WETLAND MITIGATION DESIGN AND PLAN FOR THE PROPOSED WELD COUNTY ROAD 39 EXTENSION PROJECT BETWEEN WELD COUNTY ROADS 50.5 AND 52 NEAR LASALLE, COLORADO IN WELD COUNTY

Prepared By:

Darcy Tiglas
5015 Swainsona Drive
Loveland, Colorado 80537

Prepared For:

Weld County
1111 H Avenue
Post Office Box 758
Greeley, Colorado 80632

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Introduction

Background

Weld County proposes to construct an extension of Weld County Road 39 (WCR 39) between Weld County Road 50.5 (WCR 50.5) and Weld County Road 52 (WCR 52) near LaSalle, Colorado. The project entails the crossing of the abandoned Lower Latham Drain Ditch at the north end of the project area. The wetland impacts under this project total approximately 0.27 acres and on-site mitigation is proposed as there is currently no wetland bank in service. Weld County plans to create approximately 0.27 acres of in-kind palustrine wetlands to mitigate for the expected wetland losses during the proposed construction. This report presents a conceptual design and plan for the creation of the wetlands at the project site, using guidance prepared by Cooper (1991) for wetland mitigation, to ensure compliance with wetland determination criteria.

Objective

The objective of this document is to present the U.S. Army Corps of Engineers (COE) with a conceptual design and plan for wetland creation at the project area shown in Figure 1. This creation plan addresses ecological concerns associated with creating wetlands.

Technical Approach

Development of the creation design and plan incorporated the following parameters:

- Three palustrine wetlands were identified within the project area during the field reconnaissance. These wetlands will be impacted by the proposed project and include approximately 11,853.7 square feet (0.272 acres). The mitigation area has been identified that covers approximately 13,803.6 square feet or 0.317 acres. A wetland delineation has been conducted to determine the boundaries of any existing wetlands on the project property and that delineation has been included in this packet.
- Under the principals set forth by the Pre-Construction Notification (PCN) as part of the 404-wetland permit application submitted to the COE, Weld County would be required to create wetlands from non-wetland areas in order to meet mitigation requirements under the permit. Currently, no wetland mitigation bank is in service and on-site mitigation is the only alternative. Weld County requests that the mitigation ratio to disturbed wetlands be at a 1:1 ratio.
Figure 1
Proposed Mitigation Location
WCR 39 Extension Project
• Weld County will submit all proper documentation to the COE to show the success of the created wetland. Weld County will submit an annual monitoring report by December 31 of each year until the mitigation area is released from future reporting by the COE.

• Weld County would be required to conduct a monitoring and maintenance program to ensure the success of the wetland creation at the project area. If the mitigation area is failing, the COE will ask Weld County to amend their mitigation plan and work to achieve the required wetland acreage success.

Wetland Creation

The purpose of the mitigation plan is to create wetlands to offset the permanent loss of 0.27 acres of wetlands as a result of the road extension activities proposed by Weld County on the project site. To accomplish this, areas within the proposed mitigation areas will be modified by the excavation of soil down to a pre-determined elevation, the provision of wetland hydrology, the formation of hydric soils, and the planting/seeding of hydrophytic vegetation. The wetland creation design will create palustrine wetlands currently found at the project area and the mitigation will be in-kind. At present, few invasive species occur within the project area and noxious plants should not be encouraged within the project area. The proposed community creates critical components of wildlife habitat that provide protective cover, nesting and breeding areas, and food sources for animals. Wetlands are also important for water quality improvements, cooling, and oxygenation of water.

Wetland Design

The wetland design provides for ponded or low-lying depressions similar to those wetlands along the west side of the project area. There will be small areas of open water created initially within the created wetland areas that will offer support for wildlife, particularly waterfowl and shorebirds. The elevation of these existing upland areas will be dropped 0.5-3 feet and will mimic the existing depressions on the site. This will ensure the proper hydrology to support wetland vegetative growth. Appendix A provides a list of plants to be used for the mitigation project. The wetlands will be created in the mitigation areas at the north end of the project area on both sides of the proposed WCR 39 extension roadway.

Native wetland grasses and sedges, such as switchgrass (Panicum virgatum) [FAC] and Baltic rush (Juncus balticus) [FACW], will be established in the mitigation area. This vegetation can tolerate inundation for short periods of time and drier conditions if required. Other native wetland grasses and grass-like plants which can be used in these areas include Nebraska sedge (Carex nebrascensis) [OBL], great bulrush (Schoenoplectus tabernaemontani) [OBL], three-square (Schoenoplectus pungens) [OBL], and spikerush (Eleocharis palustris) [OBL]. Several forbs can be included in the plantings list: swamp milkweed (Asclepias incarnata) [FACW], broadleaf arrowleaf (Sagittaria latifolia) [OBL], and blue vervain (Verbena hastata) [FACW]. Wetland forbs are difficult to propagate in a greenhouse, so their availability is limited. However, available native wetland forbs
will be included in the planting efforts as available. **Figure 2** presents a drawing of the proposed planting regime for the mitigation area.

The success of the mitigation efforts will be based on the provision of proper wetland hydrology. The project area lies below an escarpment and is a stable surface and ground water provider to the proposed wetland mitigation site. Weed-free hay or straw can be crimped into the soil if hydric soils are slow in forming. This process will quicken the development of "organic muck" or anaerobic soils typical of natural wetlands. Weld County will use Best Management Practices to stabilize the embankments of the roadway above the mitigation areas and will use methods to assure the stoppage of sediment transport into the mitigation areas.

**Final Design**

The final design establishes approximately 0.27 acres of wetlands with a variety of functions including nesting and resting for birds and other animals, buffering and cooling of surface water, and cleansing for groundwater. This design is ecologically desirable because it will create in-kind wetlands to those being lost under the proposed project. The palustrine community will be similar to other common community types within the greater South Platte River floodplain. The design is cost-effective because most of the species identified for use for the mitigation planting area are readily available from nurseries and from surrounding borrow areas. These available resources are needed to make the project successful. The advantages of this design include those discussed above and protection of the wetland with a zone of emergent and hardy vegetation. Increased complexity and diversity are directly related to the functional value of a wetland system as well as its ability to withstand disturbance.

**Wetland Creation Plan**

The wetland creation plan addresses specific requirements to ensure the success of the project. The following sections specifically describe how to create a wetland.

**Site Preparation**

The proposed wetland creation site is located south of WCR 52 and north of the abandoned Lower Latham Ditch on both sides of the proposed WCR 39 extension. Weld County will excavate soil to form slight depressions on the landscape with accompanying slight terraces within the mitigation areas. **Figure 2** shows the conceptual wetland creation plan schematic with numbers of plantings to be used and locations of plantings to be placed.

**Earthwork and Revegetation**

Earthwork, the grading and soil removal required to create the new wetlands, will begin several months after the road construction project begins. Due to a limited construction corridor the proposed mitigation area site will be used as the construction staging area. Live bareroot plant
Figure 2
Wetland Planting Schematic
WCR 39 Extension Project

Mitigation Areas
Utility Line
Utility Line
Utility Line
Mitigation Area
Abandoned Lower Latham Ditch

- Nebraska Sedge
- Great bulrush
- Baltic rush
- Three-square
- Prairie cordgrass
- Swamp milkweed
- Switchgrass
- Soft rush

1 Inch = 40 Feet
material from a retail nursery or another wetland site will be used as the primary source of new wetland vegetation for the newly created wetland site. If another wetland site is used as a source for vegetation, only thinning techniques will be used to obtain the vegetation and all vegetation removal will be accomplished manually. Bulrush plugs and other sprigs can be taken from one wetland and placed into another without harm to the source wetland. Preferably, this removal would occur in late winter or early spring while plants are still in a state of winter dormancy.

Slopes

Slopes, albeit slight and gentle, within the mitigation project area will be contoured to be stable in the absence of vegetation. Again, Weld County will use Best Management Practices to stabilize the embankments of the roadway above the mitigation areas to assure the stoppage of sediment transport into the mitigation areas. The depressions will be designed with an irregular perimeter geometry to offer an effective shelter from heavy flows from acute thunderstorms where surface water runoff would approach the mitigation area at oblique angles. After the emergent vegetation becomes established, any wave action from standing water will have little effect on the perimeter. Hardy vegetation, like bunchgrasses and rushes, will be used to buffer the perimeters around the edges of the mitigation area.

Summary Description of Wetlands to be Created

Approximately 0.27 acres of palustrine/emergent wetlands will be created under this plan. Five areas will be used to achieve the wetland mitigation requirement and these five areas will mimic the small depressions within the pastureland area south of the abandoned Lower Latham Drain Ditch. Utility line easements and setbacks are outside of the five areas so that Weld County can assure the COE of the protection in perpetuity of the wetland mitigation areas. The total mitigation area is greater than the needed mitigation acreage and this provides insurance of meeting the total needed mitigation acreage number if any small pockets within the created wetlands don’t meet the criteria for a regulatory wetland prior to release.

Site Hydrologic Regime

The project site's hydrologic regime will be suitable for wetland establishment. The water level will fluctuate throughout the year, but the ground water table is high between WCR 52 and the escarpment at the southern end of the project area and appears to be persistent all year long. A suitable hydrologic regime does not appear to be a limiting factor for wetland establishment.

Construction Schedule

The most critical element involved with the wetland mitigation construction schedule is the planting of wetland plants. Ideally, wetland plants should be planted in early spring (April-early June) and late fall (September-October). It should be noted that nurseries may not be able to
provide wetland plants until late May or mid-June. Borrow sites for plantings would be available for harvest in the event that nursery plants are difficult to obtain.

**Reporting Timetable**

An annual report will be prepared at the end of each growing season and submitted to the COE by December 31st of each year after completion of the creation project. These annual reports will be submitted to the COE for subsequent years to illustrate the success and progression of the created wetland. Once the site is a viable wetland of approximately 0.27 acres and meets the success criteria, Weld County will request that the COE accept this wetland acreage as adequate and successful mitigation acreage due under the Nationwide permit for the project.

**Plant List**

A plant list is provided in Appendix A. Substitutions will be made if some species are not available. Substitutions will be made between like forms, i.e. if switchgrass is not available, prairie cordgrass can be used instead. Local sources of wetland plants may also be used. These plants may be found in railroad right-of-ways, existing Weld County properties, and possibly on private properties near the project area. As stated above, season and plant condition are crucial factors to successful wetland development.

**Elevational Concerns**

All plant species obtained for use on the mitigation area will be adapted to a 4,000-5,500-foot elevation. Therefore, all live plant materials will be obtained from local nurseries (northern Colorado).

**Maintenance Program**

Appropriate maintenance is essential to the success of a constructed wetland. Several specific recommendations have been made below to increase the chances of success.

**Restrict Access.** Weld County should restrict human, vehicular, and pet access to the newly created wetland. Wetlands are very resistant once established. However, until they are established, they are fragile and need to be given time, without disturbance, to function properly.

**Weed Control.** Some weedy species will invade the wetland as soon as the soil is disturbed, and the growing season begins. Annual seeds, particularly, lie in-wait in the soil for an opportunity to grow and establish. Most weeds, such as Canada thistle, can be removed manually or mechanically. However, chemical treatment (with a safe chemical created for use in and around water) is usually the most effective control method. Weld County has a Weed Control Officer, Ms. Tina Booton, that can assist with weed control, if necessary.
Potential Problems

The primary potential problem to wetland creation areas is the impact of humans and heavy equipment due to adjacent roadway maintenance and operations. Interpretive signage may be required to educate people about the construction of this wetland, or a fence erected to keep access prohibited.

Monitoring Program

The project has a very high probability of success based on the existing wetlands across the greater project area. Suitable conditions for wetland plant growth already exist across the greater project area. Weld County will monitor the success of the wetland until such time as it is a viable, self-sustaining wetland. Parameters to be monitored over the course of a year include water quality, surface water levels, development of hydric soils, and wetland plant growth and establishment. An annual report will be prepared and submitted to the COE to provide documentation for the success of the created wetland each year by December 31. Qualitative and quantitative data will be collected for this report.

Success Criteria

Weld County proposes the following release criteria as special conditions under the nationwide permit for the project.

- Weld County agrees to create 0.27 acres of palustrine wetlands within the proposed mitigation areas identified in Figure 1. Weld County will hire a professional ecologist to oversee the mitigation, which will be accomplished in accordance with the mitigation plan.
- Weld County agrees that the created wetlands will be considered successful and self-sustaining when the mitigation area has not been manipulated via irrigation, removal of noxious plants, or replanting or reseeding during the last three years of a five consecutive year period.
- Weld County agrees that an additional determination of success includes at least 80% of the mitigation area be vegetated, with at least 50% of the total number of dominant species present consisting of species rated as facultative or wetter.
- As another measure of success, Weld County agrees that those species shown on the Colorado Noxious Weed Inventory list-A shall be 100% eradicated. Additionally, those species shown on the list-B will be no more than 10% or less of the total cover in the mitigation area.
Special-Status Species

A determination of no effect for each of the 9 Threatened, Endangered, and Candidate Species and 11 Birds of Conservation Concern have been determined based on habitat requirements of each species and the habitat type occurring within the project area. The proposed project will not result in any direct or indirect impacts to any federally listed threatened, endangered, or candidate species or Birds of Conservation Concern or their habitats. This decision is based on ground reconnaissance of the project area on January 23, 2019, vegetation community/wildlife habitat survey of the project area, as well as a field reconnaissance of the areas adjacent to the project area. Several species have minimal habitat opportunities within or directly adjacent to the project area, but due to the heavy cattle grazing and saline-laden soils causing large denuded areas these species are generally discouraged from using the project area. A Biological Assessment document is included in the permit request packet for this project.
References and Supporting Documents


APPENDIX A
PLANTS TO BE USED FOR
THE WCR 39 EXTENSION MITIGATION PROJECT

Name and Location on Landscape

Nebraska sedge (*Carex nebrascensis*)
Planting location: Perimeter; partial inundation

Baltic rush (*Juncus balticus*)
Planting location: Perimeter; terrestrial

Soft rush (*Juncus effusus*)
Planting location: Perimeter

Switchgrass (*Panicum virgatum*)
Planting location: Terrestrial; depression

Three-square (*Schoenoplectus pungens*)
Planting location: Perimeter; slight inundation

Great bulrush (*Schoenoplectus tabernaemontani*)
Planting location: Emergent; perimeter; slight inundation

Spikerush (*Eleocharis palustris*)
Planting location: Inundated perimeter

Prairie cordgrass (*Spartina pectinata*)
Planting location: Terrestrial; depression

Swamp milkweed (*Asclepias incarnata*)
Planting location: Inundation; perimeter

Blue vervain (*Verbena hastata*)
Planting location: Perimeter

Broadleaf arrowleaf (*Sagittaria latifolia*)
Planting location: Perimeter; slight inundation

Switchgrass (*Panicum virgatum*)
Planting location: Perimeter