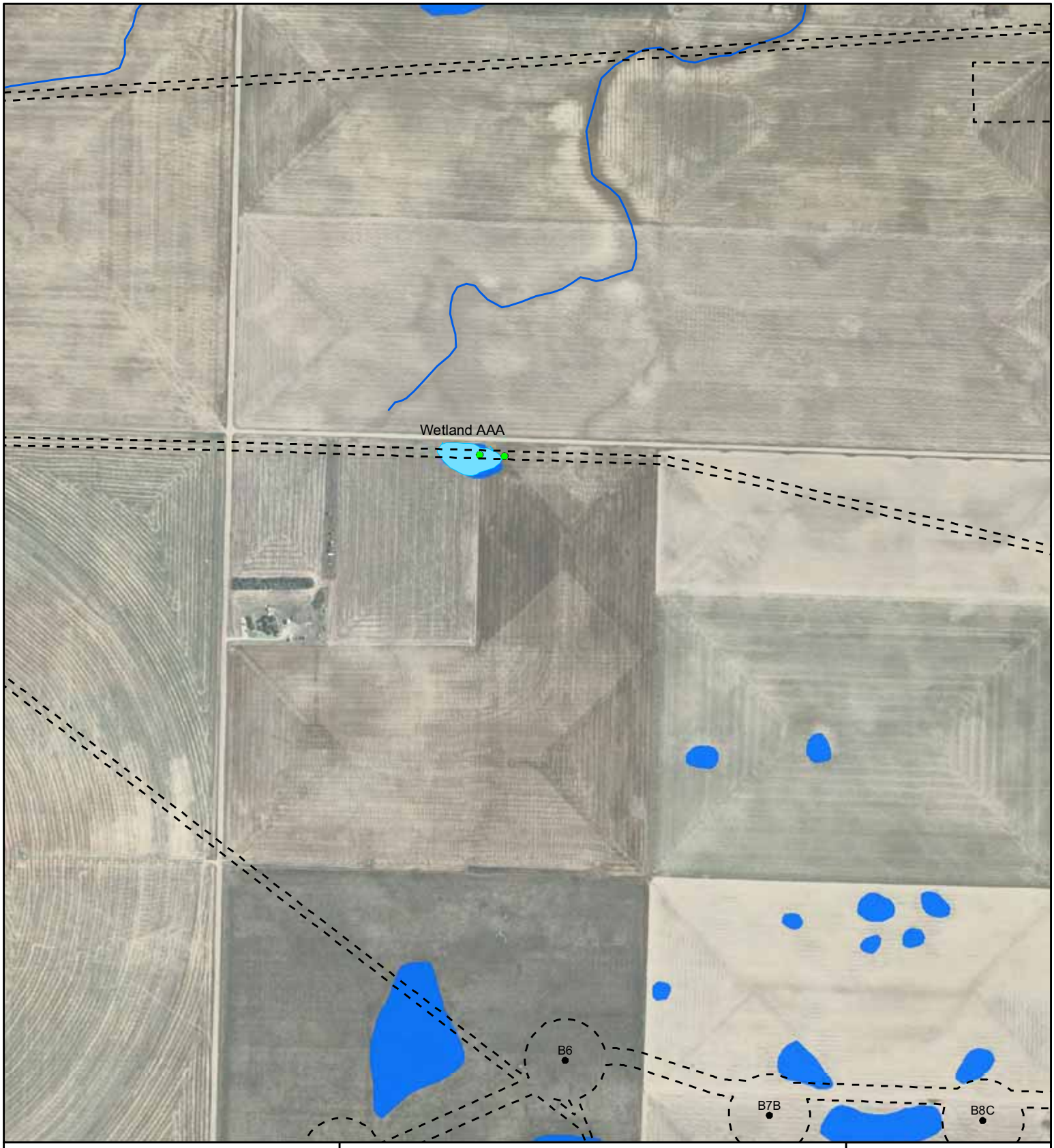


Figure 4
Supplemental Delineation of Wetlands and Waters

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

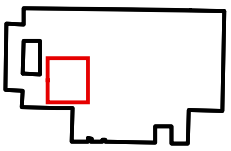
TETRA TECH EC, INC.

Project Area
Project Study Corridor (v4.2)
Proposed Turbine
Sample Plot
NWI Wetland
NHD Stream
Delineated Wetland

N

0 0.1 0.2 Miles

Sources: Layout v4.2, ESRI, NWI, Tt EC.



Map Detail Area

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APPENDIX A

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cimarron Wind City/County: Gray Sampling Date: 9/29/11

Applicant/Owner: CPV State: KS Sampling Point: AAA WL

Investigator(s): JV KL Section, Township, Range: S20, T25S, R27W

Landform (hillslope, terrace, etc.): Slight depression Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): H Lat: 384486.8 Long: 4192245.5 Datum: NAD83

Soil Map Unit Name: 2801 Spearville Silty Clay NWI classification: PEM

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

Are Vegetation ✓, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ 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 ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: NWI mapped isolated wetland in cultivated cropland. Crop yeild significantly reduced & confined to wetland. Consideration of all three parameters despite managed plant community.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5' R)			
1. Kochia scoparia	10	Y	FACU
2. Ammannia coccinea *	5	Y	FACW
3. Triticum aestivum	<5	N	NI
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 10

20
10/4

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding 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:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:
* Appears to be toothcrop but past flowering period get pos ID. Opp., lance Lv, Flw axil cluster.

SOIL

Sampling Point: AAA WL

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	Remarks
0-4	10YR 2/2	100					SI LO	
4-6	10YR 2/1	90	10YR 3/2	10	C	M	SI CLLO	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ 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)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: 6

Depth (inches): SI CL LO

Hydric Soil Present? Yes ✓ No ___

Remarks: Concretions evident specifically in WL. While refusal at 6", clay component slightly more pliable. Conc. suggest recent hydric condition in cultivated land.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ✓ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

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 ___

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

NWI wetlands map

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cimarron Wind City/County: Gray Sampling Date: 9/29

Applicant/Owner: CPV State: KS Sampling Point: AAA-UPL

Investigator(s): JV, KL Section, Township, Range: S20, T25S, R27W

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0-1%

Subregion (LRR): H Lat: 412243.7 Long: 324533.3 Datum: NAD83

Soil Map Unit Name: 2801 Spearville Silty Clay NWI classification: Upland

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

Are Vegetation ✓, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ 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 ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: UPL Ag field planted earlier in the season & recently harvested. Uniform vigor, topography & soil profile.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5' R)			
1. Triticum aestivum	85	Y	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85% = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 15%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (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:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ____

Remarks: Bare ground associated with row crops. Uniform vigor. Observations of crop vigor & health indicate area is not flooded for prolonged periods.

SOIL

Sampling Point: AAA-UPL

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	Remarks
0-6	10YR 3/3	100					SILO	plow layer
6-7	10YR 3/2	100					SI CL LO	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ 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)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: CL

Depth (inches): 7"

Hydric Soil Present? Yes ___ No ✓

Remarks: Soils are Mollisols & characteristically low chroma/value & assumed UPL. when compared to wetland soil, texture & subtle difference.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

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 ✓

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

Remarks: Topograph uniform & level. No discernable difference between UPL & remainder of UPL ag field.

APPENDIX B

Site Photographs

APPENDIX B

Cimarron Wind Energy Project – Phase 1

Supplemental Delineation of Wetlands and
Other Waters of the United States
September 2011

Photograph 01 – Facing west into Supplemental Survey Area south of XX-1 (excavated pond). No wetland or stream features observed.

Photograph 02 – Facing south at USGS mapped "blue line" stream south of XX-1. Feature has been cultivated and no longer functions as a channel.

Photograph 03 – Facing east at Supplemental Survey Area south of turbine C23A and C24. No wetlands or streams observed.

Photograph 04 – Facing east into Supplemental Survey Area toward XX-1 east of 19th Street. Trees in background are location of XX-1. No wetlands or streams observed.

Photograph 05 – Facing southwest into Supplemental Survey Area west of 19th Street. No wetlands or streams observed.

Photograph 06 – Facing east into 300 foot radius Supplemental Survey Area around powerline south of turbines C29A and C30.

Photograph 07 – Facing south at NWI mapped PEM wetland (AAA) intersecting collection line south of J Road.