WETLAND FINDING TECHNICAL MEMORANDUM STATE HIGHWAY 7 PROJECT

C&B PROJECT NO.: 070702.400.1.0001

Prepared for:

MULLER ENGINEERING

and

COLORADO DEPARTMENT OF TRANSPORTATION REGION 4
GREELEY, COLORADO

Prepared by:

CARTER & BURGESS, INC. 216 16TH STREET MALL, SUITE 1700 DENVER, COLORADO 80202

> February 22, 2002 Revised February 13, 2006

State Highway 7 Highway Improvement Project, Boulder, Colorado; prepared November 26, 2001; Revised November 29, 2005.

This Wetland Finding has been written in compliance with Executive Order 11990, "Protection of Wetlands," and is in accordance with 23 CFR 771, 23 CFR 777, and Technical Advisory T6640.8A.

Project Location and Description

The project is located east of Boulder, Colorado (Mile Post 54.9 to 57.0) on State Highway 7 (Arapahoe Road) between approximately Cherryvale Road and 75th Street at the boundaries between Sections 27 and 34 west ½, Sections 26 and 35, and Sections 25 and 36, T1N, R70W in Boulder County (Figure 1), and is located on the Niwot United States Geological Survey (USGS) Quad Map.

The Colorado Department of Transportation has proposed transportation improvements including highway capacity, level of service, and safety. Transportation improvements including the widening of SH 7 between Cherryvale Road and 75th Street to incorporate additional turn lanes, shoulders, and in some locations additional through lanes. Bike lanes and sidewalks are also included for the entire project. The project will require the replacement of the existing BNSF railroad bridge over SH7.

The primary purpose of improvements of SH 7 (Cherryvale Road to 75th Street) include reducing congestion and enhancing safety. The improvements are also intended to improve mobility for multiple modes of transportation.

Traffic accidents related to substandard roadway conditions are occurring within the study area. Approach grades to the hill in the middle of the project are steep and the sight distance over the hill is substandard. Existing paved shoulders are 2 to 3 feet in width. The roadway section provides little room to pass an incapacitated vehicle or to easily maneuver past a turning vehicle. Right and left turn lanes are substandard or non-existent.

Existing conditions in the study area reduce the desirability for multiple modes of transportation. Buses utilize the same lanes as general traffic and congestion along the corridor creates a reduced level of service for transit operation. Transit stops are on gravel shoulders or dirt areas adjacent to the highway. Sidewalk facilities exist along the north side of SH 7 between Cherryvale Road and 63rd Street. Within the project area, there are no other sidewalks or pedestrian facilities nor do bike lanes exist.

A wide range of alternatives were developed and evaluated during the EA process. The public and local, state and federal agencies were involved during the alternative development and evaluation. Alternatives evaluated included a wide range of roadway build options, multi-modal enhancements, intersection enhancements, and congestion management options. Alternatives were also evaluated for the Burlington Northern Santa Fe railroad alignment that crosses SH 7 since roadway build alternatives require the reconstruction of the BNSF railroad bridge over SH 7.

The alternatives evaluated in detail are the No-Action Alternative and two build alternatives (Alternative 2 – the Preferred Alternative and Alternative 2 – the Optional

Alternative). The No-Action alternative includes intersection improvements at the 75th Street intersection including four through lanes of traffic along SH 7 with on-street bike lanes and sidewalks. In addition, the City of Boulder has funding for intersection improvements for transit operations along SH 7 from Cherryvale Road to east of 63rd Street. The US 36 Environmental Impact Statement (EIS) is evaluating multi-modal transportation improvements between Denver and Boulder. As part of the US 36 study, improvements including commuter rail are being considered along the existing BNSF railroad corridor that crosses SH 7. In addition to possible commuter rail service, a potential park-n-Ride is being considered in the vicinity of the SH 7 and 63rd Street intersection.

The Preferred Alternative (Alternative 2) has two through lanes in each direction from Cherryvale Road to the Boulder Valley School District (BVSD) entrance. Westbound, from west of 75th Street to the BVSD, the preferred alternative has one through lane in each direction. Eastbound, from Westview Drive to 75th Street, there is also one lane in each direction. The proposed improvements feature curb and gutter with storm sewer for the west portion of the project and shoulders and roadside ditches for the east portion of the project.

The Optional Alternative (Alternative 3) has the same elements of the Preferred Alternative outlined above, with the exception of the number of through travel lanes for the 3½ mile segment between the BVSD intersection and west of 75th Street. The Optional Alternative provides two lanes in each direction to 75th Street with deceleration lanes at Westview Drive and Valtec Lanes.

Wetland Delineation Methods

The project area was surveyed for wetlands on June 12 and 15, 2001 by Laura Backus of Carter and Burgess. Wetland survey limits of the project area were:

- 60 meters (200 feet) west of Cherryvale Street to 600 meters (2000 feet) east of 75th
 Avenue, including 300 meters (1000 feet) north and south of SH 7 along 75th Avenue,
- 180 meters (600 feet) north and south along 63rd Avenue,
- the BNSF Railroad grade from 75th Avenue to north of Legion Park.

A wetland re-evaluation was conducted in February 2005 to determine if the location, size, and extent of previously mapped wetlands were still consistent of field work conducted in 2001. No changes to any of the previously identified wetland areas were observed during the 2005 re-evaluation.

Wetlands were delineated in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual. Data were collected on wetland parameters of vegetation, hydrology, and soils. A wetland was determined to be present at a site if at least one positive indicator of each wetland parameter was observed.

Central Plains Wetland Indicator Status was assigned for each plant species from Porter et al., 1996:

- Obligate Wetland Plants (OBL) species that almost always (>99% probability) occur in wetlands.
- Facultative Wetland Plants (FACW) species that usually (67 to 99% probability) occur in wetlands.
- Facultative Plants (FAC) species that are equally likely (33 to 67% probability) to occur in wetlands or uplands.
- Facultative Upland Plants (FACU) species that usually (67 to 99% probability) occur in uplands.
- Not Listed (NL) species with no designated wetland indicator status and assumed to be upland.
- No Indicator (NI) species for which insufficient information was available to determine an indicator status, or species that were not considered by the review panel.
- * tentative assignment based on limited information or conflicting review.

Wetlands were mapped using a Trimble ProXR Global Positioning System Receiver.

Wetland Descriptions

Emergent and scrub/shrub broad-leaved deciduous wetlands were present in and adjacent to irrigation ditches, roadside ditches, BNSF Railroad, and a constructed basin (Figure 2). All wetland areas were within unincorporated Boulder County. Total wetland area adjacent to anticipated SH 7 improvements is approximately 0.66 acre. Very small areas of wetland vegetation (fewer than 1.8 square meters [20 square feet]) which were not considered to function as wetlands were excluded from mapping (per Jeff Manuel, Colorado Department of Transportation, Region 4). Wetlands are grouped by wetland type (e.g., roadside ditch, irrigation ditch) and generally numbered from west to east. Wetland areas and US Corps of Engineers jurisdictional determination are presented in Table 1, located in the Project Impacts section of this report. Wetland delineation forms are in Appendix 1.

Wetland 1 - East Boulder Ditch

Wetland 1 is emergent wetland bands adjacent to East Boulder Ditch on the north side of SH 7 (Photograph 1, Map 1). Total wetland area is 0.004 acre. The ditch drains north to the Hillcrest portion of Valmont Reservoir and is jurisdictional. Dominant vegetation is a cow parsnip (*Heracleum sphondylium* subsp. *montanum*, FACW) with a vegetative sedge (probably *Carex emoryi*, OBL or *C. lanuginosa*, OBL) and minor smooth brome (*Bromopsis inermis*, FACU*). On the east side of the ditch, cow parsnip extends up the slope for approximately 1.5 meters (5 feet). Soils were too rocky to permit soil probe sampling. Wetland hydrology is supplied by ditch flows, two stormwater drain pipes, and probably by runoff from adjacent parking lots. Wetland functions include stormwater storage, bank stabilization, and sediment and pollutant trapping. Ditch bank vegetation on the south side of SH 7 did not meet wetland parameters.

Wetland 2 - SH 7, roadside drainage ditches, west of Hoover Hill

Wetlands 2a, 2b, 2c, and 2d are emergent wetland areas with patches of scrub-shrub wetland in the roadside drainage ditches adjacent to the south side of SH 7 from just east of 63rd Street to the east side of the Boulder Valley Arapahoe Campus Technical Education Center (Photograph 2, Map 1). Total combined wetland area is 0.286 acre. Wetlands 2a and 2b drain west to East Boulder Ditch. Wetlands 2c and 2d each drain in separate pipes under SH 7 to the north and outlet separately on the south side of the BNSF railroad. These wetlands are non-jurisdictional.

For Wetlands 2a and 2b, dominant vegetation is spikerush (*Eleocharis palustris*, OBL), threesquare bulrush (*Schoenoplectus pungens*, OBL), and quackgrass (*Elytrigia repens*, FAC) with clumps of smooth brome. Soils were light brownish gray (2.5YR 6/2) clay with common yellowish brown (10YR 6/8) and dark grayish brown (2.5YR 4/2) mottles and were saturated to the surface. Wetland hydrology is provided by runoff from parking lots to the south and from the highway. Wetlands 2a and 2b flow into a storm drain at the west end of 2a which appears to empty into East Boulder Ditch on the north side of SH 7.

For Wetlands 2c and 2d, dominant herbaceous species are broad-leaved cattail (*Typha latifolia*, OBL), spikerush, threesquare bulrush with areas of foxtail barley (*Critesium jubatum*, FACW), fescue (*Festuca pratensis*, FAC), redtop (*Agrostis stolonifera*, FACW), curly dock (*Rumex crispus*, FACW), scouring rush (*Hippochaete hymenalis*, FACW), Emory's sedge (*Carex emoryi*, OBL), and wooly sedge (*C. lanuginosa*, OBL). Small, intermittent patches of sandbar willow (*Salix exigua*, OBL) and seedling to sapling plains cottonwood (*Populus deltoides* subsp. *monilifera*, FAC) were present. Some areas were infested with Canada thistle (*Breea arvensis*, FACU) and a small stand of leafy spurge (*Tithymalus esula*, NL) was present near Boulder Valley Arapahoe Campus Technical Education Center. Hydric soils were assumed since the dominant species are OBL and FACW and the boundary is abrupt. Flowing water was present in 2c and 2d and enters a cross-drain under SH 7 north of the campus. Wetland hydrology is provided by runoff from the highway and areas of irrigated side slopes.

Wetland functions include stormwater storage, bank stabilization, and sediment and pollutant trapping. Wetlands 2c and 2d were higher quality wetlands with greater plant diversity. Wetlands 2a and 2b were in less distinctly defined roadside ditches and of lower function.

Additionally, a small non-jurisdictional north-south ditch (Wetland 2e, Map 1) is present east of the traffic light. Total area is 0.006 acre. Dominant vegetation is narrow-leaved cattail (*Typha angustifolia*, OBL) with fescue. Hydric soils were assumed since the dominant species is OBL and the boundary is abrupt. Wetland hydrology is probably provided by parking lot and road runoff. Water was flowing in the ditch at the time of the survey. Wetland functions include stormwater storage, bank stabilization, and sediment and pollutant trapping.

Wetland 3 - Detention Basin south of SH 7

An emergent wetland is present in a basin at Boulder Valley Arapahoe Campus Technical Education Center (Map 1). Total area is 0.075 acre. The wetland stormdrain connects to Wetland 2d, and the wetland is non-jurisdictional. Dominant vegetation is redtop and

fescue with cattail and foxtail barley. Soils were very dark gray (10YR 3/1) clay with common yellowish-brown (10YR 5/8) mottles. Soils were saturated and standing water in the wetland center was present at the time of the survey. Additionally, areas of cracked mud and 20 centimeter (8 inch) deep vehicle tracks were present. Wetland hydrology appears to be provided by runoff from adjacent parking lots and slopes. Wetland functions include stormwater storage, wildlife habitat, food chain support, and sediment and pollutant trapping.

Wetland 4 - Enterprise Ditch

The Enterprise Ditch is present in the project area adjacent to SH 7 on the west side of Hoover Hill and to the BNSF Railroad north of Legion Park. At both locations, narrow emergent and scrub-shrub wetland bands are present adjacent to the ditch (Maps 2 and 3). The ditch drains north to Valmont Reservoir, and is jurisdictional. Wetland functions include bank stabilization, wildlife habitat, food chain support, and sediment and pollutant trapping.

Wetland 4a is west of Hoover Hill (Photograph 3). Total wetland area adjacent to SH 7 is 0.025 acre. Dominant vegetation is Emory's sedge with scouring rush (*Hippochaete hymenalis*, FACW), a vegetative forb, showy milkweed (*Asclepias speciosa*, FAC), and virgin's creeper (*Parthenocissus inserta*, FAC). Adjacent to the wetland bands the upper banks are vegetated with plum (*Prunus americana*, UPL), Siberian elm (*Ulmus pumila*, UPL), and Wood's rose (*Rosa woodsii*, FACU). A minor infestation of Canada thistle is present. Soils approximately 1 meter (3 feet) from the edge of the ditch were very dark grayish brown (10YR 2/3) sandy clay loam with common yellowish brown (10YR 5/6) mottles. Wetland hydrology is supplied by ditch flows, and water was flowing in the ditch at the time of the survey.

Wetland 4b is north of SH 7 and west of the BNSF Railroad. Total area is 0.006 acre. Wetland bands in the area of ditch lined with metal are dominated by sandbar willow, wooly sedge, and arctic rush (*Juncus arcticus*, FACW) with curly dock and showy milkweed. Hydric soils were assumed since the dominant species is OBL and the boundary is abrupt. Wetland hydrology is provided by ditch flows.

Wetland 5 - Wetlands adjacent to BNSF Railroad embankment

A series of isolated, non-jurisdictional wetlands are present adjacent to both sides of the toe of the BNSF Railroad embankment (Map 2). Wetland functions include wildlife habitat, food chain support, and sediment and pollutant trapping.

Wetland 5a is an emergent wetland area north of the BNSF Railroad embankment (Photograph 4). Wetland area is 0.015 acre. Dominant vegetation is clustered field sedge (*Carex praegracilis*, FACW), arctic rush, and a vegetative sedge (probably *C. emoryi*, OBL). Soils are 10 YR 2/1 and were saturated to the surface. Wetland hydrology appears to be supplied by slope runoff.

South of the railroad, Wetland 5b is an emergent and scrub-shrub wetland area dominated by sandbar willow, vegetative sedges (probably *C. emoryi*), and fescue with a large-stemmed vegetative sedge and reed canarygrass (*Phalaroides arundinacea*, FACW). Total area is 0.012 acre. On the north side of the railroad (Wetland 5c),

dominant vegetation is emergent sedges, a vegetative forb that is probably swamp milkweed (*Asclepias incarnata*, OBL), and fescue with threesquare bulrush, showy milkweed, and Canada thistle. The wetland area within the fenceline is 0.015 acre. The wetland continues north of the fence. Soils on both sides of the railroad were mottled dark yellowish brown (10YR 4/4), and hydric soils were assumed based on the prevalence of OBL and FACW species and the boundary is abrupt. Wetland hydrology appears to be supplied by water steadily trickling out of a plastic pipe on the south slope. Soils were saturated in the vicinity of the pipe outlet.

Wetlands 5d and 5e are emergent and scrub-shrub wetlands are present in a shallow ditch on the south side of the railroad just west of the curve to SH 7 (Photograph 5). Total wetland area is 0.098 acre. Dominant vegetation is broad-leaved cattail, clustered field sedge, wooly sedge, and Emory's sedge with curly dock and Canada thistle. An area dominated by sandbar willow is present at the east end of the shallow ditch. Hydric soils were assumed since the dominant species are OBL and FACW and the boundary is abrupt. Wetland hydrology is potentially supplied by seepage from the Enterprise Ditch on the slope above and by runoff.

Wetland 6 – Cottonwood Ditch

The Cottonwood Ditch (also identified as Cottonwood Ditch #2 and Liner Cottonwood Ditch) is present in the project area adjacent to the BNSF Railroad south of the bridge over SH 7, SH 7 on the east side of Hoover Hill north of SH 7, and adjacent to the 75th Street right-of-way north of the intersection with SH 7. Narrow bands of emergent wetlands and minor areas of scrub-shrub wetlands are present adjacent to the ditch (Maps 3 and 4). Cottonwood Ditch drains north into Boulder Creek near Brownsville (per Robert Phearson, ditch company president), and Wetlands 6a, 6b, and 6d are jurisdictional. Wetland functions include bank stabilization, wildlife habitat, food chain support, and sediment and pollutant trapping.

Cottonwood Ditch side slope Wetlands 6a (Photograph 6) and 6b are present at the ditch intersection with BNSF Railroad south of the bridge over SH 7. Total wetland area is 0.023 acre. Wetland 6c is a network of non-jurisdictional feeder ditches with 0.024 acre within the BNSF Railroad right-of-way. Dominant ditch bank vegetation is wooly sedge, Emory's sedge, and reed canarygrass, with patches of sandbar willow. A minor infestation of Canada thistle is present. Hydric soils were assumed since dominant vegetation is OBL and FACW and the boundary is abrupt. Wetland hydrology is supplied by ditch flows, and water was flowing in the ditches at the time of the survey. Wetland bands appear to continue outside the right-of-way.

Wetland 6d is narrow wetland bands present adjacent to Cottonwood Ditch on the west side of 75th Street, north of the intersection with SH 7. Total wetland area adjacent to the road is 0.032 acre. Dominant ditch bank vegetation is sedges (probably *C. emoryi*), showy milkweed, and grasses.

Wetland 7 - SH 7, roadside drainage ditches, east of Hoover Hill

Wetlands 7a, 7b and 7c are emergent wetlands in SH 7 roadside drainage ditches east of the BNSF Railroad bridge (Photograph 7, Map 2). Total wetland area is 0.027 acre. Ditch flows are transferred by buried pipes to an irrigation water storage tank at the southeast

corner of SH 7 and 75th Street, and the wetlands are non-jurisdictional. Dominant species of Wetland 7a are spikerush and clustered field sedge with curly dock and threesquare bulrush. Hydric soils were assumed since the dominant species are OBL and FACW and the boundary is abrupt. Dominant species of Wetlands 7b and 7c are broadleaved cattail, threesquare bulrush, spikerush, and redtop with foxtail barley, arctic rush, quackgrass, horsetail (*Equisetum arvense*, FAC), curly dock, vegetative ragweed (*Ambrosia* spp.), and prickly lettuce (*Lactuca serriola*, FAC). Hydric soils were assumed since the dominant species are OBL and FACW. Flowing and standing water were present in some areas of the ditch. Wetland hydrology is provided by runoff from the highway collected both east and west of the bridge and augmented at Wetland 7a and Wetland 7c from side slope seeps. The Wetland 7c seep is possibly supported by Cottonwood Ditch. Wetland functions include stormwater storage, bank stabilization, and sediment and pollutant trapping.

Ditch north of SH 7

The north-south ditch on the north side of SH 7 across from the traffic light at Boulder Valley Arapahoe Campus Technical Education Center did not support wetlands within the highway right-of-way. Right-of-entry was not available for the property north of the right-of-way. Ditch banks, as viewed from the property line, appeared to be vegetated with smooth brome and thus do not meet the parameter for wetland vegetation.

Alternatives

Alternative 2 (Preferred Alternative)

The Preferred Alternative has two thru lanes in each direction from Cherryvale Road to the Boulder Valley School District entrance. At Cherryvale Road, curb and gutter is added to the existing right turn deceleration lane for eastbound traffic. At 63rd Street, in the westbound direction, there is a continuous right turn acceleration/deceleration lane that also functions as a bus bypass lane from east of 63rd to Cherryvale Road. In the eastbound direction, there is a continuous right turn acceleration/deceleration lane between the business access west of the Boulder Valley School District to east of the BVSD signal. From the BVSD signal to Westview Drive there is one thru lane westbound and two thru lanes eastbound. The second eastbound thru lane is dropped as a right turn lane at Westview Drive. There is a right turn lane in the westbound direction at Valtec Lane. The two-lane section (one lane in each direction) continues past the Burlington Northern Santa Fe Railroad overpass where the roadway section widens to two lanes in each direction at the 75th Street intersection improvements.

Alternative 3 (Optional Alternative)

This alternative has all of the same elements of the Preferred Alternative outline above, with the exception of the number of through travel lanes for the 3/4 mile segment between the BVSD intersection and west of 75th Street. The Optional Alternative retains two lanes in each direction to 75th Street with deceleration lanes at Westview Drive and Valtec Lanes.

Project Impacts

Wetland impacts were reduced as much as practicable during project design specifically by selection of an alternative that maintains the current alignment. Approximately 0.32

acre of wetland impacts are anticipated to occur during construction of the Preferred Alternative (Table 1). These impacts were unavoidable due to project purpose and need.

A Section 404 Permit will be obtained, as necessary, from the US Army Corps of Engineers prior to project construction.

Impacted wetland functions and values are anticipated to include bank stabilization, sediment/toxin retention, nutrient removal/transformation, food chain support, wildlife habitat, and visual quality.

Table 1. Wetland Jurisdictional Determination, Areas, and Permanent Impacts

Site ID	Acres w/in Study Area	USACE Jurisdictional?	Wetland Type*	Alternative 2 (Preferred) Permanent Impacts (Acres)	Alternative 3 (Optional) Permanent Impacts (Acres)
1	<0.01	Yes	Emergent	0.002	0.002
2 a, b, c, d	0.29	No	Emergent with Scrub Shrub	0.287	0.287
3	0.08	No	Emergent	0.0	0.0
4 a, b	0.03	Yes	Emergent with Scrub Shrub	0.011	0.011
5 a, b, c, d, e	0.14	No	Emergent with Scrub Shrub	0.0	0.0
6 a, b, c, d	0.08	Yes-a, b, d; No-c	Emergent with Scrub Shrub	0.0	0.0
7 a, b, c	0.03	No	Emergent	0.022	0.022
Total	0.66			0.322	0.322

^{*}Cowardin, L.M. et al. 1979. Classification of Wetland and Deepwater Habitats of the United States. United States Fish and Wildlife Service, Biological Services Program; FWS/OBS-79/31

Wetland Impact Minimization and Best management Practices

The alternative designs include avoidance and minimization of impacts to most study area wetlands. Impacts to wetlands will be avoided and minimized as much as practical during the final design process. The design shall comply with the policy of Executive Order 11990 regarding impacts to wetlands. The following specific BMPs from the *Erosion Control and Storm Water Quality Guide*, CDOT, 2002, will be required during construction to reduce the potential for wetlands to be indirectly affected by sedimentation from accelerated erosion or by hazardous materials (e.g., fuel, equipment lubricants):

- All disturbed areas will be revegetated with native grass and forb species. Seed, mulch and mulch tackifier will be applied in phases throughout construction.
- Where permanent seeding operations are not feasible because of seasonal constraints (e.g., summer and winter months), disturbed areas will have mulch and mulch tackifier applied to prevent erosion.

- Erosion control blankets will be used on slopes 3:1 or steeper, newly seeded slopes to control erosion and to promote the establishment of vegetation. Slopes should be roughened at all times.
- Temporary erosion control blankets will have flexible natural fibers.
- Erosion bales, erosion logs, silt fence or other sediment control device will be used as sediment barriers and filters adjacent to wetlands, surface waterways and at inlets where appropriate.
- To minimize the loss of sand from the road surface during winter sanding operations, sediment catch basins will be included during construction and put in place permanently with continual maintenance.
- Where appropriate, slope drains will be used to convey concentrated runoff from top to bottom of the disturbed slopes. Slope and cross-drain outlets will be constructed to trap sediment.
- Storm drain inlet protection will be used where appropriate to trap sediment before it enters the cross-drain.
- Check dams will be used where appropriate to slow the velocity of water through roadside ditches and in swales.

Additionally, the following BMPs to minimize additional wetland impacts during construction will be employed:

- All wetland areas and water bodies not impacted by the project will be protected
 from unnecessary encroachment by temporary fencing and will be seeded in
 phases throughout construction. Sediment control such as silt fence or erosion
 logs will also be used where needed to protect the area from sediment. Siltation
 control devices (e.g., fences) will be placed on the down-gradient side of
 construction areas to prevent soil from entering wetland areas.
- No staging of construction equipment, equipment refueling or storage of construction supplies will be allowed within 100 feet of a wetland or any waterrelated area.
- Standard erosion/sediment control measures will be observed and an erosion control plan will be developed prior to and for inclusion in the construction bid plans. All bare fill or cut slopes adjacent to streams or intermittent drainages will be stabilized as soon as practicable.
- No fertilizers, hydrofertilizers, or hydromulching will be allowed anywhere on the project.
- Work areas will be limited as much as possible to minimize construction impacts to wetlands.

Compensatory Mitigation

Wetlands as well as their associated functions permanently impacted by project construction will be mitigated at a 1:1 ratio by purchase of credits at one of the three wetland mitigation banks within the primary service area. Wetland impacts will be reduced as much as possible during final design.

Conclusion

"Based on the above considerations, it is determined that there is no practicable alternative to the proposed new construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use."

References

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Appendix 1

Wetland Delineation Forms

Routine Wetland	Determin	ation	(1987 COE W	Vetlands Delineation Manual)		
Project, City/County, State: 5+ 7, R	ouide	~ C	<u></u>			
Applicant/Owner: COOT - R 4		,	It	nvestigator: L. Back us		
Site: East Bould Witch so	outh o			Date: 6-15-01		
Disturbed - Wetland indicators altered/removed w/s Problem Area - Wetland indicators periodically lac Ecological setting: developed area or pl	in last 5 ye king due to	ars by l	numan activitie	es/catastrophic natural events? Yes	No	
Vegetation: Wetland vegetation present? Yes N	<u>6</u>					
Dominant species	Layer S	Status	Dominant s	species	Layer	Status
Reynoutria japonica	<u> </u>	ACU	Taraxa	cum officinalis	<u>+</u>	FACU
Hemerocallis spp.		AC U				
Salix Fragilis -langemature	<u> + </u>	AC				
Dacty 115 Flomerata	_ <u>H</u> F	AC U				
Vinca	<u>^ H </u>	<u> </u>				
Vita spp.	H					
H – woody/non-wood <3.2': S – woody >3.2', <3.0 Dominant species – most abundant species that except the species $\frac{18}{2}$ % of dominants = OBL.	eed 50% o	f total c	over, plus add	any height, v = woody, chinoing >5. litional species comprising over 20% ands - 50% or greater of dominants =	of total cove	
Depth Horizon Matrix color Mottle color	Mottle	abunda	ance/contrast	Texture, concretions, structure		<u>. </u>
			OMAN IN SECURITY OF THE SECURI			
Mottle abundance: few = <2%, common = 2-20%, Mottles prominent/distinct: same hue – value varies			na by 2; differe	ent hue – value and chroma vary by	l unit	
Non-sandy hydric soil indicators:			Sandy by	ydric soil indicators – add:		
Histosol				ic moisture regime		
Histic epipedon				organic content in surface layer		
H2S odor				aking of subsurface horizons by orga		
Aquic moisture regimeFe/Mg recent concretions				anic accretions (muck balls just below spodosol (dark red-br horizon beneat		t
Reducing conditions (a-a-dipyridil) Gley				table depth)	in leached E	norizon
Chroma = 2/less in mottled, 1 or less in unmottle	ed		Assum	ne soils when all dominant plants are	OBL and/or	FACW
Hydrology: Wetland hydrology present? Yes No) thou	us i	neitch			
Depth of surface waterDepth	to free wat	ter in pi	t	Depth to saturated soil AoT	o rutoz.	<u>L 97</u>
Vater sources: Litch, runoff					Marie Control of the	
rimary wetland hydrology indicators:				ry indicators (need 2 or more):		
Inundated				ized root channels in upper 12"		
Saturated in upper 12" > 12.5% of growing seaso Water marks	on			er-stained leaves		
drift lines				l soil survey data neutral test (>50% dom = OBL, FAC	W+ FACW)
Sediment deposits			Other		,	,
Drainage pottern in wetlands						

Routine Wetland	Determination (19)	87 COE Wetlands	Delineation Manual)) (1)	F D
Project, City/County, State: 547 Bools	es,co				
Applicant/Owner: COOT - R 4		Investiga	itor: L. Backus		
Site: ditches on south sile SH7,	WEST of Hoov	en +1;11	Date: 6-12-01		
Disturbed - Wetland indicators altered/removed w/i Problem Area - Wetland indicators periodically lac Ecological setting:				S	
Vegetation: Wetland vegetation present? Yes N	o	·		÷	
Dominant species Schoenopleaus pungens Feleochanis palustris	Layer Status 1 H OB L H OB L	Dominant species		Layer	Status
Œlytrigia répens Bromopsis inermis?mower	H FACO?				
H – woody/non-wood <3.2': S – woody >3.2', <3.0 Dominant species – most abundant species that exceed the property of dominants = OBL,	eed 50% of total cove	r, plus additional	species comprising over 20% of		
Soils: Wetland soils present? Yes No Map unit series and phase: Depth Horizon Matrix color Mottle color 12 " 25 YR 6 2 10 YR 5/2 25 YR 6 2 10 YR 5/2	Mottle abundance S CG m Mor CO m mo)	/contrast Textu	Iydric soils list? Yes No re, concretions, structure		
Mottle abundance: few = <2%, common = 2-20%, 1 Mottles prominent/distinct: same hue – value varies		y 2; different hue	– value and chroma vary by 1 ur	nit	-
Non-sandy hydric soil indicators: Histosol _Histic epipedon _H2S odor _Aquic moisture regime _Fe/Mg recent concretions _Reducing conditions (a-a-dipyridil) _Gley _Chroma = 2/less in mottled, 1 or less in unmottle	d	Aquic moistHigh organiStreaking ofOrganic accWet spodose at water table de	c content in surface layer subsurface horizons by organic retions (muck balls just below su ol (dark red-br horizon beneath le	ırface) eached E	
Aydrology: Wetland hydrology present? (Yes) No Cross Lain Emptying into Depth of surface water Depth Water sources: runoff from high under wetland hydrology indicators:	Drain to c East Bouldu to free water in pit_	west, appropriately on the lots	north size of high Depth to saturated soil Sur	5H7 way face	
Primary wetland hydrology indicators: Inundated Saturated in upper 12" > 12.5% of growing seasoWater marksdrift linesSediment depositsDrainage pattern in wetlands		Oxidized roo Water-staine Local soil su	ot channels in upper 12" d leaves	-, FACW)	ı

Routine Wetland D	etermination (19	87 COE Wetlands Delineation Manual)	2	ことろ
Project, City/County, State: 5+ 7 , Bools	L CO			
Applicant/Owner:	·	Investigator: L. Backus		
Site: Litches on south side St	17. WEST OF			
Disturbed - Wetland indicators altered/removed w/in Problem Area - Wetland indicators periodically lacking Ecological setting: Jevelope 2 and a p	last 5 years by huming due to normal se	nan activities/catastrophic natural events? Yes No	Son m	t maulin
Vegetation: Wetland vegetation present? (Yes) No				
Dominant species	Layer Status	Dominant species	Layer	Status
Schoemenlectus la crustis		Salixexiguo - patches	<u> </u>	0136
1 3	H OBL 4	Eleochanis palustri's		<u>081</u>
Critesius Juhatum		Populus deltoides subsp. monil		<u> </u>
testuca protensis		guisetum spp.	<u> </u>	
Agrastis Stolonifera		Scheenspherus pungens		OBL
Rumex Crispus		arex emany!		CBC
H – woody/non-wood <3.2': S – woody >3.2', <3.0" Dominant species – most abundant species that excee				er
•				
Photo # 2 > E % of dominants = OBL, I reason of edu center traffic 118 ht	ACW, FAC 100	$\underline{}$ (Wetlands - 50% or greater of dominants = 0	BL, FAC	W, FAC)
-litchelingthan- I hasaine i 1-	Fired or we	est side a vogetation is him	ne d	
Minor Breez arisms is not he	- and Elacas	inus augustifolia atuppunmo	rign.	s
minor Breez arvensis parchas Soils: Wetland soils present? Yes No	Iganis of eas	Tem 2		
Map unit series and phase: Depth Horizon Matrix color 12" NOTR 3/2 MOTT L. WEXL arb Mottle color	Mottle abundance	, , , , , , , , , , , , , , , , , , ,		
Mottle abundance: few = $<2\%$, common = 2-20%, m Mottles prominent/distinct: same hue – value varies b		by 2; different hue – value and chroma vary by 1 u	ınit	
Non-sandy hydric soil indicators:		Sandy hydric soil indicators – add:		
Histosol		Aquic moisture regime		
Histic epipedon		High organic content in surface layer		
H2S odor Aquic moisture regime		Streaking of subsurface horizons by organicOrganic accretions (muck balls just below s		
Fe/Mg recent concretions		Wet spodosol (dark red-br horizon beneath		horizon
Reducing conditions (a-a-dipyridil)		at water table depth)		
Gley Chroma = 2/less in mottled, 1 or less in unmottled	l	XAssume soils when all dominant plants are C	BL and/o	r FACW
Hydrology: Wetland hydrology present? Yes No	flows promote at storage	near east and to obscide	ũ h	
Deput of surface water <u>31/2/1000 (1000 3</u> Deput to	o free water in pit	Depth to saturated soil	· · · · · · · · · · · · · · · · · · ·	
Water sources: runoff, in sate 2 law Primary wetland hydrology indicators:	un s			
?rimary wetland hydrology indicators: Inundated		Secondary indicators (need 2 or more):		
Saturated in upper 12" > 12.5% of growing season	1	Oxidized root channels in upper 12"Water-stained leaves		
Water marks	•	Local soil survey data		
drift lines		Fac-neutral test (>50% dom = OBL, FACW	+, FACW)
Sediment deposits		Other:		

Routine Wetland Determina	ation (1987 COE Wetlands Delineation Manual)
Project, County, State: SH 7 Boul In CO	
	Date: (9-12-01
Applicant/Owner: CDOT Q 4	
Disturbed - Wetland indicators altered/removed w/in last 5 year Problem Area – Wetland indicators periodically lacking due to Ecological setting:	rs by human activities/catastrophic natural events? Yes No
Vegetation: Wetland vegetation present? Yes No	
Dominant species % Layer : Typho angustifolio 0 Tilatifolio 0	Status Dominant species % Layer Status OBL OBL
H – woody/non-wood <3.2': S – woody >3.2', <3.0" dbh, T – w Dominant species – most abundant species that exceed 50% of to % of dominants = OBL, FACW, FAC (Wetlands - 50)	total cover, plus additional species comprising over 20% of total cover.
Soils: Wetland soils present? (Ves) No ORDUTTE -	
Map unit series and phase:	Hydric soils list? Yes No abundance/contrast Texture, concretions, structure
Mottle abundance: few = <2%, common = 2-20%, many = >20. Mottles prominent/distinct: same hue – value varies by 3 units,	% chroma by 2; different hue – value and chroma vary by 1 unit
Non-sandy hydric soil indicators: HistosolHistic epipedonH2S odorAquic moisture regimeReducing conditions (a-a-dipyridil)	Sandy hydric soil indicators – add: Aquic moisture regime High organic content in surface layer Streaking of subsurface horizons by organic material Organic accretions (muck balls just below surface) Wet spodosol (dark red-br horizon beneath leached E horizon
GleyChroma = 2/less in mottled, 1 or less in unmottledFe/Mg recent concretions	at water table depth)
Iydrology: Wetland hydrology present? Yes No	y sotting runoff for melaper to East
Depth of surface waterDepth to free water	er in pitDepth to saturated soil
Vater sources: rimary wetland hydrology indicators: Inundated Saturated in upper 12" > 12.5% of growing season Water marks drift lines	Secondary indicators (need 2 or more): Oxidized root channels in upper 12" Water-stained leaves Local soil survey data Fac-neutral test (>50% dom = OBL, FACW+, FACW)

Wetland Determination: Does this sampling point meet all 3 wetland criteria? (Yes) No

Sediment deposits

__Drainage pattern in wetlands

_Other:

Routine Wetland Determination	n (1987 COE Wetlands Delineation Manual)
	T(1767 COL WOLLING DOMINICALITY
Project, City/County, State: SH7, Boulde CO	
Applicant/Owner: COOT R 4	
Site: Letentron basin at Votech	Date: 6-12-01
Disturbed - Wetland indicators altered/removed w/in last 5 years by Problem Area - Wetland indicators periodically lacking due to norm Ecological setting:	
Vegetation: Wetland vegetation present? Yes No	
Dominant species Layer Status	Dominant species Layer Status
+ Agrostis Stolonifera H FACI	ω
Typha spp. H OBL Critesium jubatum H FAC	
Chitesium jubatum H FAC	w
Festuca protensis H FAC	
H - woody/non-wood <3.2': S - woody >3.2', <3.0" dbh, T - wood	
Dominant species – most abundant species that exceed 50% of total	•
Photo # $ \longrightarrow $	Olombiants = OBL, FACW, FAC)
mowed on west sile	
Breez anuensis at easter =	
Dreed annews s an extrem	
Soils: Wetland soils present? Yes No	
Map unit series and phase: Depth Horizon Matrix color Mottle color Mottle abund 12 " 104R3/1 104R5/8 comm	Hydric soils list? Yes No dance/contrast Texture, concretions, structure
Mottle abundance: few = <2%, common = 2-20%, many = >20% Mottles prominent/distinct: same hue – value varies by 3 units, chro	oma by 2; different hue – value and chroma vary by 1 unit
Non gandy hydric soil indicators.	Candy hydria and indicators adds
Non-sandy hydric soil indicators:Histosol	Sandy hydric soil indicators – add:Aquic moisture regime
Histic epipedon	Aquic moisture regime High organic content in surface layer
H2S odor	Streaking of subsurface horizons by organic material
Aquic moisture regime	Organic accretions (muck balls just below surface)
Fe/Mg recent concretions	Wet spodosol (dark red-br horizon beneath leached E horizon
Reducing conditions (a-a-dipyridil)	at water table depth)
Gley	
XChroma = 2/less in mottled, 1 or less in unmottled acas of ackers, peel 5 hours 8" Jeap vehicle Tracks	Assume soils when all dominant plants are OBL and/or FACW
8" Jeap Vehick Tracks	
Hydrology: Wetland hydrology present? Yes, No	
Depth of surface water <u>Seep in Center</u> Depth to free water in	pit Depth to saturated soil rear surface
Water sources: runoff - probably mainly fram	
Primary wetland hydrology indicators:	Secondary indicators (need 2 or more): Oxidized root channels in upper 12"
Saturated in upper 12" > 12.5% of growing season	Oxidized root channels in upper 12Water-stained leaves
Water marks	Local soil survey data

_drift lines Sediment deposits TDrainage pattern in wetlands Fac-neutral test (>50% dom = OBL, FACW+, FACW)
Other:

Routine Wetland D	etermination (19	987 COE W	etlands Delineation Manual)	(4)a
Project, City/County, State: 5H 7 Bould	4,00			
Applicant/Owner: COOT RU		Ir	nvestigator: L. Backus	
Site: Enterprise Ditch - wes	T branch		Date: 6-12-01	
Disturbed - Wetland indicators altered/removed w/in Problem Area - Wetland indicators periodically lacki Ecological setting:	last 5 years by hun	nan activitie	es/catastrophic natural events? Yes (I	√ 0
Vegetation: Wetland vegetation present? (Yes) No				
Dominant species - WEST Side		Dominant s		Layer Status
Carex ernory	H OBL	·		
tlippochaote hymeinalis	H FACW			
Asclenias Sociosa	H EAC			
Rosa woodsii	S FACU_			
1000013302 11/20140	<u> </u>			
H-woody/non-wood <3.2': S-woody >3.2', <3.0"	H FACU_			
Photo # 3 7500 % of dominants = OBL, F Minor Breed avents = OBL, F Upper riparian band w/ Pri East side private land apper Soils: Wetland soils present? Yes No	ACW, FAC <u>75</u> ?	(Wetla	ands - 50% or greater of dominants =	
Map unit series and phase:			Hydric soils list? Yes No	
Depth Horizon Matrix color Mottle color	Mottle abundanc	e/contrast	Texture, concretions, structure	
12" - 104R 3/2 104 R 5/6 on upper 15hrubby wetlam	more) = s		samy clay loarn	
	- 6.16.3			
Mottle abundance: few = $<2\%$, common = 2-20%, maximum fortiles prominent/distinct: same hue – value varies b		by 2; differe	ent hue – value and chroma vary by 1	unit
Non-sandy hydric soil indicators:			ydric soil indicators – add:	
Histosol			c moisture regime	
Histic epipedon H2S odor			organic content in surface layer	
Aquic moisture regime			king of subsurface horizons by organ nic accretions (muck balls just below	
Fe/Mg recent concretions			spodosol (dark red-br horizon beneat	
Reducing conditions (a-a-dipyridil)			table depth)	
Gley Chroma = 2/less in mottled, 1 or less in unmottled		Assum	ne soils when all dominant plants are	OBL and/or FACW
Hydrology: Wetland hydrology present? Yes No	Jitch Flou	2		
Depth of surface waterDepth to		Petablish	Depth to saturated soil	mp
Vater sources: Entenorise ditch rimary wetland hydrology indicators:	unoff			
rimary wetland hydrology indicators:	1	Secondar	y indicators (need 2 or more):	
Inundated	1 .		ized root channels in upper 12"	
Saturated in upper 12" > 12.5% of growing season	based on veg		r-stained leaves	
Water marks drift lines			soil survey data	XI EACUD
Sediment deposits		Other	eutral test (>50% dom = OBL, FACT	YT, FACW)
Drainage nattern in wetlands			•	

Routine Wetlan	nd De	termi	nation (1987 COE Wetlands Delineation Manual)	4)	b	
Project, County, State: SH 7 Boold	ur_	, CC	j				
Site: W. Engerise Ditch	at.	RRE	L nox	Date: 6-15-01			
Applicant/Owner: CDOT R4		-		Investigator: L. Backus			
	w/in l lackir	ast 5 ye	ears by hi	ıman activities/catastrophic natural events? Yes	No		
Dominant species		Laye	r Status	Dominant species	% L	aver	Status
ASalix exigua		S	100				20000
* Carex langinuosa		H	084				
Rumerchispus							
A Juneus anctique		++	TAC W				
Arlapius opectosa		14	FAC				
Nottle abundance: few = <2%, common = 2-20	lor	Mottle	e abundar	Hydric soils list? Yes No nee/contrast Texture, concretions, structure	unit		- - -
Ion-sandy hydric soil indicators:				Sandy hydric soil indicators – add:			
Histosol				Aquic moisture regime			
Histic epipedon H2S odor				High organic content in surface layer	. •		
Aquic moisture regime				Streaking of subsurface horizons by organOrganic accretions (muck balls just below			
Reducing conditions (a-a-dipyridil)				Wet spodosol (dark red-br horizon beneat	h leacher	d E ho	orizon
Gley Chroma = 2/less in mottled, 1 or less in unmo	.++1ad			at water table depth)			
Fe/Mg recent concretions	itica			il total and the second of the	be some	BOY?	man
Iydrology: Wetland hydrology present? Yes	No (Losses	s and Pitch CFlow	present a facent to mutal li just was culvestinled under ling in ditch	track.	S	
epth of surface waterDe	oth to	free wa	ter in pit	Depth to saturated soil	-		
Vater sources: rimary wetland hydrology indicators: _Inundated Saturated in upper 12" > 12.5% of growing se _Water marks _drift lines Sediment deposits	eason			Secondary indicators (need 2 or more): Oxidized root channels in upper 12" Water-stained leaves Local soil survey data Fac-neutral test (>50% dom = OBL, FACT	W+, FA(CW)	
Sediment deposits Drainage pattern in wetlands				Other:			

Routine Wetla	nd Determination (19	87 COE Wetlands Delineation Manual)	5)a
Project, City/County, State: 5+7, Bo	oulder, CC		
Applicant/Owner: CDOT R4			
Site: Railroad Nof SH7, nor	th of Tracks	Date: 6-15-01	
Disturbed - Wetland indicators altered/removed Problem Area - Wetland indicators periodically Ecological setting:	l w/in last 5 years by hum y lacking due to normal se	nan activities/catastrophic natural events? Ye	
Vegetation: Wetland vegetation present? Ye	<u> </u>		
Dominant species	Layer Status	Dominant species	Layer Status
Carex proceduce 115	_	:	
· Juneus arcticus	H FACW		
Carex prinoryi? Vepetative	H OBL		
H – woody/non-wood <3.2': S – woody >3.2',	<3.0" dbh, T – woody >3	.0" dbh of any height, V – woody, climbing	>3.2'
Dominant species – most abundant species that	exceed 50% of total cove	er, plus additional species comprising over 20	% of total cover.
Photo # % of dominants - C	DRI FACW FAC	(Wetlands - 50% or greater of dominants	
FIGURE WOOD WOOD TO SEE THE SE	eta d la Rama	allensis was omitted	, , , , , , , , , , , , , , , , , , , ,
area at west end domine Bassia Sieverstana is p	Sand Jak Was	dans margins	
Dassia steads			
Soils: Wetland soils present? Yes No			
Processor & Commission of the			
Map unit series and phase:		Hydric soils list? Yes No	
Depth Horizon Matrix color Mottle co	olor Mottle abundance	e/contrast Texture, concretions, structure	
0-9 10482/1			
9-12 104 R5/4 black	< many.		
· ·			
Mottle abundance: few = <2%, common = 2-20 Mottles prominent/distinct: same hue – value va	/%, many = >20% aries by 3 units, chroma t	by 2; different hue – value and chroma vary b	y 1 unit
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		•
Non-sandy hydric soil indicators:		Sandy hydric soil indicators – add:Aquic moisture regime	
Histosol		High organic content in surface layer	
Histic epipedon H2S odor		Streaking of subsurface horizons by or	ganic material
Aquic moisture regime		Organic accretions (muck balls just be	
Fe/Mg recent concretions		Wet spodosol (dark red-br horizon ben	
Reducing conditions (a-a-dipyridil)		at water table depth)	
Gley			
Chroma = 2/less in mottled, 1 or less in unm		Assume soils when all dominant plants a	are OBL and/or FACV
disturbed soils - part of 1			
Hydrology: Wetland hydrology present? Yes			
Depth of surface waterDe	epth to free water in pit _	Depth to saturated soil	6"
Water sources: rong f Primary wetland hydrology indicators:			
		Secondary indicators (need 2 or more):	
Inundated 12 5 % 6		Oxidized root channels in upper 12"	
Saturated in upper 12" > 12.5% of growing s	season	Water-stained leaves	
Water marks		Local soil survey data XFac-neutral test (>50% dom = OBL, FA	/CM+ EVCMV
drift lines Sediment deposits		Other:	LOW I, L'ACTY)
Drainage pattern in wetlands			

Routine Wetland Determination (19	987 COE Wetlands Delineation Manual)
Project, City/County, State: SH7, Boulder, CO	
Applicant/Owner: CDOT R4	Investigator: L. Backus
Site: RR North of Sti7, Not parked rehire	
Disturbed - Wetland indicators altered/removed w/in last 5 years by hur Problem Area - Wetland indicators periodically lacking due to normal s Ecological setting:	nan activities/catastrophic natural events? Yes No
Vegetation: Wetland vegetation present? Yes No	
Dominant species Layer Status 4 Satis exigua including young SOBL	Dominant species Layer Status
& Carex energy HOBE	
L'arex emery: H OBC Vegetative laye carex /Scirpus H -	
& testuca pratemse H FAC	
Phalanoides anundinacea H FACW	
H - woody/non-wood <3.2': S - woody >3.2', <3.0" dbh, T - woody >3.2 Dominant species - most abundant species that exceed 50% of total coverage Photo # 7 > 5 \ldots 8 of dominants = OBL, FACW, FAC 1000	er, plus additional species comprising over 20% of total cover.
Soils: Wetland soils present? Yes No Map unit series and phase: Depth Horizon Matrix color Mottle color Mottle abundance 12" 104R4/4 mottle common	, , , , , , , , , , , , , , , , , , , ,
Mottle abundance: few = <2%, common = 2-20%, many = >20% Mottles prominent/distinct: same hue - value varies by 3 units, chroma	
Non-sandy hydric soil indicators: HistosolHistic epipedonH2S odor Aquic moisture regimeFe/Mg recent concretionsReducing conditions (a-a-dipyridil)Gley	Sandy hydric soil indicators – add: Aquic moisture regimeHigh organic content in surface layerStreaking of subsurface horizons by organic materialOrganic accretions (muck balls just below surface)Wet spodosol (dark red-br horizon beneath leached E horizon at water table depth)
Chroma = 2/less in mottled, 1 or less in unmottled	Assume soils when all dominant plants are OBL and/or FACW
Hydrology: Wetland hydrology present? Ves No	
Depth of surface waterDepth to free water in pit	Depth to saturated soil Puc outle t
Water sources: Trickling flows from PUC pipe	runall
Primary wetland hydrology indicators: Inundated \(\subseteq \text{Saturated in upper 12"} > 12.5\% \) of growing season Water marksdrift lines	Secondary indicators (need 2 or more): Oxidized root channels in upper 12" Water-stained leaves _Local soil survey data
AMICO	χ Fac-neutral test (>50% dom = OBL, FACW+, FACW)

__Other:

_Sediment deposits

___Drainage pattern in wetlands

Routine V	Vetland Determination (19	287 COE Wetlands Delineation Manual)	
Project, City/County, State: SH7.	Boulder CO		
		Investigator: L. Backus	
		of Track = Date: 6-15-01	
Disturbed - Wetland indicators altered/ren Problem Area - Wetland indicators period Ecological setting: rolling plains	moved w/in last 5 years by hun dically lacking due to normal s	nan activities/catastrophic natural events? Yes No easonal environmental variations? Yes No	D.
Vegetation: Wetland vegetation presen	I! (Yes)No		
Dominant species		Dominant species	Layer Status
Carex & Mory 1	<u> </u>		
- Asclepias inconara?			
Asclepias specios -	, ,		
· Vegetative tall gras			
probably Festive pro		· · · · · · · · · · · · · · · · · · ·	
H- woody/non-wood 32's s woody	3 2' <3 0" dbh T woody >3	3.0" dbh of any height, V – woody, climbing >3.2"	
		er, plus additional species comprising over 20% of	
		$\frac{7}{2}$ (Wetlands - 50% or greater of dominants = 0	
		Wettailds - 50% of greater of dominants = 0	DL, I'ACW, I'AC)
Breed anuensis inva. Elacagnus angustifolia	**************************************		
Elacagnus angustitolla	on margin		
Soils: Wetland soils present? (Yes) No			
•			
Map unit series and phase:		Hydric soils list? Yes No	
	ottle color Mottle abundanc		
			<u></u>
light colored thin	sand layer an	(<u> </u>	
With the second			
Mottle abundance: few = <2%, common =	- 2 20% many - >20%		
		by 2; different hue - value and chroma vary by 1 v	ınit
Non-sandy hydric soil indicators: Histosol		Sandy hydric soil indicators – add:Aquic moisture regime	
Histosof Histic epipedon		Aquic moisture regime High organic content in surface layer	
H2S odor		Streaking of subsurface horizons by organic	c material
Aquic moisture regime	•	Organic accretions (muck balls just below s	surface)
Fe/Mg recent concretions		Wet spodosol (dark red-br horizon beneath	leached E horizon
Reducing conditions (a-a-dipyridil) Gley		at water table depth)	
Chroma = 2/less in mottled, 1 or less in	ı unmottled	Assume soils when all dominant plants are C	BL and/or FACW
disturbed soil and?		- A STATE OF THE PARTY OF THE P	
	J'an		
Hydrology: Wetland hydrology present?	?(Yes) No		
Depth of surface water	Donath to free system in nit	Depth to saturated soil	
	-	<u> </u>	
Water sources: runoff, water	n seeping undust	rocks;	
Primary wetland hydrology indicators: Inundated		Secondary indicators (need 2 or more):Oxidized root channels in upper 12"	
Saturated in upper 12" > 12.5% of grow	wing season	Water-stained leaves	
Water marks	<u></u>	Local soil survey data	
drift lines		Fac-neutral test (>50% dom = OBL, FACW	+, FACW)
Sediment deposits		Other:	
Drainage pattern in wetlands			

Project, City/County, State: SH7, Boulder	(ı					
Applicant/Owner: CDOT 2-4				estigator:	L. Backus		
Site: RR north of SH7, inside conve							
Disturbed - Wetland indicators altered/removed w/in						`	
Problem Area - Wetland indicators periodically lacki	ng due	to normal s	seasonal envir	onmental	variations? Yes No		
Ecological setting: rolling plains of cast C						,	.:,
Vegetation: Wetland vegetation present? Yes No							
•	Layer		Dominant sp			Layer	Status
- Carex progracilis	<u>H</u>	FACW_					
Carex emory'							
Rumer crispus	<u>}~[</u>	FACW_			. 44		
	-	***************************************			151.		
H – woody/non-wood <3.2': S – woody >3.2', <3.0" Dominant species – most abundant species that excee						4 . 9	
Photo #% of dominants = OBL, F			-	_	-		
Soils: Wetland soils present? Yes No				Y7J	a acita tiang ayan Ma		
Map unit series and phase: Depth Horizon Matrix color Mottle color	Mot	tle abundan	ce/contrast		c soils list? Yes No oncretions, structure		
**************************************		1	ykuun hali aan daa Piari i hiii				
							
			by 2: differen	nt hue – va	lue and chroma vary by 1 un	it	
Mottles prominent/distinct: same hue value varies b			-			it	
Mottles prominent/distinct: same hue value varies be Non-sandy hydric soil indicators:			Sandy hyd	dric soil in	dicators – add:	it	
Mottles prominent/distinct: same hue value varies but the same			Sandy hyd	dric soil in moisture	dicators – add: regime	it	
Mottles prominent/distinct: same hue value varies by Non-sandy hydric soil indicators: HistosolHistic epipedonH2S odor			Sandy hyd Aquic High o	dric soil in moisture organic co ring of sub	dicators – add: regime ntent in surface layer surface horizons by organic	material	
Mottles prominent/distinct: same hue value varies by Non-sandy hydric soil indicators: HistosolHistic epipedonH2S odorAquic moisture regime			Sandy hyd Aquic High d Streak Organ	dric soil in moisture organic co ring of sub ic accretic	dicators – add: regime ntent in surface layer surface horizons by organic ns (muck balls just below su	material rface)	
Mottles prominent/distinct: same hue — value varies b Non-sandy hydric soil indicators:HistosolHistic epipedonH2S odorAquic moisture regimeFe/Mg recent concretions			Sandy hyd Aquic High d Streak Organ Wet sp	dric soil in moisture organic co ing of sub ic accretic podosol (d	dicators – add: regime ntent in surface layer surface horizons by organic ns (muck balls just below su ark red-br horizon beneath le	material rface)	horizor
Mottles prominent/distinct: same hue — value varies by Non-sandy hydric soil indicators: HistosolHistic epipedonH2S odorAquic moisture regimeFe/Mg recent concretionsReducing conditions (a-a-dipyridil)			Sandy hyd Aquic High d Streak Organ	dric soil in moisture organic co ing of sub ic accretic podosol (d	dicators – add: regime ntent in surface layer surface horizons by organic ns (muck balls just below su ark red-br horizon beneath le	material rface)	horizon
Histic epipedon H2S odor Aquic moisture regime Fe/Mg recent concretions	y 3 ur		Sandy hyd Aquic High c Streak Organ Wet sp at water ta	dric soil in moisture organic co ing of sub ic accretic podosol (d able depth)	dicators – add: regime ntent in surface layer surface horizons by organic ns (muck balls just below su ark red-br horizon beneath le	material rface) eached E	
Mottles prominent/distinct: same hue — value varies by Non-sandy hydric soil indicators: HistosolHistic epipedonH2S odorAquic moisture regimeFe/Mg recent concretionsReducing conditions (a-a-dipyridil)GleyChroma = 2/less in mottled, 1 or less in unmottled	y 3 ur		Sandy hyd Aquic High c Streak Organ Wet sp at water ta	dric soil in moisture organic co ing of sub ic accretic podosol (d able depth)	dicators – add: regime ntent in surface layer surface horizons by organic ns (muck balls just below su ark red-br horizon beneath le	material rface) eached E	
Mottles prominent/distinct: same hue — value varies by Non-sandy hydric soil indicators: HistosolHistic epipedonH2S odorAquic moisture regimeFe/Mg recent concretionsReducing conditions (a-a-dipyridil)Gley	y 3 ur		Sandy hyd Aquic High c Streak Organ Wet sp at water ta	dric soil in moisture organic co ing of sub ic accretic podosol (d able depth)	dicators – add: regime ntent in surface layer surface horizons by organic ns (muck balls just below su ark red-br horizon beneath le	material rface) eached E	

_Drainage pattern in wetlands

Routine Wetland Determination (1987 COE Wetlands Delineation Manual)

Project, City/County, State: SH7 Bould	~ CO		
Applicant/Owner: COOT R - 4	nt 1944 yn yn hynnas gallen - mae'n ynnas an y mae'n mae'n ar ar ar ar a'r ar a'r a'r a'r a'r a'r	Investigator: L. Rackus	
Site: RR northof Stiffinside cu			
1	last 5 years by h	numan activities/catastrophic natural events? Yes No	
Vegetation: Wetland vegetation present? (Yes) No			
Dominant species	Layer Status	Dominant species	Layer Status
carax emory;	. •	20 minute species	
Etypha latifolia	HOBC		
: Carex langosra	11 0136	~	
C. no brascensis Preparative	H ORL		**************************************
Salix enigue patch at Een	SOBL		
H – woody/non-wood <3.2': S – woody >3.2', <3.0" Dominant species – most abundant species that exceed	dbh, T – woody d 50% of total c	>3.0" dbh of any height, V – woody, climbing >3.2' over, plus additional species comprising over 20% of the state of the s	otal cover.
~6×10 disturbed and North o	f blue bui	(Wetlands - 50% or greater of dominants = OB	12 V 8.
	,	0 0	3
Soils: Wetland soils present? Yes No			
Map unit series and phase:		Hydric soils list? Yes No	
Depth Horizon Matrix color Mottle color	Mottle abunda		

Mottle abundance: few = <2%, common = 2-20%, ma			
		na by 2; different hue – value and chroma vary by 1 uni	it
Non-sandy hydric soil indicators:		Sandy hydric soil indicators – add:	
Histosol		Aquic moisture regime	
Histic epipedon		High organic content in surface layer	
H2S odor		Streaking of subsurface horizons by organic r	
Aquic moisture regime Fe/Mg recent concretions		Organic accretions (muck balls just below sur	
Reducing conditions (a-a-dipyridil)		Wet spodosol (dark red-br horizon beneath leat water table depth)	acned E norizon
Gley		-	
Chroma = 2/less in mottled, 1 or less in unmottled		Assume soils when all dominant plants are OB	L and/or FACW
Hydrology: Wetland hydrology present? Yes No			
Depth of surface water 3-4" Depth to	free water in pi	tDepth to saturated soil Sur Do	168
Water sources: rungll . no. 2? antents	on bank	on south sile	
Water sources: runolf page ? extends Primary wetland hydrology indicators:		Secondary indicators (need 2 or more):	
Inundated		Oxidized root channels in upper 12"	
Saturated in upper 12" > 12.5% of growing season		Water-stained leaves	
Water marks drift lines		Local soil survey data Fac-neutral test (>50% dom = OBL, FACW+,	EACDO
Sediment deposits		Pac-neutral test (>50% dom = OBL, FACW+,Other:	TACW)
Drainage pattern in wetlands			

Routine Wetland D	etermination (198	7 COE Wetlands Delineation Manual)	o) arb
Project, City/County, State: 5H7 Boulder	,co		
		Investigator: L. Rackus	
Site: Enter prise Ditch-west branch and adjacent secondary dir Disturbed - Wetland indicators altered/removed w/in Problem Area - Wetland indicators periodically lacking Ecological setting: rolling plains of east	ing due to normal sea	an activities/catastrophic natural events? Yes asonal environmental variations? Yes No	(a)
Vegetation: Wetland vegetation present? Yes No			u
Dominant species	Layer Status D	Dominant species	Layer Status
Phalavoiles arundinacra	•		
Carex lanue	H OBL		
+ C. emoryi Salixerigua	H OBL		
H – woody/non-wood <3.2': S – woody >3.2', <3.0" Dominant species – most abundant species that excee Photo # $\frac{19.75 \omega}{22.75 \omega}$ % of dominants = OBL, F Breez 75 ω	d 50% of total cover FACW, FAC	r, plus additional species comprising over 20% of	of total cover.
Soils: Wetland soils present? Yes No Map unit series and phase: Depth Horizon Matrix color Mottle color ——————————————————————————————————	Mottle abundance	Hydric soils list? Yes No Contrast Texture, concretions, structure	
Mottle abundance: few = <2%, common = 2-20%, m Mottles prominent/distinct: same hue – value varies t		y 2; different hue – value and chroma vary by 1	unit
Non-sandy hydric soil indicators:		Sandy hydric soil indicators – add:	
Histosol		Aquic moisture regime	
Histic epipedon		High organic content in surface layer	
H2S odor		Streaking of subsurface horizons by organ	
Aquic moisture regime		Organic accretions (muck balls just below	
Fe/Mg recent concretions		Wet spodosol (dark red-br horizon beneath	ı leached E horizon
Reducing conditions (a-a-dipyridil)		at water table depth)	
GleyChroma = 2/less in mottled, 1 or less in unmottled		Assume soils when all dominant plants are 0	OBL and/or FACW
Hydrology: Wetland hydrology present? Yes No			
Depth of surface water <u>6-8" Flows</u> Depth to	free water in pit	Depth to saturated soil	-
Water sources: Litch Flows			
Primary wetland hydrology indicators:		Secondary indicators (need 2 or more):	
Inundated		Oxidized root channels in upper 12"	
X Saturated in upper 12" > 12.5% of growing season	l	Water-stained leaves	
Water marks		Local soil survey data	O. DACOON
drift linesSediment deposits		Fac-neutral test (>50% dom = OBL, FACV Other:	v+, FACW)
Sediment depositsDrainage pattern in wetlands		Culoi.	

Routine Wetland	Determ	ination (1987 COE W	etlands Delineation Manual)) c
Project, City/County, State: 5H 7, Boulde	<u>ہ دہ</u>				
			In	rvestigator: L. Backus	
Site: Enterprise Ditch - WEST bran	- cla	D00000			
Disturbed - Wetland indicators altered/removed w/ Problem Area - Wetland indicators periodically lac Ecological setting: rolling planes of eco	in last 5 king du	years by he to norma	uman activitie	es/catastrophic natural events? Yes	N 0
Vegetation: Wetland vegetation present? Yes N					
Dominant species	Lave	r Status	Dominant s	species	Layer Status
Carex emora!					
		FACU			:
		<u></u>			
- Control of the Cont			- 279		
H – woody/non-wood <3.2': S – woody >3.2', <3.0 Dominant species – most abundant species that except the species of dominants = OBL	eed 50%	of total c	over, plus add	any height, V – woody, climbing >3 itional species comprising over 20% ands - 50% or greater of dominants =	of total cover.
Soils: Wetland soils present? Yes No Map unit series and phase: Depth Horizon Matrix color Mottle color	Mot	tle abunda	nce/contrast	Hydric soils list? Yes No Texture, concretions, structure	
	_				

Mottle abundance: few = <2%, common = 2-20%, Mottles prominent/distinct: same hue – value varie			na by 2; differen	ent hue – value and chroma vary by	1 unit
Non-sandy hydric soil indicators:			Sandy h	ydric soil indicators – add:	
Histosol				ic moisture regime	
Histic epipedon				n organic content in surface layer	
H2S odor				aking of subsurface horizons by orga	
Aquic moisture regime				anic accretions (muck balls just belo	
Fe/Mg recent concretions				spodosol (dark red-br horizon benea	ith leached E norizon
Reducing conditions (a-a-dipyridil)			at water	table depth)	
Gley Chroma = 2/less in mottled, 1 or less in unmottl	led		__Assur	ne soils when all dominant plants ar	e OBL and/or FACW
Hydrology: Wetland hydrology present? Yes N					
	n to free	water in pi	it	Depth to saturated soil	
Water sources: ditch flows					
Primary wetland hydrology indicators:				ry indicators (need 2 or more):	
Inundated				lized root channels in upper 12"	
Saturated in upper 12" > 12.5% of growing seas	son			er-stained leaves	
Water marks				nl soil survey data	TWIL BACTON
drift lines			xrac-	neutral test (>50% dom = OBL, FAC	ντ, 1'AC W)
Sediment deposits X Drainage pattern in wetlands			Oute	A. •	

Routine Wetland I	Determination (19	87 COE W	Vetlands Delineation Manual)) a
Project, City/County, State: SH 7, Bould	2r, CO			
Applicant/Owner: CDOT R4		I	nvestigator: 4, Backus	
Site: ditch Northsile SH7, Eap R	er bride,		Date: 6-12-01	
Disturbed - Wetland indicators altered/removed w/in Problem Area - Wetland indicators periodically lack Ecological setting: Follows plains of eco Vegetation: Wetland vegetation present? Yes No.	n last 5 years by hum king due to normal so	nan activitie	es/catastrophic natural events? Yes 🕏	<u>19</u>
Dominant species	Layer Status	Dominant :	species	Layer Status
A Eleochanis palustris	H OBC			- '
A Carex praegracilis	H FACW			
Schoenoplatus pungens	H 086 -			
H - woody/non-wood < 3.2': S - woody > 3.2', < 3.0'	$\frac{1}{3}$ dbh, T – woody >3	.0" dbh of	any height, V – woody, climbing >3.2],
Dominant species - most abundant species that exce	ed 50% of total cove	er, plus add	litional species comprising over 20% of	of total cover.
Photo # $\frac{1 \Rightarrow NE}{\# (o \Rightarrow NE)}$ % of dominants = OBL,	FACW, FAC <u>100 </u>	<u>گو</u> (Wetla	ands - 50% or greater of dominants = 6	OBL, FACW, FAC)
Soils: Wetland soils present? Yes No Map unit series and phase: Depth Horizon Matrix color Mottle color ——————————————————————————————————	Mottle abundance	e/contrast	Hydric soils list? Yes No Texture, concretions, structure	
				·
	***************************************			The state of the s
Mottle abundance: few = <2%, common = 2-20%, n Mottles prominent/distinct: same hue – value varies		oy 2; differe	ent hue – value and chroma vary by 1	unit
Non-sandy hydric soil indicators:			ydric soil indicators – add:	
Histosol Histic epipedon			ic moisture regime organic content in surface layer	
H2S odor			aking of subsurface horizons by organ	ic material
Aquic moisture regime		Orga	anic accretions (muck balls just below	surface)
Fe/Mg recent concretionsReducing conditions (a-a-dipyridil)			spodosol (dark red-br horizon beneath table depth)	ı leached E horizon
Gley		_	• '	
Chroma = 2/less in mottled, 1 or less in unmottled	i	Assun	ne soils when all dominant plants are	OBL and/or FACW
Hydrology: Wetland hydrology present? Yes No				
Depth of surface waterDepth t	to free water in pit _		Depth to saturated soil	
Water sources: Number of Primary wetland hydrology indicators:				
Primary wetland hydrológy indicators:Inundated			ry indicators (need 2 or more): lized root channels in upper 12"	
Saturated in upper 12" > 12.5% of growing seaso	n		er-stained leaves	
Water marks		Loca	l soil survey data	
drift lines			neutral test (>50% dom = OBL, FACV	V+, FACW)
Sediment depositsDrainage pattern in wetlands		Othe	ι;	

Routine Wetland	Determination (1	987 COE Wetlands Delineation Manual)	(7) b+c-
Project, City/County, State: 5H 7, Boulde	·		
Applicant/Owner: CDOT 12 - 4			7
Site: ditch south side 5+17, Eaf			
Disturbed - Wetland indicators altered/removed w/i Problem Area - Wetland indicators periodically lac Ecological setting: Plains of eo	in last 5 years by hukking due to normal	man activities/catastrophic natural events? Y	es No
Vegetation: Wetland vegetation present? Yes N	o		
Dominant species	Layer Status	Dominant species	Layer Status
etypha latifolia			H FACU
Ti ancustipalia	H OBL	Critesium jubatum	H FACH
Ambiosia spp. Lactuca serrolla		Rumer chispus	H FAW
Lactuca Kerrolla	H FAC		
A Elecchanis palustris	HOBL -		
A Ascostis Stolanifera	H FACW		
H - woody/non-wood <3.2': S - woody >3.2', <3.0 Dominant species - most abundant species that exce	eed 50% of total co	ver, plus additional species comprising over 2	20% of total cover.
Photo # $\frac{1}{6} \rightarrow N\hat{c}$ % of dominants = OBL,	, FACW, FAC <u>IO</u>	(wetlands - 50% or greater of dominar	IIS = OBL, FACW, FAC)
Soils: Wetland soils present? Yes No Map unit series and phase: Depth Horizon Matrix color Mottle color	Mottle abundan	Hydric soils list? Yes No ce/contrast Texture, concretions, structure	
Mottle abundance: few = <2%, common = 2-20%, Mottles prominent/distinct: same hue value varies		by 2; different hue - value and chroma vary	by 1 unit
Non-sandy hydric soil indicators:		Sandy hydric soil indicators – add:	
Histosol		Aquic moisture regime	
Histic epipedon		High organic content in surface layer	
H2S odor		Streaking of subsurface horizons by c Organic accretions (muck balls just b	
Aquic moisture regimeFe/Mg recent concretions		Wet spodosol (dark red-br horizon be	•
Reducing conditions (a-a-dipyridil)		at water table depth)	Model Cached E Horizon
Gley Chroma = 2/less in mottled, 1 or less in unmottle	ed	Assume soils when all dominant plants	s are OBL and/or FACW
Hydrology: Wetland hydrology present? Yes No	standing and all	g water at west concerted of poor party poor present to saturated soil	sterm dain
	to free water in pit	Depth to saturated soil	Surfac-a
Water sources: No no l	ACCOUNTS AND	Sacondam indicators (mar. 1.2 mar.)	
Primary wetland hydrology indicators: Inundated		Secondary indicators (need 2 or more): Oxidized root channels in upper 12"	
mundated XSaturated in upper 12" > 12.5% of growing seas	on	Water-stained leaves	
Water marks	···	Local soil survey data	
drift lines			FACW+, FACW)
Sediment deposits		Other:	·
X Drainage nattern in wetlands			

Routine Wetland	Determination (198	87 COE Wei	tlands Delineation Manual)	() a = b
Project, City/County, State: 5H 7, Bools	der, CO			
Applicant/Owner: CDOT R 4				
Site: ditches west side 75th 57. N	and of pp h		Date: 6-12-0	> 1
Disturbed - Wetland indicators altered/removed w/Problem Area - Wetland indicators periodically lac Ecological setting: rolling plains of east	in last 5 years by hum king due to normal se	an activities	/catastrophic natural events?	Yes (No)
Vegetation: Wetland vegetation present? Yes N	Го			
Dominant species	Layer Status I	Dominant sp	ecies	Layer Status
1-salixexisue	H 0136		. '	
· Critesium jubatum	H FACW			
& Carex amolyi	H 08L			
Fostuca protense				
Juneus spp.	H			
Populus dettoides soptimes	H FAC			
H - woody/non-wood <3.2': S - woody >3.2', <3.0 Dominant species - most abundant species that exc Photo #	eed 50% of total cove	r, plus additi	ional species comprising over	20% of total cover.
Soils: Wetland soils present? Yes No Map unit series and phase: Depth Horizon Matrix color Mottle color ——————————————————————————————————	Mottle abundance	/contrast '	Hydric soils list? Yes N Texture, concretions, structure	
Mottle abundance: few = <2%, common = 2-20%, Mottles prominent/distinct: same hue – value varies				y by 1 unit
Non-sandy hydric soil indicators: Histosol			ric soil indicators – add:	
Histosoi Histic epipedon			moisture regime	-
H2S odor Aquic moisture regime Fe/Mg recent concretions Reducing conditions (a-a-dipyridil) Gley		Streak	rganic content in surface laye ing of subsurface horizons by c accretions (muck balls just) odosol (dark red-br horizon b ble depth)	organic material below surface)
Chroma = 2/less in mottled, 1 or less in unmottle		Assume	soils when all dominant plan	ts are OBL and/or FACW
Hydrology: Wetland hydrology present? Yes No				
Depth of surface waterDepth	to free water in pit		Depth to saturated soil _	
Water sources: runoff	and the state of t			-
rimary wetland hydrology indicators:			indicators (need 2 or more):	
Inundated			ed root channels in upper 12"	
Saturated in upper 12" > 12.5% of growing seaso Water marks	ЭΠ		stained leaves	
drift lines			oil survey data utral test (>50% dom = OBL,	FACW+ FACWA
Sediment deposits		Other:	-um tost (>50 // dom - ODL,	PACWT, PACW)

Routine Wetlan	nd Determination (19	987 COE Wetlands Delineation Manual)	8)c
Project, City/County, State: 5+ 7, Boo	older, CO		
Applicant/Owner: CDOT P-4		Investigator: L. Rack US	
Site: Litch west sile 75ths	r. south of R	R bridge Date: 6-12-01	
Disturbed - Wetland indicators altered/removed Problem Area - Wetland indicators periodically Ecological setting:	w/in last 5 years by hun lacking due to normal s	nan activities/catastrophic natural events? Yes	(Ne)
Vegetation: Wetland vegetation present? Yes			
Dominant species	Layer Status	Dominant species	Layer Status
Typha lotipolia			
Electronis polystnis	<u> </u>		
Schoeno platus purger	s H OBL		
H – woody/non-wood <3.2': S – woody >3.2', <	3.0" dbh, T – woody >3	3.0" dbh of any height, V – woody, climbing >	3.2'
Dominant species - most abundant species that e			
Photo $\# \sqrt{20}$ % of dominants = Ol	BL, FACW, FAC 100	(Wetlands - 50% or greater of dominants	= OBL, FACW, FAC)
Soils: Wetland soils present? Yes No Map unit series and phase: Depth Horizon Matrix color Mottle co	lor Mottle abundanc	Hydric soils list? Yes No re/contrast Texture, concretions, structure	
Mottle abundance: few = <2%, common = 2-20			The state of the s
Mottles prominent/distinct: same hue – value va	ries by 3 units, chroma	by 2; different hue – value and chroma vary by	/ 1 unit
Non-sandy hydric soil indicators:		Sandy hydric soil indicators - add:	
Histosol		Aquic moisture regime	
Histic epipedonH2S odor		High organic content in surface layerStreaking of subsurface horizons by org	ranic material
Aquic moisture regime		Organic accretions (muck balls just belo	
Fe/Mg recent concretions		Wet spodosol (dark red-br horizon bene	
Reducing conditions (a-a-dipyridil)		at water table depth)	
Gley Chroma = 2/less in mottled, 1 or less in unmo	ttled	Assume soils when all dominant plants a	ra OBI and/or EACW
Cinoma = 2/icss in modicu, 1 of icss in diffic	ittica		IC ODE and/of TACW
Hydrology: Wetland hydrology present? Yes	No		
Depth of surface waterDe	oth to free water in pit_	Depth to saturated soil _S_	urfac-e
Water sources:			
Primary wetland hydrology indicators:	,	Secondary indicators (need 2 or more):	
Inundated		Oxidized root channels in upper 12"	
Saturated in upper 12" > 12.5% of growing so Water marks	eason	Water-stained leavesLocal soil survey data	
water marks drift lines		X Fac-neutral test (>50% dom = OBL, FA	.CW+, FACW)

__Other:

_Sediment deposits

Routine Wetland	Determination (198	87 COE Wetlands Delineation Manual) () arb
Project, City/County, State: 547, Boul	Jen, CO	
		Investigator: L. Rack us
Site: East side 75th st., North	of RRbi	Date: 6-12-01
Disturbed - Wetland indicators altered/removed w/s Problem Area - Wetland indicators periodically lac Ecological setting: Foliage plains of ea Vegetation: Wetland vegetation present? Yes, N	in last 5 years by hum cking due to normal se STCO	nan activities/catastrophic natural events? Yes No
		Dominant species Layer Status
Dominant species Schoenoplectus purgeins	H OBL	•
Carex pragnacilis	H FACW_	
Critesium jubatum	H FACW	
Eleptrigia repens	H FAC	
Photo # $14-16 \Rightarrow SE \%$ of dominants = OBL	.FACW, FAC 1002 Dry Cruk west of ten	Hydric soils list? Yes No
Mottle abundance: few = <2%, common = 2-20%,	many = >20%	
Mottles prominent/distinct: same hue – value varie	s by 3 units, chroma b	by 2; different hue – value and chroma vary by 1 unit
Non-sandy hydric soil indicators: HistosolHistic epipedonH2S odorAquic moisture regimeFe/Mg recent concretionsReducing conditions (a-a-dipyridil)		Sandy hydric soil indicators – add: Aquic moisture regime High organic content in surface layer Streaking of subsurface horizons by organic material Organic accretions (muck balls just below surface) Wet spodosol (dark red-br horizon beneath leached E horizon at water table depth)
Gley Chroma = 2/less in mottled, 1 or less in unmottl	ed	XAssume soils when all dominant plants are OBL and/or FACW
Hydrology: Wetland hydrology present? Yes No	o standing w	Depth to saturated soil
Depth of surface waterDepth	to free water in pit _	Depth to saturated soil
Water sources: Primary wetland hydrology indicators: Inundated Saturated in upper 12" > 12.5% of growing seas Water marks drift lines Sediment deposits V_Drainage pattern in wetlands		Secondary indicators (need 2 or more): Oxidized root channels in upper 12" Water-stained leaves Local soil survey data YFac-neutral test (>50% dom = OBL, FACW+, FACW) Other:

Routine Wetland Determ	ination (1987 COE Wetlands Delineation Manual)	
Project, City/County, State: SH 7 Boulda	Co	
Applicant/Owner: CDOTR4		
Site: City Open Space, east sib 75th ST	; south of RR britz. Date: 6-12-01	
<u> </u>	years by human activities/catastrophic natural events? Yes No	
Dominant species Layer	Status Dominant species	Layer Status
Tucha late Police H	OBL Eligni-ra repro-s	H FAC
1 Schenoplogus puneus H	OBL Salivericua	H OBC
Traid voides along the		
	FAC W	
Elearhanis palustris A	084	
	- woody >3.0" dbh of any height, V - woody, climbing >3.2"	
D : 1 1 1 4 4 500	-ft-t-1 when additional amoning commising over 20% of tot	tal cover.
extends sooth to Dry Creek includes small ditch at NE e	FAC (Wetlands - 50% or greater of dominants = OBL	, FACW, FAC)
Soils: Wetland soils present? Yes No		
Map unit series and phase:	Hydric soils list? Yes No le abundance/contrast Texture, concretions, structure	
Mottle abundance: few = <2%, common = 2-20%, many = > Mottles prominent/distinct: same hue – value varies by 3 un	20% its, chroma by 2; different hue – value and chroma vary by 1 unit	
Non-sandy hydric soil indicators:Histosol	Sandy hydric soil indicators – add:Aquic moisture regime	
Histic epipedon	High organic content in surface layer	
H2S odor	Streaking of subsurface horizons by organic m	
Aquic moisture regimeFe/Mg recent concretions	Organic accretions (muck balls just below surface)Wet spodosol (dark red-br horizon beneath lead	
Reducing conditions (a-a-dipyridil)	at water table depth)	
GleyChroma = 2/less in mottled, 1 or less in unmottled	Assume soils when all dominant plants are OBL	, and/or FACW
Hydrology: Wetland hydrology present? Yes No		
Depth of surface waterDepth to free w	vater in pitDepth to saturated soil <u>Surface</u>	e in mostanea
Water sources: runoff high ground water	, taku?	-
Timaly wettand hydrology indicators.	Secondary indicators (need 2 or more).	
Inundated ∑Saturated in upper 12" > 12.5% of growing season	Oxidized root channels in upper 12" Water-stained leaves	
Water marks	Local soil survey data	
drift lines	χ Fac-neutral test (>50% dom = OBL, FACW+, I	FACW)
Sediment depositsDrainage pattern in wetlands	Other:	

Wetland Mitigation Site Selection Form Colorado Department of Transportation

Attachment to Wetland Finding

Projec	ct Name/No. <u>SH 7 Cherryvale Road to 75th Street</u>	<u>STA 0072 -013</u> Subaccount
Regio	on 4 Author <u>Laura Backus</u> Firm <u>Carter</u>	<u>2 & Burgess</u> Date <u>4-18-2006</u>
Mitigation Options	 (1) Mitigation bank available? Yes (2) Project impacts in 1°, 2° service area? Yes (4) On-site mitigation available? No (5) Off-site mitigation available? No (6) In-lieu fee arrangement? In-lieu fee sponsor? No (7) Mitigation ratio(s) other than 1:1 involved? No 	(3) HUC units NA – ditch wetlands Ratio(s) NA

		Impact Site	Mitigation Site
istics	(8) Geographic location	R70W, T1N, S 25, 26, 27, 34, 35, 36	Wetland mitigation bank (in primary service area of 3 banks)
Site Characteristics	(9) Wetland community type, pct.	Emergent – 80% Scrub/shrub – 20%	Varies
こ	(10) Functions, values	GW-L, SS-M; SR-M, WH-L	Varies
	(11) Size of impacts, pct. of total area?	0.32 acre, 50% of wetlands in narrow study area	NA
	(12) T&E species/habitat present?	No	Corps of Engineers approved bank
	(13) Species? Status?	NA	"
ital	(14) Migratory Bird Treaty Act?	No	"
Iab	(15) Other wildlife issues	No	44
e/E	(16) Status of aquatic resource?	NA	"
ij	(17) Special aquatic site?	Wetlands	"
Wildlife/Habitat	(18) Unique? Quality? Ranking?	No, L-M, none	"
	(19) Watershed, ecosystem issues?	No	
	(20) Likelihood of success?	NA	Bank
Other	(21) Interagency agreement?	NA	No
<u>o</u>	(22) Project logistics, size/scope?	NA	Ditch wetlands
	(23) Cost considerations?	NA	Ditch wetlands
	(24) Buffer used:	NA	Bank
	(25) Individual 404 permit condition?	No	
ıes	(26) 404(b)(1) Guidelines?	No	
Water Issues	(27) NWP gen., reg. conditions?	No	
er.]	(28) Regulatory letters?	No	
∀a1	(29) S.B. 40?	No	
	(30) Water rights issues?	No	
	(50) water rights issues:	110	
	(31) Cumulative impact issues?		
VEPA ssues	(32) Agency policy, input? No		
SS	(32) Agency poncy, input:		

No

(33) Public involvement?

(34) Basis for Decision

[Describe those factors from the front side that are instrumental in the selection of the chosen mitigation decision.]

SH 7 project impacts 0.32 acre of irrigation ditch and roadside ditch wetlands.

The Transportation Equity Act for the 21st Century establishes a preference for mitigation banks, and the project site is within the primary service area of three Corps of Engineers approved wetland mitigation banks.

No suitable sites for wetland mitigation such as natural drainages or wetland sites are present in the project area.

(35) **Decision**

Mitigation at a Wetland Mitigation Bank

(36) Contingency Plans

The project is within the primary service area of three wetland mitigation banks.