Appendix D. Fall 2023 Wetland Delineation Technical Memorandum

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Date: 1/19/2024
To: Bobby Quinones and Zach Lasek, Scout Clean Energy
From: Kirsten Frahm and Kara Hempy-Mayer, Western EcoSystems Technology, Inc.
Subject: Wetland−Waterbody Delineation 2023 Results

BACKGROUND

Scout Clean Energy (Scout) is proposing the development of the Silver Queen Wind Project (Project) in Crawford and Carroll counties, Iowa, between the towns of Denison and Carroll, and south of Interstate Highway 30 (Figure 1).

To support development of the Project, Scout requested Western EcoSystems Technology, Inc. (WEST) complete a wetland and waters survey. The objectives of the survey were to identify and delineate locations of wetlands (non-tidal wet areas made up of hydrophytic vegetation and hydric soils) and waterbodies (any type of perennial, intermittent, or ephemeral waterway or catch basin where water flows, or could flow, or is held).

A 10% Project layout became available from Scout in November 6, 2023 (**11/6/23 layout**). Given seasonal constraints, WEST conducted an initial wetland and waterbody desktop assessment and field delineation for the Project based on the 11/6/23 layout focused on permanent Project infrastructure where WEST had landowner permission, although some temporary construction areas were included. An assessment and delineation on remaining Project infrastructure and an updated layout will be completed in the spring of 2024 in accordance with Section 404 permitting requirements.

DESKTOP ASSESSMENT

Potential wetlands and waterbodies were identified based on a desktop assessment to identify potential wetlands and waterbodies that could be present in the Study Are using publicly available data. The Study/ Survey Area for the desktop assessment and field surveys were defined as follows:

- 300-foot (ft, 91-meter [m]) buffer surrounding proposed wind turbine locations (600-ft [183-m] diameter circular survey corridor centered on the turbine location).
- 200-ft (61-m) buffer around other wind facility locations, such as the substations, O&M Facility, ADLS, and laydown yard.
- 75-ft (23-m) buffer of proposed linear facility centerlines not associated with the transmission line corridor (i.e., 150-ft [46-m] wide survey corridor centered on the centerlines of collection lines, access roads, and crane walks).
- 250-ft (76-m) buffer of the proposed transmission line centerline (i.e., 500-ft [152-m] wide survey corridor centered on the centerline)

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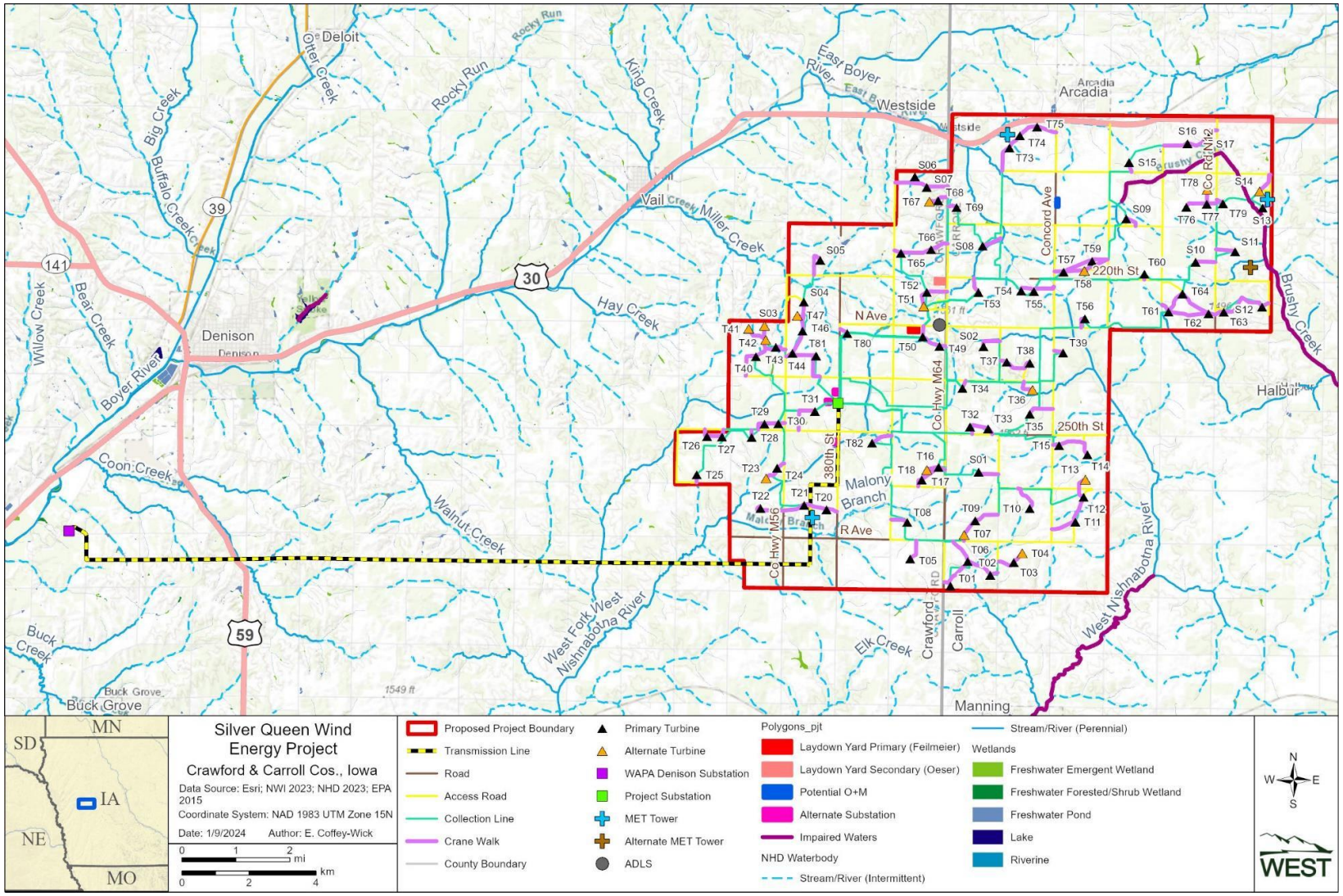

Figure 01. NWI/NHD wetlands and waterbodies in the Silver Queen Wind Project Study Area, Crawford and Carroll counties, Iowa.

The following datasets were used for the desktop assessment to identify potential wetlands and waterbodies:

- US Fish and Wildlife Service National Wetlands Inventory (NWI)
- US Geological Survey (USGS) National Hydrography Dataset (NHD)
- US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey
- USGS 7.5-minute series topographic maps
- Federal Emergency Management Agency (FEMA) National Flood Hazard Layer
- Esri named rivers and streams data
- Current and historic imagery accessed via Google Earth. Google Earth combines available imagery in the Study Area from a variety of sources, including USGS, USDA Farm Service Agency, Landsat, and other unlisted sources; available years include 1984 – 2021, 2023

Based on the desktop assessment, no Project infrastructure from the 11/6/23 layout, including turbines, the Project Substation, Denison Substation expansion, O&M Facility, and Laydown Yards, were located within a wetland or waterbody. Linear Project components, including crane paths, collector lines, access roads, and the transmission (gen-tie) line corridor, cross NWI and NHD wetlands and waterbodies, as described below.

According to the USGS NHD (2023), waterbodies in the Proposed Project Area (including the transmission line corridor) are shown in Figure 1 and include:

- **Brushy Creek**: within the PPB (tributary to the South Raccoon River)
- **Coon Creek**: crosses the gen-tie line corridor (tributary to the Boyer River)
- **The East Boyer River**: within the PPB (tributary to the Boyer River)
- **Halburn Creek**: within the PPB (tributary to Brushy Creek)
- **Malony Branch**: within the PPB (tributary to the West Fork West Nishnabotna River)
- **Miller Creek**: within the PPB (tributary to the Boyer River)
- **West Fork West Nishnabotna River**: within the PPB and crosses the gen-tie line corridor (tributary to the West Nishnabotna River)
- **West Nishnabotna River**: within the PPB (tributary to the Nishnabotna River)
- **Unnamed tributaries [UNTs]** total 115.9 mi: within the PPB and gen-tie line corridor

Based on NHD data, Project construction would result in up to 35 perennial and 145 intermittent stream crossings in the gen-tie line corridor and for installation of new access roads, crane walks, and collection lines. In addition, based on NWI data (see Figure 1), Project construction could affect up to 65 wetland crossings, most of which are associated with streams (riverine wetlands; making up 56% of the wetlands), along with freshwater emergent wetlands (38%), freshwater ponds (6.0%), and freshwater forested/shrub wetlands (0.2%). Many of these crossings would be overlapping (e.g., access roads and collection lines crossing the same stream segments).

SURVEY METHODS

A WEST wetland specialist, Kirsten Frahm, conducted surveys on November 20–22, 2023, assisted by Kara Hempy-Mayer, a WEST senior ecologist. WEST created shapefiles and an ArcGIS online map (AGOL) based on the 11/6/23 layout and results of the desktop assessment, NWI polygons and NHD flowlines. The AGOL map was accessible in the field via tablet and used to ensure the Study Area was accurately identified during the site visit, and for accurate field-verification of potential wetlands and waterbodies to be surveyed. As noted, only wetlands and waterbodies crossed by permanent infrastructure were surveyed during the November 2023 delineation.

Wetlands were delineated in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual* (US Army Corps of Engineers [USACE] 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Version 2.0; USACE 2010). The 1987 manual outlines a three-parameter approach, which consists of hydrophytic plants (dominant vegetative cover), hydric soils, and wetland hydrology. All three parameters must be present and meet the wetland criteria of each parameter in order for an area to be considered a wetland.

The delineated wetlands were classified according to methodologies set forth in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). Wetland plant indicator status was determined using the USACE *National Wetland Plant List – Midwest Region* (2020). Paired sample plots (wetland and upland) were established, and USACE regional datasheets were completed for each potential wetland within the Study Area. Wetland plots were located in areas that best represented the vegetation, soils, and hydrology of the site and were established in locations where NWI or aerial signatures suggested wetland conditions may be present. Depending on indicators recorded, these sample plots contained either paired sample points, a single upland point to confirm non-wetland conditions, or a non-waters point, described below.

RESULTS

A total of four wetland and seven waterbody (stream) crossings were identified during the November 2023 delineation (Figure 2). There were also 21 NWI-mapped wetlands and NHD-mapped waterbodies that were determined to be non-wetlands or waterbodies; these were recorded as “no points” to document non-wetland/waterbody conditions. Descriptions of confirmed wetlands and waterbodies are included below, and Tables 1 and 2 provide summaries of the wetland and waterbody classifications and acreages/linear ft of features found within the survey area.

Wetlands

Wetlands identified during the November 2023 delineation were located within an agricultural matrix and occurred in low-positions in the landscape dominated by cultivated crops and pasturelands and within roadside ditches.

Wetland W01 is a 0.1-ac temporarily flooded emergent wetland (PEM1Ah) delineated in the northwest portion of the survey area. Wetland W03 is a less than 0.1-ac temporarily flooded emergent wetland (PEM1Ad) delineated in the central portion of the survey area. Wetland W04 is a less than 0.1-ac temporarily flooded emergent wetland (PEM1Ad) delineated in the southeast portion of the survey area. These wetlands were dominated by reed canary grass (*Phalaris arundinaceae*) and exhibited hydrology indicators such as geomorphic position and FAC-neutral test. Soils were sampled in wetland W01 and exhibited the redox dark surface hydric soil indicators; due to their location in roadside ditches and the potential for underground utilities, soils were not sampled in wetlands W03 and W04. In those cases, soils were assumed hydric due to the presence of hydrophytic vegetation and wetland hydrology.

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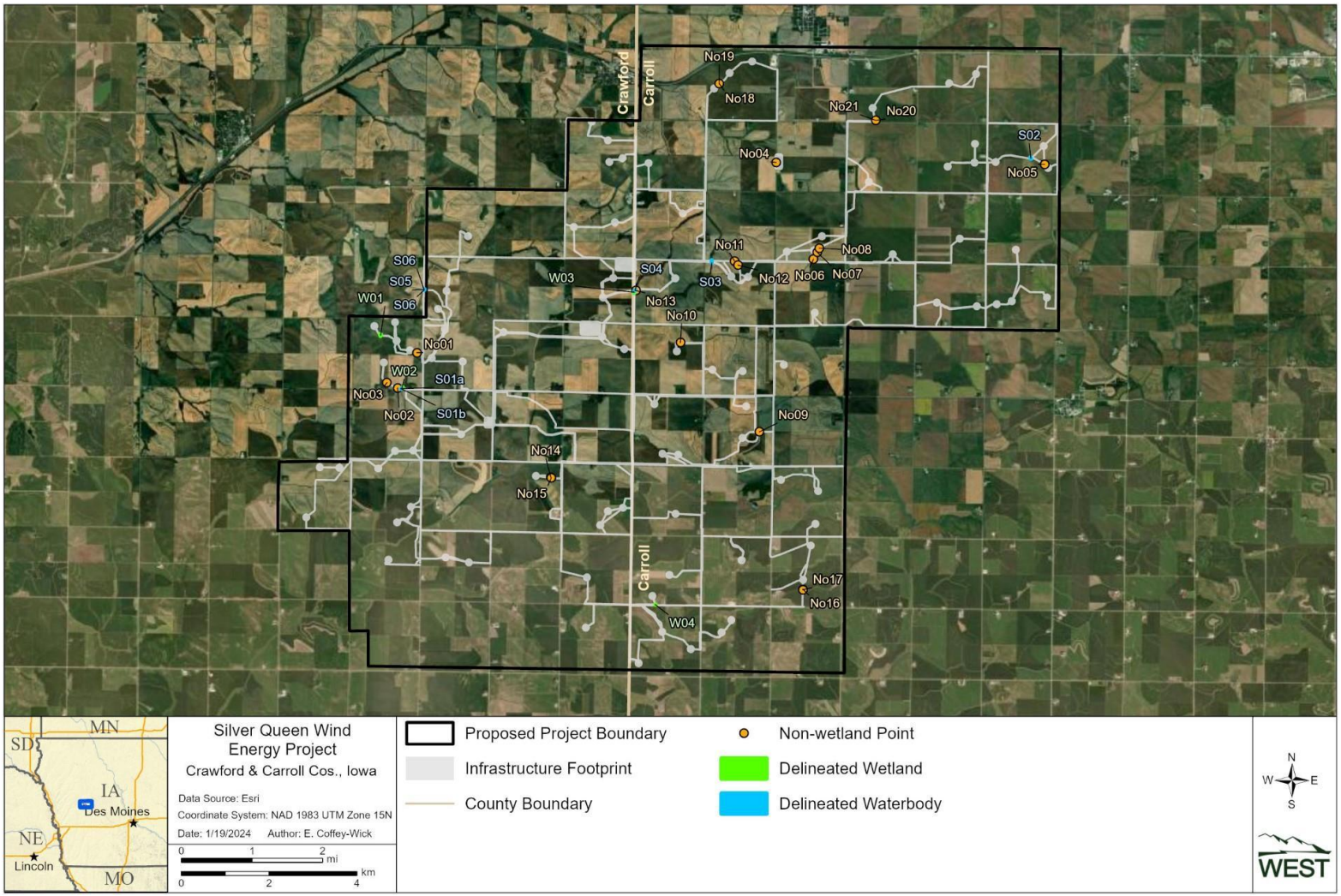

Figure 2. Wetlands and waterbodies delineated during the November 2023 delineation in the Silver Queen Wind Project Study Area, Crawford and Carroll counties, Iowa.

Wetland W02 is a less than 0.1-ac saturated emergent wetland (PEM1Bd) delineated in the northwest portion of the survey area and is associated with streams S01a and S01b. This wetland was dominated by smartweed (*Persicaria* sp.) and barnyard grass (*Echinochloa crus-galli*) and exhibited the redox dark surface hydric soil indicator and a combination of primary and secondary hydrology indicators such as a high-water table, saturation, and algal mat/crust

Table 1. Characteristics of wetland features observed during the November 2023 delineation within the Silver Queen Wind Project Survey Area, Crawford and Carroll counties, Iowa.

Wetland ID	Classification [a]	Area (Acres)	Impact Type
W01	PEM1Ah	0.1	• New access road • Crane path • Collection line
W02	PEM1Bd	<0.1	• Collection line
W03	PEM1Ad	<0.1	• Collection line • Existing road improvement
W04	PEM1Ad	<0.1	• New access road • Crane path • Collection line
Totals [b]	**–**	**0.2**	**–**

Waterbodies

A total of seven waterbodies were delineated during the November 2023 delineation, six of which are crossed permanent Project infrastructure. All streams and segment crossings demonstrated relatively permanent or continuously flowing water (classified as intermittent or perennial in the field). As with wetlands described above, waterbodies identified during the November 2023 delineation were located within an agricultural matrix and were commonly located near roads with culverts and among crop fields.

Waterbodies S01a and S01b are connected intermittent streams delineated in the west-central portion of the survey area. The crossings of waterbodies S01a and S01b by Project infrastructure, such as a collection line and an existing road improvement, are approximately 81-ft- and 22-ft-long, respectively. Waterbody S02, Brushy Creek, is a perennial stream delineated in the northeast portion of the survey area and is crossed by Project infrastructure for approximately 155 ft. Waterbody S03, East Boyer River, is a perennial stream delineated in the central portion of the survey area and is crossed by Project infrastructure for approximately 227 ft. Waterbody S04 is an intermittent stream delineated in the central portion of the survey area and is connected to wetland W03 via a culvert under the road. The crossing of stream S04 is approximately 192-ft-long and includes the width of the existing road under which it flows. Waterbody S05 is a perennial stream delineated in the west-central portion of the survey area and is crossed by Project infrastructure, including a new access road and an existing road improvement, for approximately 106 ft. Waterbody S06 is an intermittent stream and is a tributary to waterbody S05. Waterbody S06 is crossed by the same Project infrastructure as waterbody S05 and is approximately 44 ft long.

Table 2. Characteristics of waterbody (stream) features observed during the November 2023 delineation within the Silver Queen Wind Project Survey Area, Crawford and Carroll counties, Iowa.

Waterbody ID	Waterbody Name	Flow Regime	OHWM Width (ft)	OHWM Depth (ft)	Length in 150- to 500-ft-wide Survey Area (linear ft) [a]	Impact Type
S01a	–	Intermittent	8	0.5	81	• Collection line • Existing road improvement
S01b	–	Intermittent	4	1.0	22	• New access road • Existing road improvement
S02	Brushy Creek	Perennial	6	2.0	155	• Collection line • Crane walk
S03	East Boyer River	Perennial	3	1.0	227	• Collection lines • Existing road improvement
S04	–	Intermittent	6	3.0	192	• Collection lines • New access road • Existing road improvement
S05	–	Perennial	5	1.5	106	• New access road • Existing road improvement
S06	–	Intermittent	5	2.5	44	• New access road • Existing road improvement
Total Stream Length in Survey Area [a]					**827**	**–**

[a] Approximate length (ft) of the waterbody within the Survey Area for linear Project components, which encompasses the Project footprint. No survey areas for wind turbines and other wind facility structures contained waterbodies.

2024 SURVEY

WEST will conduct a supplemental desktop assessment and field delineation on NWI/NHD wetlands/waterbodies in the spring of 2024 once the seasonal conditions are appropriate based on USACE guidance, and in coordination with participating landowners to avoid crop damage. Project infrastructure will be surveyed to ensure compliance with Section 404 of the CWA and nationwide permit conditions for Iowa, to be determined in coordination with Scout.

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