

WETLAND DELINEATION REPORT

I-70/32nd AVENUE INTERCHANGE ENVIRONMENTAL ASSESSMENT CDOT Project No. IM 0703-294

Jefferson County, Colorado

Felsburg Holt & Ullevig Project No. 05-154
NRSI Project No. 05-CO-030-001

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January 31, 2006



I-70/32nd Avenue Interchange
Environmental Assessment
Wetland Delineation Report

The information contained in this report is certified to be authentic and accurate and was acquired ethically through the means and methods described herein.

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ACRONYMS

CDOT	Colorado Department of Transportation
CWA	Clean Water Act (33 U.S.C. § 1344)
dbh	Diameter Breast Height
EA	Environmental Assessment
EPA	Environmental Protection Agency
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
FACW+	Facultative Wetland plus
FHU	Felsburg Holt & Ullevig
FHWA	Federal Highway Administration
GPS	Global Positioning System
H	Herbaceous
HQUSACE	Headquarters United States Army Corps of Engineers
I-70	Interstate Highway 70
JD	Jurisdictional Determination
LRT	Golden Light Rail
MS	Midstory
NI	No Indicator
NRCS	Natural Resources Conservation Service (formerly the Soil Conservation Service)
NRSI	Natural Resource Services, Inc.
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OBL	Obligate
OS	Overstory
PEM	Palustrine Emergent
PFO6	Palustrine Forested Deciduous
PSS	Palustrine Scrub-Shrub
ROW	Right of Way
RTD	Regional Transportation District
SH 58	Colorado State Highway 58
UPL	Upland
USACE	United States Army Corps of engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
WOTUS	Waters of the United States

WETLAND DELINEATION REPORT

I-70/32nd AVENUE INTERCHANGE ENVIRONMENTAL ASSESSMENT CDOT Project No. IM 0703-294 Jefferson County, Colorado

Prepared by:

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Natural Resource Services, Inc.

INTRODUCTION

In accordance with the National Environmental Policy Act of 1969 (NEPA) and its related regulations, the Federal Highway Administration (FHWA), as the lead agency, in cooperation with the Colorado Department of Transportation (CDOT) as the applicant agency, is preparing an Environmental Assessment (EA) for proposed improvements to the Interstate Highway 70 (I-70)/32nd Avenue Interchange (Figures 1 and 2). The project is sponsored by the city of Wheat Ridge. Natural Resource Services, Inc. (NRSI) was contracted on August 30, 2005 by Felsburg Holt & Ullevig (FHU), acting on behalf of CDOT and the city of Wheat Ridge, to conduct a wetlands determination and boundary delineation for the I-70/32nd Avenue Interchange EA. The detailed information included in this report will be incorporated into the EA.

The purpose of this wetland delineation report is to review the proposed I-70/32nd Avenue Interchange Improvements Project in sufficient detail to determine to what extent the proposed action may affect any wetlands which may or may not come under the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE). This report is prepared in accordance with legal requirements set forth under NEPA as amended (42 U.S.C. 4321 et seq.) and Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344), and follows standards established in USACE, U.S. Fish and Wildlife Service (USFWS), Environmental Protection Agency (EPA), FHWA, and CDOT NEPA and CWA guidance documents.

A thorough onsite assessment of pertinent areas of the project site for the presence of jurisdictional and non-jurisdictional wetlands as defined under Section 404 of the CWA was conducted between September 21 and September 30, 2005 and on January 14, 2006 by Steve C. Johnson, Senior Ecologist with NRSI. A delineation of the boundaries of all wetlands located within relevant areas of the Project Area, using procedures described in the *1987 Corps of Engineers Wetlands Delineation Manual* (USACE 1987), was completed during the same period. The following report describes the methods used and the results of the assessment and delineation.

DESCRIPTION OF THE PROPOSED ACTION:

The primary purpose of the proposed project is to relieve traffic congestion at the I-70/32nd Avenue /Youngfield Street and the I-70/Ward Road/44th Avenue interchanges and address the transportation demands on the system due to the proposed Cabela's shopping center and other regional growth. Relieving traffic congestion at this interchange can be accomplished through its improvement and/or through the provision of alternative routes within the Study Area.

Prior to the EA, a System Level Feasibility Study was conducted (FHU 2005), which considered numerous alternatives within the Study Area. The System Level Feasibility Study recommended three alternative packages (Alternative Packages 1, 2, and 3)(Figures 3, 4 and 5) for further consideration as part of the EA based on the design and traffic analysis and public input received. The three alternative packages are briefly described as follows:

- **Alternative Package 1** (Figure 3) – This includes a single point urban interchange at the I-70/32nd Avenue Interchange, which would require the relocation of Youngfield Street at 32nd Avenue to the east to allow for adequate space to construct the urban interchange and improve traffic signal/intersection spacing. This package also includes the realignment of the Colorado State Highway 58 (SH 58) frontage road (proposed Cabela Drive) intersection with McIntyre Street.
- **Alternative Package 2** (Figure 4) – This alternative incorporates off-set hook ramps at the I-70/32nd Avenue interchange. The configuration also incorporates westbound hook-ramps into Cabela Drive north of 32nd Avenue and eastbound hook ramps into Youngfield Street at 27th Avenue. Cabela Drive would be aligned with a new SH 58 interchange and would connect with 44th Avenue.
- **Alternative Package 3** (Figure 5) - This alternative incorporates off-set hook ramps at the I-70/32nd Avenue interchange. It also incorporates westbound hook-ramps into Cabela Drive north of 32nd Avenue and eastbound hook ramps into Youngfield Street at 27th Avenue. This package also includes the realignment of SH 58 frontage road (proposed Cabela Drive) intersection with McIntyre Street.

This report was prepared in support of the alternative package screening process and was completed for the portions of the Study Area potentially affected by each of the three alternative packages. Subsequent to this wetland delineation being completed in the fall of 2005, the three alternative packages were screened and a Proposed Action selected. The Proposed Action consists of Alternative Package 2 and the following series of elements:

- Construction of off-set hook ramps at the I-70/32nd Avenue interchange with the westbound hook ramps located north of 32nd Avenue and the eastbound hook ramps located at Youngfield Street and 27th Avenue,
- Widening of 32nd Avenue and Youngfield Street in the vicinity of the I-70/32nd Avenue interchange,
- Pedestrian and school safety improvements along 32nd Avenue,
- Connection of Cabela Drive with 32nd Avenue west of I-70,
- Construction of a new diamond interchange on SH 58 west of Eldridge Street,
- Relocation of the Jefferson County Clear Creek Bicycle/Pedestrian Trail in the vicinity of the new interchange on SH 58,
- Connection of the Cabela Drive with 44th Avenue north of the new interchange on SH 58.

A No-Action Alternative was also retained for comparison with the other alternative packages in accordance with NEPA requirements. The No-Action Alternative includes the existing transportation system and transportation improvements that are planned in the vicinity of the interchange. These other transportation improvements generally have committed or identified funds for construction and will be

made regardless of whether or not any other improvements are made to the I-70/32nd Avenue Interchange. The No-Action Alternative includes several local agency projects planned by the city of Wheat Ridge and improvements to the I-70/SH 58 interchange planned by CDOT.

The city of Wheat Ridge submitted an application to CDOT for construction of a series of local agency projects that are common to each of the alternative packages presented in the System Level Feasibility Study (FHU 2005) and that would be independent and stand on their own merits should no other improvements take place. The local agency projects include the:

- Construction of the 40th Avenue underpass beneath I-70,
- Widening of Youngfield Street from 38th Avenue to 44th Avenue, and
- Construction of Cabela Drive from 40th Avenue to north of Clear Creek.

The I-70/SH 58 interchange improvements include the addition of ramp connections between I-70 west and SH 58 west. The I-70/SH 58 interchange improvements also include the relocation of the I-70/Ward Road east ramps further east along I-70 to increase spacing between the on-ramp from SH 58 and the 44th Avenue eastbound off-ramp. The relocation of the existing I-70 eastbound on-ramp from the Youngfield Street/38th Avenue intersection south to the Youngfield Street/35th Avenue intersection was also included in the I-70/SH 58 interchange improvements; however, the Proposed Action will relocate the existing I-70 eastbound on-ramp from the Youngfield Street/38th Avenue intersection south to the Youngfield Street/27th Avenue intersection.

Construction of the I-70 Denver to Golden Light-Rail (LRT) Gold Line by the Regional Transportation District (RTD) is also included in the No-Action Alternative. The Gold Line extends from Union Station in Downtown Denver to the Ward Road Park-N-Ride (Phase I) and ultimately to the city of Golden (Phase II) (CH2M HILL 2000). Phase I of the Gold Line is part of the metro-wide FasTracks system, which was approved by voters in November 2004. The FasTracks system is planned to be completed between 2013 and 2016. Phase II is unfunded at this time.

SITE LOCATION

The I-70/32nd Avenue Interchange project is located in the western part of the Denver metropolitan area, as shown in Figure 1. The Study Area falls partially within the cities of Wheat Ridge and Lakewood and within unincorporated Jefferson County (Figures 1 and 2). The city of Arvada is located north of the Study Area, and the city of Golden is located to the west.

The Study Area is shown in Figure 2. It is bounded on the north by SH 58 and its associated frontage road immediately to the south, on the east by I-70 and Youngfield Street, on the south by 32nd Avenue, and on the west by McIntyre Street. The general coordinates are 39° 46' 00" N latitude and 105° 09' 00" W longitude (UTM Zone 13 487,500E and 4,402,000N). The Study Area can be found on the U.S. Geological Survey (USGS) Golden, CO 7.5 minute topographic quadrangle at the following locations:

- SE1/4 of Section 24 in Township 3 South, Range 70 West of the 6th Prime Meridian
- NE1/4 of Section 25 in Township 2 South, Range 70 West of the 6th Prime Meridian
- S1/2 of Section 19 in Township 3 South, Range 69 West of the 6th Prime Meridian
- NW1/4SW1/4 of Section 20 in Township 3 South, Range 69 West of the 6th Prime Meridian
- N1/2 of Section 30 in township 2 South, Range 69 West of the 6th Prime Meridian

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DATES FIELD WORK WAS COMPLETED

September 21-30, 2005 and January 14, 2006

DESCRIPTION OF DELINEATION PROCEDURES

Routine Onsite Wetland Determination procedures as outlined in the *1987 Corps of Engineers Wetlands Delineation Manual* (USACE 1987:57-69) were utilized to delineate the wetland boundaries within the project site. Preliminary data collection included inspection of copies of Natural Resources Conservation Service (NRCS) soils maps (Price and Amen 1980) and local hydric soils lists obtained from the U.S. Department of Agriculture, NRCS, Lakewood, Colorado office (NRCS 2003) (Figure 8); inspection of USGS 7.5 minute topographic quadrangle sheets (Golden, CO quad), inspection of 2004 aerial orthophotography, and inspection of the USFWS National Wetland Inventory (NWI) Golden, CO quad map (Figure 7).

Onsite sampling procedures included: 1) visual inspection of the soils, hydrology, and flora of the overall project site and specific designated sampling points and 2) completion, for each sample point, of a USACE data form for Routine Onsite Wetland Determination as approved by Headquarters U.S. Army Corps of Engineers (HQUSACE) in March 1992. Sample points were selected at representative sites within identified wetlands using procedures described in the *1987 Delineation Manual* (USACE 1987:60-63) for areas of less than five acres in size.

Vegetation:

Characteristics and indicators of vegetation present on the site were determined using procedures outlined in the *1987 Wetland Delineation Manual* (USACE 1987:16-26). Plant community characteristics were determined in the field and compared with designations described by Cowardin et al. (1979). Appropriate community designations (Ibid) were recorded on each data sheet.

Vegetation at each sample point was divided into three strata for sampling purposes. These were **overstory (OS)**, **midstory (MS)**, and **herbaceous (H)**. The **OS** was sampled by counting the number of stems greater than one decimeter diameter breast height (dbh) for each species within a ten meter radius

of the plot center. **MS** vegetation was sampled by estimating the percent ground cover for shrubs and vines with stems less than one decimeter dbh and over one meter high for dominant species within a three meter radius of the plot center. Vegetation in the **H** strata was sampled by estimating the percent ground cover for dominant species less than one meter high within a one meter radius of the plot center. Predominant plant species within each stratum were recorded on each data sheet.

If a species could not be identified in the field, samples were taken to the lab for identification using appropriate reference books and keys (Bruggen 1983, Carter 1988, Gleason and Cronquist 1963, Hitchcock and Chase 1971, Nelson and Williams 1992, Royer and Dickinson 1999, Weber 1976, Weber and Wittman 1996, Whitson et al. 2001, Wingate 1994). The *National List of Vascular Plant Species That Occur in Wetlands: 1988 National Summary* (USFWS 1988) was used to determine the hydrophytic status of plant species (OBL, FACW+, FACW, FACW-, FAC, FACU, UPL, or NI) which was also recorded for each species on the data sheets.

Hydrology:

Hydrology was determined using guidelines outlined in the *1987 Delineation Manual* (USACE 1987:34-41).

Soils:

Soil characteristics were identified using guidelines described in the *1987 Delineation Manual* (USACE 1987:26-34). Soils data were collected using a tube-type soil auger with an 18 inch long, 13/16 inch inner diameter sampling tube. A "sharp-shooter" spade was also used. Soil colors were determined using the *1994 Revised Edition of Munsell Soil Color Charts* (Kollmorgan Instruments Corp. 1994). Soil characteristics identified in the field were compared with soil descriptions provided in the *Soil Survey of Golden Area, Colorado* (Price and Amen 1980) and local hydric soils lists obtained from the NRCS, Lakewood, Colorado office (NRCS 2003) to verify soil type. Hydric soil determinations were made using characteristics described in the *1987 Wetland Delineation Manual* (USACE 1987:26-34).

Wetland Boundary Designation

All delineation sample data points were marked in the field with pink surveyor's ground flags imprinted with the words "**Wetland Delineation**". Specific alpha-numeric plot sample point identifier codes were written on each flag. Sample points where data sheets were completed had corresponding alpha numeric identifiers written on the data sheet. Most wetland boundaries delineated within the Study Area were flagged with orange ribbon imprinted with the words "**WETLAND BOUNDARY**". Field mapping of the locations of boundary and data points was accomplished using an aerial photograph of the site. Delineated wetland boundaries were surveyed using a Leica GS20 Global Positioning System (GPS) unit. Approximate wetland boundaries of all wetlands delineated in the Study Area of the project are shown in Figures 9, 10 and 11 superimposed on a recent (2004) aerial orthophotograph.

RESULTS

A total of thirty-three wetland polygons were identified within the assessment area for this project (Table 2 and Figure 9). Data sheets for 41 data plots were completed and are included in Appendix A of this report. The locations of the delineated wetlands are shown in Figures 9, 10, 11, and 12. Observations during the site visits determined that most of the entire Study Area had been significantly disturbed in the past. Identified historic disturbance factors included 1) extensive mining for gravel in the areas north and south of Clear Creek and east of the railroad, 2) construction of several irrigation ditches to transport water from Clear Creek to areas north of the Study Area (these include the Juchem Ditch, the Juchem-Reno Ditch, and the Bayou [Bayau] Ditch), 3) the construction of a number of check dams along the

length of Clear Creek within the Study Area, 4) the construction of SH 58 and the associated frontage road on the south side of the highway, 5) the recent construction of the paved Jefferson County Pedestrian Trail and associated infrastructure, 6) the construction of I-70 and the I-70/SH 58 interchange, 7) the construction of the railroad spur line which crosses SH 58 at the east end of the Study Area and parallels the north bank of Clear Creek to provide access to the Coors Brewing Company grain elevator and other industrial infrastructure at the west end of the Study Area, 8) the historic channelization of most of the length of Clear Creek within the Study Area and associated application of large riprap to the both banks along most of the channelized areas, 9) the historic construction of water treatment infrastructure and research facilities associated with the operation of the Coors Brewing Company plant, 10) the recent construction of a permitted wetland mitigation area just south of Clear Creek at the east end of the Study Area by Jefferson County, and 11) disturbance associated with the industrial use of portions of the area as borrow areas for earthen fill material and as storage areas for concrete, earthen and wooden construction materials. Construction activity associated with the construction of the new Cabela's retail center was proceeding south of Clear Creek at the east end of the Study Area at the time this survey was completed.

The literature review identified several wetland delineations and USACE Jurisdiction Determinations (JD's) which have been completed within the Study Area in the recent past. These include the following:

- Work associated with the Dog Pound Gravel Pit fill and mitigation area to include the issuance of Department of the Army Section 404 Permit No. 199680390 to the Jefferson County Road Department on November 26, 1996 (Dept. of the Army 1996). This permit authorized placing 70,000 cubic yards of fill material and creating a 3.4 acre mitigation wetland in an old gravel pit immediately south of Clear Creek at the east end of the I-70/32nd Avenue Interchange EA Study Area.
- A preliminary JD issued by the Department of the Army, Corps of Engineers for the Golden Pits, Mining Permit # M-1977-145, for isolated wetlands and open water of Pits B5-East and A5-West, Corps File No. 199176059 (Dept. of the Army 2003). The JD was issued to Coors Brewing Company, Golden, Colorado by the Omaha District, Denver Regulatory Office, 9307 South Wadsworth Blvd., Littleton, Colorado. January 27, 2003.
- A wetland delineation completed by Weiland Sugnet, Inc. in October of 2001 for CH2MHILL for the I-70/SH 58 Interchange Project, CDOT Project No. NH0703-246 (Weiland Sugnet, Inc. 2001). This delineation report was prepared as part of the EA process for that project.
- A wetland delineation completed by Savage and Savage, Inc. in November 2004 for the west end of the Dog Pound Pit and portions of Clear Creek (Savage and Savage, Inc. 2004). The delineation was completed for Martin/Martin on behalf of Cabela's.
- A Department of the Army, Corps of Engineers Jurisdiction Determination and Nationwide Permit (NWP) No. 14 (Dept. of the Army 2004) completed for the Mt. Olivet South Pit (Mine Permit No. M-1989-127 and Corps File No. 199015027) and issued to Coors Brewing Company on October 26, 2004. The NWP No. 14 was issued for a temporary culverted access road crossing over Clear Creek to provide access to the Mt. Olivet South Pit which is located on the north side of Clear Creek. The NWP is valid until October 25, 2006.

The thirty-three wetland units identified within the assessed area during this study were designated as shown in Table 2 and in Figures 9, 10, 11, and 12. They could be generally described as follows:

- Data Point A-1a was recorded in a stormwater drainage area at the extreme west end of the Study Area (Figures 9 and 10) (Appendix B, Photo 1). The site had wetland soils and hydrology characteristics, but was later determined not to be a wetland since it didn't meet the facultative vegetation criteria. A data sheet for this site is included on page A-2 in Appendix A.
- Wetlands A-2 (Data Point A-2a) (Appendix B, Photo 2); A-3 (Data Point A-3a) (Appendix B, Photos 3 and 6); and A-4 (Data Points A-4a, A-4b, and A-4c) (Appendix B, Photos 4, 5 and 6) were isolated seasonal wetlands located adjacent to McIntyre Street at the extreme west end of the Study Area and just south of Clear Creek (Figures 9 and 10).
- Wetland B-1 (Data Points B-1a, B-1b and B-1c) (Appendix B, Photos 7, 8 and 9) was a riparian wetland located immediately adjacent to Clear Creek and also at the extreme west end of the Study Area (Figures 9 and 10).
- Wetlands C-1, C-2, C-3, C-4, C-5, C-6, and C-7 (Data Points C-1a, C-2a, C-3a, C-4a, C-5a, C-6a, and C-7a, respectively) (Appendix B, Photos 10, 11, 12, 13, 14, and 15) were also riparian wetlands immediately adjacent to Clear Creek, but were located at the east end of the Study Area (Figures 9 and 11).
- Wetland D-1 (Data Point D-1a) (Appendix B, Photo 16) was an isolated wetland located north of Clear Creek and immediately south of the Jefferson County Pedestrian Trail at the center of the Study Area (Figures 9 and 11).
- Wetlands E-1 (Data Point E-1a) and E-2 (Data Point E-2a) (Appendix B, Photos 17 and 18, respectively) (Figures 9 and 11) were associated with a groundwater seepage and stormwater drainage system for SH 58 and its associated south frontage road which carries water into the Juchem Ditch.
- Wetland F-1 (Data Points F-1a and F-1b) (Appendix B, Photo 19) (Figures 9 and 10) was part of the groundwater seepage and stormwater drainage ditch paralleling the south side of the SH 58 frontage road. This ditch system carries water from the north and south sides of SH 58, the frontage road, and the Jefferson County Pedestrian Trail through Wetlands E-1 and E-2 into the Juchem Ditch on the south side of SH 58. The Juchem Ditch then flows north under SH 58 to form the Juchem-Reno ditch which carries water north to a lake system.
- Wetland G-1 (Data Point G-1a) (Appendix B, Photo 20) was also part of the same ditch system as Wetland F-1 and was immediately east of Wetland F-1 (Figures 9 and 10). The two were separated by a culverted roadway.
- Wetland H-1 (Data Point H-1a) (Appendix B, Photo 21) (Figures 9 and 10) was also part of the same ditch system as Wetlands F-1 and G-1 and was immediately east of Wetland G-1. The two were also separated by a culverted roadway.
- Wetlands I-1, I-2, I-3, I-4, and I-5 (Data Points I-1a, I-2a, I-3a, I-4a, and I-5a, respectively) (Appendix B, Photos 22, 23, 24, 25, and 26, respectively) (Figures 9, 10 and 11) were all

isolated wetlands formed where groundwater seepage and stormwater runoff flowing from the north side of SH 58 emerged from culverts beneath the highway and either entered another culvert beneath the south frontage road (I-1, I-2, I-3, and I-4) or flowed down the ditch between SH 58 and the frontage road for some distance before entering a culvert (I-5).

- Wetlands J-1 (Data Points J-1a and J-1b) (Appendix B, Photos 27 and 28), J-2 (Data Point J-2a) (Appendix B, Photo 29), J-3 (Data Point J-3a) (Appendix B, Photo 30), and J-4 (Data Point J-4a) (Appendix B, Photo 31) were all segments of the groundwater seepage and stormwater drainage ditch which paralleled the south side of the frontage road (Figures 9, 10 and 11). The segments were separated by three culverted access road crossings.
- Wetlands K-1 (Data Point K-1a) (Appendix B, Photo 32) and K-2 (Data Points K-2a and K-2b) (Appendix B, Photo 33) were segments of the SH 58 drainage ditch paralleling the north side of SH 58 (Figures 9, 10 and 11). The ditch carries groundwater seepage and stormwater runoff either directly into the Juchem Ditch just east of the railroad overpass (Wetland J-1) or to culverts beneath SH 58 which carry runoff south to Wetlands I-1 through I-5 and ultimately to the Juchem Ditch south of the SH 58 frontage road. Water then flows through the Juchem Ditch back north under SH 58.
- Wetlands K-3 (Data Point K-3a) and K-4 (Data Point K-4a) (Appendix B, Photos 34 and 35, respectively) were perched wetlands immediately north of Wetland K-2 (Figures 9, 10 and 11) and were probably formed from groundwater seepage from the hillside.
- Wetland L-1 (Data Point L-1a) (Appendix B, Photo 36) was wetland associated with the edge of the Bayou (Bayau) Ditch at the waterline on both sides of the ditch. Data Point L-1a was located immediately north of Clear Creek near the C-1 through C-7 complex of wetlands (Figures 9 and 11).
- Wetland M-1 (Data Point M-1a) (Appendix B, Photo 37) lay along a Right of Way (ROW) drainage ditch located immediately southeast of the Youngfield Street/44th Avenue intersection on the east side of I-70 (Figures 9 and 12).
- Wetland N-1 (Data Point N-1a) (Appendix B, Photo 38) was a ROW drainage ditch located within the Ward Road to I-70 west on-ramp loop (Figure 9 and 12). The wetland was oriented in a linear north-south direction and supported stormwater runoff flow from a culvert beneath Ward Road to a large holding pond north of the Ward Road to I-70 on-ramp/off-ramp complex. Water flows from Wetland N-1 to the holding pond through a culvert beneath the ramp complex.

Full descriptions of each of the delineated wetlands are provided below. Completed field data sheets are included in Appendix A.

Wetland A-2, A-3, and A-4:

Wetlands A-2, A-3 and A-4 (Table 2, Figures 9 and 10, and Appendices A and B) were all similar **Palustrine Emergent (PEM)** (Cowardin et al. 1979) isolated depressional wetlands. In our best professional judgment, these wetlands should be designated as non-jurisdictional since they evidenced no outlet to Waters of the U.S. (WOTUS). These wetlands could potentially be impacted by Alternatives 1 and 3 of the project. These isolated depressions appeared to have been formed at some

time in the past by fill removal or application and the associated grading activities, probably in association with the construction of McIntyre Street or the man-made lake immediately to the south. The estimated areas of Wetlands A-2, A-3 and A-4 are included in Table 2. More detailed descriptions of characteristics associated with Wetlands A-2, A-3 and A-4 are provided below. See field data sheets A-2a, A-3a, A-4a, A-4b, and A-4c in Appendix A for specific data related to wetland characteristics.

Hydrology:

Wetlands A-2, A-3, and A-4 all appeared to be situated within the historic floodplain to the south of Clear Creek. Each of the wetlands was located in shallow depressions, probably created by the excavation or application of fill dirt during the construction of the McIntyre Street bridge over Clear Creek. The wetlands apparently receive runoff during rainfall events from an adjacent dirt access roadway, from snowfall, and possibly from groundwater seepage (pers. comm. Tom Bueb, Coors Brewing Company, September 21, 2005). At the time of the site visit in September, there was no standing water in any of the depressions and the soil was cracked at the surface (Appendix B, Photos 2, 3, 4, and 5). Pondered water was standing in all three wetlands during a return visit to the site on January 14, 2006 (Appendix B, Photo 6).

Vegetation:

All three wetlands could be characterized as **PEM** (Cowardin et al. 1979) wetlands with little vegetative species diversity. The transition from upland to wetland was fairly abrupt. Vegetation within each of the wetlands consisted almost entirely of cattail (*Typha latifolia*) (OBL) and common spike-rush (*Eleocharis palustris*) (OBL). The upland areas surrounding these wetlands were dominated by an open smooth brome (*Bromus inermis*)/crested wheatgrass (*Agropyron cristatum*) ecotone mixed with various weed species including field bindweed (*Convolvulus arvensis*), prickly lettuce (*Lactuca serriola*), Canada thistle (*Cirsium arvense*), and sweet clover (*Melilotus* sp.). Scattered stands of coyote willow (*Salix exigua*) (OBL) were also evident in the vicinity of the wetland depressions. No overstory was present.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetlands A-2, A-3 and A-4 as **Torrifluvents, very gravely, 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 21, 2005 closely resembled the mapped soil type. **Torrifluvents** are not listed as hydric soils on the Jefferson County local hydric soils list (NRCS 2003), nor are they listed as hydric soils in the *National List of Hydric Soils* (USDA 1991).

Wetland B-1:

Wetland B-1 was a long narrow **Palustrine Scrub-Shrub (PSS)** (Cowardin et al. 1979) wetland adjacent to the northern edge of Clear Creek with small areas of **PEM** wetlands located on small silty gravel terraces and bars along the water's edge (Table 2, Figure 9 and 10, and Appendix B, Photos 7, 8 and 9). Wetland B-1 is estimated by the researchers, using best professional judgment, to be jurisdictional since it was located immediately adjacent to Clear Creek within the riparian corridor. Wetland B-1 may be impacted by proposed construction activities associated with Alternatives 1 and 3 (Figures 3 and 5) of the proposed project. The wetland was located at the base of the steeply channelized north bank of Clear Creek which was covered with large diameter (12 inch to 48 inch) riprap. Three data sheets for Wetland B-1 (B-1a, B-1b and B-1c) were completed (Appendix A) on September 21, 2005. The estimated area of Wetland B-1 is included in Table 2. More detailed descriptions of characteristics associated with Wetland B are provided below.

Hydrology:

Wetland B-1 was situated immediately adjacent to Clear Creek and was located within the 100 year floodplain. The wetland could be characterized as a long 7 foot to 20 foot wide silty, sandy, cobbly terrace which varied from 0 to 18 inches in height above the Clear Creek water level on the day of the field survey. Wetland B-1 appeared to receive moisture from rainfall, from groundwater seepage from upslope, as well as from capillary seepage from Clear Creek. The soil was saturated in the upper 12 inches at two of the three data points. See the field data sheets in Appendix A for specific data related to hydrology.

Vegetation:

Wetland B-1 could be characterized as a **PSS** (Cowardin et al. 1979) wetland with small areas of **PEM** wetlands located on small silty gravel terraces and bars along the water's edge. Considerable vegetative species diversity was evident on the **PEM** terraces. Predominant species in these areas consisted of common spike-rush (OBL), Baltic rush (*Juncus balticus*) (OBL), Nebraska sedge (*Carex nebraskensis*) (OBL), three-square rush (*Scirpus americanus*) (OBL), jointed rush (*Juncus articulatus*) (OBL), and barnyard grass (*Echinochloa crusgalli*) (FACW). The **PSS** areas were dominated by coyote willow (OBL) with a graminoid herbaceous understory consisting primarily of Baltic rush (OBL), witchgrass (*Panicum capillare*) (FAC), Junegrass (*Koeleria cristata*) (NI), and common reed (*Phragmites australis*) (FACW). The transition from upland to wetland was very abrupt at the base of the heavily riprapped bank. The scattered overstory was predominated by boxelder (*Acer negundo*) (FAC), silver maple (*Acer saccharinum*) (FACW), and Siberian elm (*Ulmus pumila*) (NI). A scattering of green ash (*Fraxinus pennsylvanica*) (FACW) and plains cottonwood (*Populus deltoides*) (FAC) was also present in the midstory and overstory along the north edge of the wetland.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland B-1 as **Fluvaquents (Alluvial cobble and silt)** (Table 1 and Figure 8). Soils characteristics determined during sampling at the site on September 26, 2005 closely resembled this soil type. **Fluvaquents** are listed on the Jefferson County local hydric soils list (NRCS 2003). Soil samples obtained within Wetland B-1 during the site visit did evidenced hydric characteristics such as gleying and mottling (Appendix A). This indicated probable long periods of saturation. Specific soils information for sample plots is provided on the data sheets in Appendix A.

Wetland C-1:

Wetland C-1 (Figures 9 and 11; Appendix A and Appendix B, Photo 10; and Table 2) was also estimated, in the best professional judgment of the researchers, to be jurisdictional since it was also located immediately adjacent to Clear Creek. C-1 could be characterized as a narrow strip of sandy silty cobble **PEM** (Cowardin et al. 1979) wetland immediately adjacent to the waterline on the south bank of Clear Creek at the east end of the Study Area. Wetlands located in this area of Clear Creek have formed on small silty gravel terraces and bars along the water's edge and inside the channel. Wetland C-1 may be impacted by proposed construction activities associated with Alternatives 1, 2 and 3 (Figures 3, 4 and 5) of the proposed project. The wetland was located at the base of the steeply channelized south bank of Clear Creek which was partially covered with large diameter riprap. One data sheet for Wetland C-1 (Data Point C-1a) was completed (Figure 11 and Appendix A) on September 26, 2005. The estimated area of Wetland C-1 is included in Table 2. More detailed descriptions of characteristics associated with Wetland C-1 are provided below.

Hydrology:

Wetland C-1 was situated immediately adjacent to Clear Creek and was located within the 100 year floodplain. The wetland could be characterized as a narrow one to three foot wide silty, sandy, cobbly terrace between Clear Creek and a steep sandy cobbly partially rip-rapped upland bank. C-1 varied from 0 to 18 inches in height above the Clear Creek water level on the day of the field survey. Wetland C-1

appeared to receive moisture from groundwater seepage from upslope, as well as from capillary seepage from Clear Creek. The soil was saturated in the upper 12 inches at the data point.

Vegetation:

Wetland C-1 could be characterized as a **PEM** (Cowardin et al. 1979) wetland with moderate vegetative species diversity. The transition from upland to wetland was fairly abrupt. Vegetation within the wetland consisted of a mix of lady's thumb smartweed (*Polygonum persicaria*) (OBL), dock-leaved smartweed (*P. lapathifolium*) (OBL), reed canarygrass (*Phalaris arundinacea*) (FACW+), tufted hairgrass (*Deschampsia caespitosa*) (FACW), beggartick (*Bidens frondosa*) (FACW), curly dock (*Rumex crispus*) (FACW), and Canada thistle (FACU). There was a scattered midstory of green ash (FACW). No overstory was present. The upland areas surrounding this wetland were dominated by an open smooth brome and downy brome (*Bromus tectorum*) ecotone mixed with various species of noxious weeds and an overstory of crack willow (*Salix fragilis*).

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland C-1 as **Fluvaquents (Alluvial cobble and silt)** (Table 1 and Figure 8). Soils characteristics determined during sampling at the site on September 26, 2005 closely resembled this soil type. **Fluvaquents** are listed on the Jefferson County local hydric soils list (NRCS 2003). Soil samples obtained within Wetland C-1 during the site visit did indicate hydric characteristics such as gleying and mottling (Data Point C-1a, Appendix A). This indicated probable long periods of saturation.

Wetland C-2:

Wetland C-2 was very similar to C-1 and was located just upstream (Figures 9 and 11; Appendix B, Photo 11; and Table 2). It too was estimated to be a jurisdictional wetland, based upon best professional judgment, given its immediate proximity to Clear Creek. Wetland C-2 may also be impacted by Alternatives 1, 2 and 3 (Figures 3, 4, and 5) proposed construction activities. A data sheet for Data Point C-2a is included in Appendix A. The estimated area of Wetland C-2 is included in Table 2. More detailed descriptions of characteristics associated with Wetland C-2 are provided below.

Hydrology:

Wetland C-2 was also situated immediately adjacent to Clear Creek and was located within the 100 year floodplain. The wetland could also be characterized as a three to five foot wide silty, sandy, cobbly terrace between Clear Creek and a steep sandy cobbly partially rip-rapped upland bank. C-2 also varied from 0 to 18 inches in height above the Clear Creek water level on the day of the field survey. Wetland C-2 also appeared to receive moisture from groundwater seepage from upslope, as well as from capillary seepage from Clear Creek. The soil was saturated in the upper 12 inches at the data point.

Vegetation:

Wetland C-2 could be characterized as a **PSS** (Cowardin et al. 1979) wetland with moderate vegetative species diversity. The transition from upland to wetland was gradual at the wetland boundary. Vegetation within the wetland consisted of a mix of reed canarygrass (FACW+), Baltic rush (OBL), curly dock (FACW), goldenrod (*Solidago canadensis*) (FACU), teasel (*Dipsacus fullonum*) (NI), bouncing bet (*Saponaria officinalis*) (FACU), and Canada thistle (FACU). There was a fairly dense midstory of coyote willow (OBL), Chinese clematis (*Clematis orientalis*) (NI), and green ash (FACW). The overstory consisted of mature crack willow (FAC) and plains cottonwoods (FAC) to the west of the Data Point. The upland areas surrounding this wetland were also dominated by an open smooth brome and downy brome ecotone mixed with various species of noxious weeds and an overstory of crack willow, plains cottonwoods, Siberian elms, and narrow-leaved cottonwoods (*Populus angustifolia*) (FACW).

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland C-2 as **Fluvaquents (Alluvial cobble and silt)** (Table 1 and Figure 8). Soils characteristics determined during sampling at the site on September 26, 2005 closely resembled this soil type. **Fluvaquents** are listed on the Jefferson County local hydric soils list (NRCS 2003). Soil samples obtained within Wetland C-2 during the site visit did indicate hydric characteristics such as gleying and mottling (Appendix A). This indicated probable long periods of saturation.

Wetland C-3:

Wetland C-3 was located just upstream (Figures 9 and 11; Appendix B, Photo 12; and Table 2) from Wetlands C-2 and C-1. It too was estimated to be a jurisdictional wetland based upon best professional judgment. Wetland C-3 may also be impacted by Alternatives 1, 2 and 3 (Figures 3, 4, and 5) proposed construction activities. A data sheet for delineation Data Point C-3a is included in Appendix A. The estimated area of Wetland C-3 is included in Table 2. More detailed descriptions of characteristics associated with Wetland C-3 are provided below.

Hydrology:

Wetland C-3 was also situated immediately adjacent to Clear Creek and was located within the 100 year floodplain. The wetland could also be characterized as a flat, somewhat scoured, silty, sandy, cobbly overflow area between Clear Creek and a steep sandy cobbly upland bank. C-3 also varied from 0 to 18 inches in height above the Clear Creek water level on the day of the field survey. Signs of scouring, sediment deposits, and flow patterns produced during periods of high flows were evident. Some pooling and standing water were present in small shallow depressions throughout the delineated boundary of the wetland. Wetland C-3 appeared to receive moisture from pooled water in the scoured depressions, as well as from groundwater and capillary seepage from Clear Creek. The soil was saturated in the upper 12 inches at the data point.

Vegetation:

Wetland C-3 could be characterized as a **Palustrine Forested Deciduous (PFO6)** (Cowardin et al. 1979) wetland with low vegetative species diversity. The transition from upland to wetland was gradual at the wetland boundary. Vegetation within the wetland consisted primarily of a mix of meadow fescue (*Festuca pratensis*) (FAC), curly dock (FACW), and watercress (*Nasturtium officinale*) (OBL) in the sparse herbaceous layer; green ash (FACW) and Siberian elm (NI) in a sparse midstory; and a dense overstory of crack willow (FAC).

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland C-3 as **Fluvaquents (Alluvial cobble and silt)** (Table 1 and Figure 8). Soils characteristics determined during sampling at the site on September 26, 2005 closely resembled this soil type. **Fluvaquents** are listed on the Jefferson County local hydric soils list (NRCS 2003). Soil samples obtained within Wetland C-3 during the site visit did indicate hydric characteristics such as gleying and mottling (Appendix A, Data Point C-3a). This indicated probable long periods of saturation.

Wetland C-4:

Wetland C-4 was located just upstream (Figure 9 and 11; Appendix B, Photo 13; and Table 2) of Wetland C-3. It too was estimated to be a jurisdictional wetland based upon best professional judgment. Wetland C-4 may also be impacted by Alternatives 1, 2 and 3 (Figures 3, 4, and 5) proposed construction activities. A data sheet for delineation Data Point C-4a is included in Appendix A. The estimated area of Wetland C-4 is included in Table 2. More detailed descriptions of characteristics associated with Wetland C-4 are provided below.

Hydrology:

Wetland C-4 was also situated immediately adjacent to Clear Creek and was located within the 100 year floodplain. The wetland was located immediately upstream of an old check dam on the south bank of Clear Creek and was delineated to include a complex of streambank and island edges within the Clear Creek channel. C-4 could be characterized as a fairly flat, silty, sandy, cobbly area of sediment and cobble bars and terraces formed in the channel of Clear Creek from sedimentation. C-4 varied from 0 to 12 inches in height above the Clear Creek water level on the day of the field survey. Wetland C-4 appeared to receive moisture primarily from capillary seepage from the Clear Creek water table. The soil was saturated in the upper 12 inches at the data point.

Vegetation:

Wetland C-4 could be characterized as a **PSS** (Cowardin et al. 1979) wetland with large areas of **PEM** vegetation and moderate vegetative species diversity. The transition from upland to wetland was gradual at the wetland boundary. Vegetation within the wetland consisted of a mix of reed canarygrass (FACW+), water speedwell (*Veronica anagallis-aquatica*) (OBL), tufted hairgrass (FACW), common reed (FACW), barnyard grass (FACW), rabbitfoot grass (*Polypogon monspeliensis*) (OBL), dock-leaved smartweed (OBL), and Canada thistle (FACU). There was also a fairly dense midstory of coyote willow (OBL) and an overstory of crack willow (FAC). The upland areas adjacent to this wetland to the south were dominated by an open smooth brome and downy brome ecotone mixed with various species of noxious weeds and an overstory of crack willow, plains cottonwoods, Siberian elms, and narrow-leaved cottonwoods.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland C-4 as **Fluvaquents (Alluvial cobble and silt)** (Table 1 and Figure 8). Soils characteristics determined during sampling at the site on September 26, 2005 closely resembled this soil type. **Fluvaquents** are listed on the Jefferson County local hydric soils list (NRCS 2003). Soil samples obtained within Wetland C-4 during the site visit did indicate hydric characteristics such as gleying and mottling (Appendix A, Data Point C-4a). This indicated probable long periods of saturation.

Wetland C-5:

Wetland C-5 was located on the north bank of Clear Creek (Figure 9 and 11; Appendix B, Photo 13; and Table 2) across from Wetland C-4. It too was estimated to be a jurisdictional wetland based upon best professional judgment. Wetland C-5 may also be impacted by Alternatives 1, 2 and 3 (Figures 3, 4, and 5) proposed construction activities. A data sheet for delineation Data Point C-5a is included in Appendix A. The estimated area of Wetland C-5 is included in Table 2. More detailed descriptions of characteristics associated with Wetland C-5 are provided below.

Hydrology:

Wetland C-5 was situated immediately adjacent to Clear Creek on the north bank and was located within the 100 year floodplain. The wetland was located immediately upstream of an old concrete and rock riprap and steel sheet piling check dam spanning Clear Creek. C-5 could be characterized as a fairly flat narrow silty, sandy, cobbly terrace formed along the north bank of the Clear Creek from natural sedimentation. C-5 varied from 0 to 12 inches in height above the Clear Creek water level on the day of the field survey. Wetland C-5 appeared to receive moisture primarily from capillary seepage from the Clear Creek water table. The soil was saturated in the upper 12 inches at the data point.

Vegetation:

Wetland C-5 could be characterized as a **PSS** (Cowardin et al. 1979) wetland with very low vegetative species diversity. The transition from upland to wetland was very gradual at the upslope wetland boundary. Vegetation within the wetland consisted of a mix of reed canarygrass (FACW+) and Chinese clematis (NI) in the understory and a dense midstory of coyote willow (OBL). No overstory was present. The upland areas adjacent to this wetland to the north were dominated by an open ecotone of mixed

noxious weed and grass species with an overstory of plains cottonwoods, Siberian elms, and narrow-leaved cottonwoods.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland C-5 as **Fluvaquents (Alluvial cobble and silt)** (Table 1 and Figure 8). Soils characteristics determined during sampling at the site on September 26, 2005 closely resembled this soil type. **Fluvaquents** are listed on the Jefferson County local hydric soils list (NRCS 2003). Soil samples obtained within Wetland C-5 during the site visit did indicate hydric characteristics such as gleying and mottling (Appendix A, Data Point C-5a). This indicated probable long periods of saturation.

Wetland C-6:

Wetland C-6 (Figure 9 and 11; Appendix B, Photo 14; and Table 2) was also estimated to be jurisdictional, using the researcher's best professional judgment, since it was also located immediately adjacent to Clear Creek. C-6 can be characterized as a narrow strip of sandy silty cobble **PEM** (Cowardin et al. 1979) and **PSS** wetland immediately adjacent to the waterline on the north bank of Clear Creek at the east end of the Study Area. Wetland C-6 was located immediately north of Wetland C-3 across the Clear Creek channel. Wetland C-6 may be impacted by proposed construction activities associated with Alternatives 1, 2 and 3 (Figures 3, 4 and 5) of the proposed project. The wetland was located near the base of the steeply channelized twenty foot high north bank of Clear Creek which was entirely covered with large diameter riprap. One data sheet for Data Point C-6a was completed (Figure 11 and Appendix A) on September 26, 2005. The estimated area of Wetland C-6 is included in Table 2. More detailed descriptions of characteristics associated with Wetland C-6 are provided below.

Hydrology:

Wetland C-6 was situated immediately adjacent to Clear Creek and was located within the 100 year floodplain. The wetland could be characterized as a narrow one to six foot wide silty, sandy, cobbly terrace between Clear Creek and a steep 20 foot high rocky rip-rapped upland bank. C-6 varied from 0 to 12 inches in height above the Clear Creek water level on the day of the field survey. Wetland C-6 appeared to receive all its moisture from capillary seepage from the Clear Creek water table. The soil was saturated in the upper 12 inches at the data point.

Vegetation:

Wetland C-6 could be characterized as a **PEM** (Cowardin et al. 1979) wetland with moderate vegetative species diversity surrounded by vegetation with **PSS** characteristics. The transition from upland to wetland was fairly abrupt. Vegetation within the wetland consisted of a mix of lady's thumb smartweed (OBL), tufted hairgrass (FACW), water speedwell (OBL), carpetweed (*Mullugo verticillata*) (FAC), and Canada thistle (FACU). There was a fairly dense midstory of coyote willow (OBL) and a scattered overstory of crack willow (FAC).

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland C-6 as **Fluvaquents (Alluvial cobble and silt)** (Table 1 and Figure 8). Soils characteristics determined during sampling at the site on September 26, 2005 closely resembled this soil type. **Fluvaquents** are listed on the Jefferson County local hydric soils list (NRCS 2003). Soil samples obtained within Wetland C-6 during the site visit did indicate hydric characteristics such as gleying and mottling (Appendix A, Data Point C-6a). This indicated probable long periods of saturation.

Wetland C-7:

Wetland C-7 was located on a cobble terrace just downstream (Figure 9 and 11; Appendix B, Photo 15; and Table 2) from Wetland C-6 on the north bank of Clear Creek. It too was estimated to be a

jurisdictional wetland, based upon the best professional judgment of the researchers. Wetland C-7 may also be impacted by Alternatives 1, 2 and 3 (Figures 3, 4, and 5) proposed construction activities. A data sheet for delineation Data Point C-7a is included in Appendix A. The estimated area of Wetland C-7 is included in Table 2. More detailed descriptions of characteristics associated with Wetland C-7 are provided below.

Hydrology:

Wetland C-7 was also situated immediately adjacent to Clear Creek and was located within the 100 year floodplain. The wetland was located on the north bank of Clear Creek immediately downstream of an old check dam. It was located immediately north of Wetland C-1. Wetland C-7 could be characterized as a fairly flat silty, sandy, cobbly area of sediment and cobble bars and terraces formed in the channel of Clear Creek from natural sedimentation. C-7 varied from 0 to 18 inches in height above the Clear Creek water level on the day of the field survey. Wetland C-7 appeared to receive moisture primarily from capillary seepage from the Clear Creek water table. The soil was saturated in the upper 12 inches at the data point.

Vegetation:

Wetland C-7 could be characterized as a **PEM** wetland (Cowardin et al. 1979) with areas of **PSS** vegetation and moderate vegetative species diversity. The wetland was surrounded by cobble lined channels of Clear Creek which constituted Waters of the U.S. (WOTUS). Vegetation within the wetland consisted of a mix of reed canarygrass (FACW+), tufted hairgrass (FACW), lady's thumb smartweed (OBL), curly dock (FACW), and Canada thistle (FACU). There was also a scattered midstory of coyote willow (OBL), crack willow (FAC), and narrow-leaved cottonwood (FACW). No overstory was present. The upland area to the north of the wetland consisted of a steep rip-rapped channelized bank approximately twenty feet high.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland C-7 as **Fluvaquents (Alluvial cobble and silt)** (Table 1 and Figure 8). Soils characteristics determined during sampling at the site on September 26, 2005 closely resembled this soil type. **Fluvaquents** are listed on the Jefferson County local hydric soils list (NRCS 2003). Soil samples obtained within Wetland C-7 during the site visit did indicate hydric characteristics such as gleying and mottling (Appendix A, Data Point C-7a).

Wetland D-1:

Wetland D-1 (Table 2; Figures 9 and 11; and Appendix B, Photo 16) was classified by the researcher as a very marginal isolated depression wetland. In our best professional judgment, this wetland should be designated as non-jurisdictional since it evidenced no outlet to WOTUS. The wetland could potentially be impacted by Alternative 2 of the proposed project. This isolated depression appeared to have been formed at some time in the past by industrial fill removal or application and associated grading activities. A data sheet for delineation Data Point D-1a is included in Appendix A. The estimated area of Wetland D-1 is included in Table 2. A more detailed description of characteristics associated with Wetland D-1 is provided below.

Hydrology:

Wetland D-1 was isolated and not associated with WOTUS. This marginal wetland was located in a shallow depression which appeared to have been created by the excavation and subsequent grading of fill dirt from an industrial storage area for wooden and concrete construction materials. The wetland apparently receives runoff during rainfall and snowfall events from a large area of extremely flat land and possibly from the south side of the Jefferson County Pedestrian Trail. At the time of the site visit, there was no standing water in the depression and the soil was cracked at the surface (Appendix B, Photo 16).

Vegetation:

Wetland D-1 could be characterized as a **PSS** (Cowardin et al. 1979) wetland with very little vegetative species diversity. The transition from upland to wetland was extremely gradual. Vegetation within Wetland D-1 consisted entirely of shrub species which included plains cottonwood (FAC), narrow-leaved cottonwood (FACW), and tamarisk (*Tamarix ramosissima*) (FACW). No herbaceous layer was present at the time of the survey. The overstory consisted of young narrow-leaved cottonwoods (FACW). The upland areas surrounding this wetland were dominated by an open ecotone composed of a mix of various weed species including field bindweed, prickly lettuce, sweet clover, and teasel.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland D-1 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 27, 2005 closely resembled the mapped soil type. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetland E-1:

Wetland E-1 (Table 2; Figures 9 and 11; and Appendix B, Photo 17) was located immediately south of a culvert outlet carrying water beneath the Jefferson County Pedestrian Trail from Wetland J-4 and Wetland I-5. Water exits Wetland E-1 through a 12 inch culvert beneath a dirt access road on Coors Brewery Company property and immediately empties into the Juchem Ditch through Wetland E-2. In our best professional judgment, Wetland E-1 should be designated as non-jurisdictional since it emptied into the Juchem Ditch and, therefore, evidenced no outlet to WOTUS that could be identified. The wetland could potentially be impacted by Alternatives 1, 2 and 3 of the proposed project (Figures 3, 4, and 5). A data sheet for delineation Data Point E-1a is included in Appendix A. The estimated area of Wetland E-1 is included in Table 2. A more detailed description of characteristics associated with Wetland E-1 is provided below.

Hydrology:

Wetland E-1 was associated with a groundwater seepage and stormwater drainage ditch system which carries water from SH 58 and its frontage road into the Juchem Ditch at a point just south of the SH 58 frontage road and Jefferson County Pedestrian Trail and just west of the railroad overpass over SH 58. At the time of the site visit, there was runoff water flowing through the wetland.

Vegetation:

Wetland E-1 could be characterized as **PSS** (Cowardin et al. 1979) wetland with moderate vegetative species diversity. The transition from upland to wetland was abrupt to gradual. Vegetation within Wetland E-1 consisted of herbaceous species which included teasel (NI), reed canarygrass (FACW+), cattail (OBL), poison hemlock (*Conium maculatum*) (FACW), water speedwell (OBL), Canada thistle (FACU), and goldenrod (FACU). Shrub species identified within the wetland included coyote willow (OBL) and choke cherry (*Prunus americana*) (UPL). Boxelder (FAC) was the only overstory species. The upland areas surrounding this wetland were mostly open and were dominated by a mix of various exotic weed species including field bindweed, prickly lettuce, sweet clover, poison hemlock, teasel, and many others. Boxelder, Siberian elm, plains cottonwood, and narrow-leaved cottonwood composed the upland overstory which was generally confined to the vicinity of the Juchem Ditch.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland E-1 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 27, 2005 closely resembled the mapped soil type. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list

(NRCS 2003) or the *National List of Hydric Soils* (USDA 1991). Soils in the wetland exhibited hydric characteristics, however.

Wetland E-2:

Wetland E-2 (Table 2; Figures 9 and 11; and Appendix B, Photo 18) was located immediately adjacent to the Juchem Ditch in a very narrow band along the sides of the Ditch and at the outlet of the culvert carrying runoff from Wetland E-1. In our best professional judgment, Wetland E-2 should also be designated as non-jurisdictional since it empties into the Juchem Ditch and, therefore, evidenced no outlet to WOTUS that could be identified. The wetland could also potentially be impacted by Alternatives 1, 2 and 3 of the proposed project (Figures 3, 4, and 5). A data sheet for delineation Data Point E-2a is included in Appendix A. The estimated area of Wetland E-2 is included in Table 2. A more detailed description of characteristics associated with Wetland E-2 is provided below.

Hydrology:

Wetland E-2 was also associated with a groundwater seepage and stormwater drainage ditch system which carries water from SH 58 and its frontage road into the Juchem Ditch at a point just south of the SH 58 frontage road and Jefferson County Pedestrian Trail and just west of the railroad overpass over SH 58. Water enters Wetland E-2 through the 12 inch culvert buried beneath a dirt access road on Coors Brewery Company property and immediately exits the wetland into the Juchem Ditch which flows north beneath SH 58. At the time of the site visit, there was runoff water flowing through the wetland.

Vegetation:

Wetland E-2 could be characterized as a **PSS** (Cowardin et al. 1979) wetland with low hydrophytic vegetative species diversity. The transition from upland to wetland was abrupt. Vegetation within Wetland E-2 consisted of herbaceous species which included teasel (NI), Canada thistle (FACU), goldenrod (FACU), nettle (*Urtica dioica*) (FACW), and false Solomon's seal (*Smilacina stellata*) (FAC). Shrub species identified within the immediate vicinity of the wetland included coyote willow (OBL), snowberry (*Symphoricarpos occidentalis*) (NI), and licorice (*Glycyrrhiza lepidota*) (FACU). Boxelder (FAC) was the only overstory species in the vicinity of the data plot. The upland areas surrounding this wetland were mostly open and were dominated by a mix of various exotic weed species including field bindweed, prickly lettuce, sweet clover, poison hemlock, teasel, and many others. Boxelder, Siberian elm, plains cottonwood, and narrow-leaved cottonwood composed the overstory which was generally confined to the vicinity of the Juchem Ditch.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland E-2 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 27, 2005 closely resembled the mapped soil type. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetland F-1:

Wetland F-1 (Table 2; Figures 9 and 10; and Appendix B, Photo 19) was part of the stormwater drainage ditch system associated with SH 58 and its frontage road. The wetland was located immediately east of the SH 58 and McIntyre Street interchange on the south side of the SH 58 frontage road. In our best professional judgment, Wetland F-1 should be designated as non-jurisdictional since it eventually empties into the Juchem Ditch and, therefore, evidences no outlet to WOTUS that could be identified. The wetland could potentially be impacted by Alternatives 1 and 3 of the proposed project (Figures 3 and 5). Data sheets for delineation Data Points F-1a and F-1b are included in Appendix A. The estimated area of Wetland F-1 is included in Table 2. A more detailed description of characteristics associated with Wetland F is provided below.

Hydrology:

Wetland F-1 lay within a groundwater seepage and stormwater drainage ditch system which carries water from SH 58 and its frontage road into the Juchem Ditch at a point just south of the SH 58 frontage road and Jefferson County Pedestrian Trail and just west of the railroad overpass over SH 58. The drainage ditch system originates at the west end of the Study Area just east of McIntyre Street and flows eastward. Water enters Wetland F-1 through a small culvert from the north side of SH 58 and from rainfall runoff from the south side of SH 58 and from the frontage road and the Jefferson County Pedestrian Trail. At the time of the site visit, the west end of Wetland F-1 was inundated with standing water, but the east end was dry. Water exits the wetland through a small culvert at the east end during wet weather.

Vegetation:

Wetland F-1 could be characterized as a combination of **PEM** and **PSS** wetland types (Cowardin et al. 1979) with high vegetative species diversity. Components of both wetland types were identified within the long narrow wetland. The transition from upland to wetland was abrupt at the east end of the wetland and gradual at the west end. Vegetation within Wetland F-1 consisted of herbaceous species which included teasel (NI), cattail (OBL), common spike-rush (OBL), duckweed (*Lemna minor*) (OBL), Baltic rush (OBL), three-square rush (OBL), primrose (*Oenothera villosa*) (FAC), Canada thistle (FACU), goldenrod (FACU), and licorice (FACU). Shrub species included coyote willow (OBL), plains cottonwood (FAC), plains rose (*Rosa arkansana*) (NI), and crack willow (FAC). A scattered overstory of Siberian elm (NI) was present at the site. The upland areas surrounding this wetland were open and were dominated by smooth brome and a mix of various exotic weed species including downy brome, field bindweed, prickly lettuce, diffuse knapweed (*Centaurea diffusa*), and many others.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland F-1 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 29, 2005 closely resembled the mapped soil type. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetland G-1:

Wetland G-1 (Table 2; Figures 9 and 10; and Appendix B, Photo 20) was very similar to Wetland F-1. Wetland G-1 was located immediately east of Wetland F-1 near the SH 58 and McIntyre Street interchange on the south side of the SH 58 frontage road. In our best professional judgment, Wetland G-1 should be designated as non-jurisdictional since it eventually empties into the Juchem Ditch and, therefore, evidenced no outlet to WOTUS that could be identified. The wetland could potentially be impacted by Alternatives 1 and 3 of the proposed project (Figures 3 and 5). A data sheet for Data Point G-1a is included in Appendix A. The estimated area of Wetland G-1 is included in Table 2. A more detailed description of characteristics associated with Wetland G-1 is provided below.

Hydrology:

Wetland G-1 lay within a groundwater seepage and stormwater drainage ditch system which carries water from SH 58 and its frontage road into the Juchem Ditch. The drainage ditch system originates at the west end of the Study Area just east of McIntyre Street and flows eastward. Water enters Wetland G-1 from Wetland F-1 through a small culvert beneath an access road which crosses the ditch and separates the two wetlands and also from rainfall runoff from the south side of SH 58 and from the frontage road and the Jefferson County Pedestrian Trail. At the time of the site visit, Wetland G-1 was dry. There was evidence that the wetland had been much wetter in recent years, however, since remnants of a stand of cattails were identified in the lowest area of the wetland. Water exits the wetland through a small culvert at the east end during wet weather.

Vegetation:

Wetland G-1 could be characterized as a combination of **PEM** and **PSS** wetland types (Cowardin et al. 1979) with low vegetative species diversity. Components of both wetland types were identified within the wetland. The transition from upland to wetland was gradual in most places along the boundary. Vegetation within Wetland G-1 consisted of herbaceous species which included teasel (NI), cattail (OBL), three-square rush (OBL), and coyote willow seedlings (OBL); a scattered midstory which consisted of coyote willow (OBL); and an overstory of Siberian elm (NI), crack willow (FAC), and plains cottonwood (FAC). The upland areas surrounding this wetland were predominated by smooth brome and a mix of various exotic weed species including downy brome, field bindweed, prickly lettuce, and diffuse knapweed as well as stands of plains cottonwood, narrow-leaved cottonwood, boxelder, and Siberian elm.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland G-1 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 29, 2005 closely resembled the mapped soil type. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetland H-1:

Wetland H-1 (Table 2; Figures 9 and 10; and Appendix B, Photo 21) was a small marginal wetland similar to Wetland G-1, but was much smaller in area and more xeric. Wetland H-1 was located in a drainage ditch immediately east of Wetland G-1 near the SH 58 and McIntyre Street interchange on the south side of the SH 58 frontage road. In our best professional judgment, Wetland H-1 should be designated as non-jurisdictional since it eventually empties into the Juchem Ditch and, therefore, evidenced no outlet to WOTUS that could be identified. The wetland could potentially be impacted by Alternatives 1 and 3 of the proposed project (Figures 3 and 5). A data sheet for Data Point H-1a is included in Appendix A. The estimated area of Wetland H-1 is included in Table 2. A more detailed description of characteristics associated with Wetland H-1 is provided below.

Hydrology:

Wetland H-1 also lay within the groundwater seepage and stormwater drainage ditch system which carries water from SH 58 and its frontage road into the Juchem Ditch. Water enters Wetland H-1 from Wetland G-1 through a small culvert beneath an access road which crosses the ditch and separates the two wetlands and also from rainfall runoff from the south side of SH 58 and from the frontage road and the Jefferson County Pedestrian Trail. At the time of the site visit, Wetland H-1 was very dry. Water apparently ponds in Wetland H-1 during periods of wet weather. Water exits the wetland through a continuation of the ditch to the west into Wetland J-1 (Figures 9 and 10). The ditch between Wetland H-1 and Wetland J-1 was sampled at the time of the site visit but did not evidence wetland characteristics as defined in the *1987 Manual* (USACE 1987).

Vegetation:

Wetland H-1 could be characterized as a **PEM** wetland (Cowardin et al. 1979) with low vegetative species diversity. The transition from upland to wetland was abrupt. Vegetation within Wetland H-1 consisted of herbaceous species which included teasel (NI), three-square rush (OBL), Canada thistle (FACU); a sparse midstory which consisted of coyote willow (OBL) and green ash (FACW); and an overstory of plains cottonwood (FAC) and boxelder (FAC). The upland areas surrounding this wetland were similar to those surrounding Wetland G-1.

Soils:

Published soil survey data (Price and Amen 1980) also listed the predominant soils associated with Wetland H-1 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 29, 2005 closely resembled the

mapped soil type. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetland I-1:

Wetland I-1 (Table 2; Figures 9 and 10; and Appendix B, Photo 22) was located immediately east of the McIntyre Street interchange with SH 58, immediately south of SH 58 and north of the frontage road. In our best professional judgment, Wetland I-1 should be designated as non-jurisdictional since it is an isolated wetland not connected to WOTUS. The wetland could potentially be impacted by Alternatives 1 and 3 of the proposed project (Figures 3 and 5). A data sheet for Data Point I-1a is included in Appendix A. The estimated area of Wetland I-1 is included in Table 2. A more detailed description of characteristics associated with Wetland I-1 is provided below.

Hydrology:

The wetland can be characterized as a shallow isolated depression in a roadside swale at the extreme west end of the SH 58 roadside drainage ditch. The hydrology apparently derives entirely from precipitation runoff from the surrounding roadways. At the time of the site visit, the site was dry.

Vegetation:

Wetland I-1 could be characterized as a **PSS** (Cowardin et al. 1979) wetland with very little vegetative species diversity. The transition from upland to wetland was very gradual. Vegetation within Wetland I-1 consisted of herbaceous species which included teasel (NI) and showy milkweed (*Asclepias speciosa*) (FAC); a dense stand of coyote willow (OBL) which comprised the only midstory shrub species; and a lone Siberian elm (NI) in the overstory. The upland areas surrounding this wetland were open and were dominated by smooth brome and a mix of various exotic weed species including field bindweed, prickly lettuce and many others.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland I-1 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 29, 2005 generally resembled the mapped soil type even though the site had been highly disturbed by road construction in the past. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetlands I-2, I-3 and I-4:

Wetlands I-2, I-3, and I-4 (Table 2; Figures 9, 10 and 11; and Appendix B, Photos 23, 24 and 25, respectively) were located along the roadside ditch system on the south side of SH 58. In our best professional judgment, Wetlands I-2, I-3 and I-4 should be designated as non-jurisdictional since they eventually empty into the Juchem Ditch and, therefore, evidence no outlet to WOTUS that could be identified. The wetlands could potentially be impacted by Alternatives 1, 2 and 3 of the proposed project (Figures 3, 4 and 5). Data sheets for Data Points I-2a, I-3a and I-4a are included in Appendix A. The estimated areas of each of the three wetlands are included in Table 2. More detailed descriptions of the characteristics associated with Wetlands I-2, I-3 and I-4 are provided below.

Hydrology:

All three wetlands were part of the previously discussed groundwater seepage and stormwater drainage ditch system which carries water from SH 58 and its frontage road into the Juchem Ditch. The drainage ditch system originates at the west end of the Study Area just east of McIntyre Street and flows eastward. Wetlands I-2, I-3 and I-4 were located at the outflow points of culverts which carry water south under SH 58 from the drainage ditch on the north side of SH 58 (Wetland K-2). Water enters each of the three wetlands through small culverts from the north side of SH 58 and from rainfall runoff from the south side

of SH 58 and the frontage road. Each of the three wetlands empties into separate culverts which carry water beneath the frontage road into the drainage ditch that lies between the frontage road and the Jefferson County Pedestrian Trail (Wetlands J-1, J-2, and J-3). Water was flowing through all three wetlands at the time of the site visit on September 29, 2005.

Vegetation:

Wetlands I-2, I-3 and I-4 were very similar in that they could be characterized as **PEM** wetlands (Cowardin et al. 1979) with fairly high vegetative species diversity. The transition from upland to wetland at all three sites was gradual to abrupt. Vegetation within all three wetlands was similar and entirely herbaceous and included teasel (NI), watercress (OBL), common spike-rush (OBL), duckweed (OBL), large duckweed (*Spirodela polyrhiza*) (OBL), three-square rush (OBL), blue vervain (*Verbena hastata*) (FACW), Canada thistle (FACU), small fruited bulrush (*Scirpus microcarpus*) (OBL), hemp dogbane (*Apocynum cannabinum*) (FAC), water speedwell (OBL), Torrey's rush (*Juncus torreyi*) (FACW), and reed canarygrass (FACW+). No shrub species or overstory was present at any of the sites. The upland areas surrounding these wetlands were open and were dominated by smooth brome and a mix of various grasses and exotic weed species.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetlands I-2, I-3 and I-4 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 29, 2005 generally resembled the mapped soil type even though the site had been highly disturbed by road construction in the past. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetland I-5:

Wetland I-5 (Table 2; Figures 9 and 11; and Appendix B, Photo 26) was very similar to Wetlands I-2, I-3, and I-4, but was much larger. The wetland was located at the east end of the Study Area within the SH 58 stormwater runoff ditch system between the highway and the frontage road and just west of the railroad overpass over SH 58. In our best professional judgment, Wetland I-5 should be designated as non-jurisdictional since it eventually empties into the Juchem Ditch and, therefore, no outlet to WOTUS that could be identified. The wetland could potentially be impacted by Alternatives 1, 2 and 3 of the proposed project (Figures 3, 4 and 5). A data sheet for Data Point I-5a is included in Appendix A. The estimated area of Wetland I-5 is included in Table 2. More detailed descriptions of the characteristics associated with Wetland I-5 are provided below.

Hydrology:

Wetland I-5 was also part of the previously discussed groundwater seepage and stormwater drainage ditch system which carries water from SH 58 and its frontage road into the Juchem Ditch. The west end of Wetland I-5 was located at the outflow point of a culvert which carries water south under SH 58 from the drainage ditch on the north side of SH 58 (Wetland K-2). Water flowing into Wetland I-5 from the culvert and from roadside runoff flows east through the wetland within the SH 58 south ditch for about two hundred yards and then empties into a culvert which carries water beneath the frontage road into the drainage ditch (Wetland J-4) located between the frontage road and the Jefferson County Pedestrian Trail. Pondered water was standing in Wetland I-5 along the length of the ditch at the time of the site visit on September 29, 2005.

Vegetation:

Wetland I-5 had very similar vegetation to that found in Wetlands I-2 through I-4. I-5 could be characterized as a **PEM** wetland (Cowardin et al. 1979) with **PSS** characteristics at the west end. A fairly high level of hydrophytic vegetative species diversity existed in the wetland. The transition from upland to wetland was fairly abrupt. Vegetation within the wetland included teasel (NI), watercress (OBL),

duckweed (OBL), Baltic rush (OBL), Canada thistle (FACU), and cattail (OBL). Shrub species and overstory present at the west end of the wetland consisted of coyote willow (OBL), Russian olive (*Elaeagnus angustifolia*) (FAC), plains cottonwood (FAC), and Siberian elm (NI). The upland areas surrounding this wetland were open and were dominated by smooth brome, blue gramma (*Bouteloua gracilis*) and a mix of various other grasses and exotic weed species.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland I-5 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 29, 2005 generally resembled the mapped soil type even though the site had been highly disturbed by road construction in the past. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetland J-1, J-2, J-3, and J-4:

Wetlands J-1, J-2, J-3, and J-4 (Table 2; Figures 9, 10 and 11; and Appendix B, Photos 27, 28, 29, 30, and 31) were located immediately south of the SH 58 frontage road and north of the Jefferson County Pedestrian Trail and they occupied the drainage ditch located between that infrastructure. Each of these wetlands was separated by unpaved access roads and associated culverts which provide access from the frontage road into the Coors Brewing Company property south of the Pedestrian Trail. In our best professional judgment, Wetlands J-1, J-2, J-3, and J-4 should be designated as non-jurisdictional since they empty into the Juchem Ditch and, therefore, evidenced no outlet to WOTUS that could be identified. The wetlands could potentially be impacted by Alternatives 1, 2 and 3 of the proposed project (Figures 3, 4, and 5). Data sheets for Data Points J-1a, J-1b, J-2a, J-3a, and J-4a are included in Appendix A. The estimated areas of the wetlands are included in Table 2. More detailed descriptions of characteristics associated with these wetlands are provided below.

Hydrology:

Wetlands J-1, J-2, J-3, and J-4 were also associated with the groundwater seepage and stormwater drainage ditch system which carries water from SH 58 and its frontage road into the Juchem Ditch at a point just south of the SH 58 frontage road and Jefferson County Pedestrian Trail and just west of the railroad overpass over SH 58. At the time of the site visit, there was runoff water flowing through these wetlands.

Vegetation:

Wetlands J-1, J-2, J-3, and J-4 could be characterized as interspersed **PFO6, PEM** and **PSS** (Cowardin et al 1979) wetlands with moderate vegetative species diversity. The transition from upland to wetland was abrupt in most places but gradual in some areas. Vegetation within these wetlands consisted of herbaceous species which included teasel (NI), common reed (FACW), cattail (OBL), small fruited bulrush (OBL), coyote willow (OBL), green ash (FACW), great bulrush (*Scirpus validus*) (OBL), domestic hops (*Humulus japonicus*) (FACU), horsetail (*Equisetum arvense*) (FAC), nettle (FACW), houndstongue (*Cynoglossum officinale*) (NI), poison hemlock (FACW), water speedwell (OBL), Canada thistle (FACU), duckweed (OBL), and large duckweed (OBL). Shrub species identified within the wetlands included coyote willow (OBL), boxelder (FAC), green ash (FACW), golden currant (*Ribes aureum*) (FAC), and plains rose (NI). Boxelder (FAC), green ash (FACW), alder (*Alnus incana*) (FACW), plains cottonwood (FAC), and crack willow (FAC) occupied the majority of the overstory. The open upland areas surrounding these wetlands were dominated by smooth brome and other grasses mixed with various exotic weed species including field bindweed, prickly lettuce, teasel, sweet clover, poison hemlock, and many others. Boxelder, Siberian elm, plains cottonwood, green ash and narrow-leaved cottonwood composed most of the upland overstory.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetlands J-1 through J-4 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 29, 2005 closely resembled the mapped soil type. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetland K-1:

Wetland K-1 (Table 2; Figures 9 and 11; and Appendix B, Photo 32) occupied part of the drainage ditch on the north side of SH 58 immediately adjacent to the north abutment of the railroad overpass. In our best professional judgment, Wetland K-1 should be designated as non-jurisdictional since it empties directly into the Juchem Ditch and, therefore, no outlet to WOTUS could be identified. The wetland probably would not be impacted by any of the construction alternatives for the proposed project (Figures 3, 4 and 5). A data sheet for Data Point K-1a is included in Appendix A. The estimated area of Wetland K-1 is included in Table 2. More detailed descriptions of the characteristics associated with Wetland K-1 are provided below.

Hydrology:

Wetland K-1 drains directly into the Juchem Ditch on the north side of SH 58 and immediately to the east of the railroad overpass. The roadside ditch, at the location of the wetland, appeared to have been filled in the recent past with sediment from hillside runoff. Pondered water was overflowing onto the shoulder of the highway at the time of the site visit on September 30, 2005.

Vegetation:

Wetland K-1 had very similar vegetation to that found in Wetlands I-2 through I-5. K-1 could be characterized as a **PEM** wetland (Cowardin et al. 1979) with **PSS** characteristics at the west end. A fairly high level of hydrophytic vegetative species diversity existed in the wetland. The transition from upland to wetland was fairly abrupt. Herbaceous vegetation identified within the wetland included watercress (OBL), Torrey's rush (FACW), Canada thistle (FACU), cattail (OBL), three-square rush (OBL), great bulrush (OBL), common spike-rush (OBL), and barnyard grass (FACW). Shrub species and overstory present at the west end of the wetland consisted of coyote willow (OBL), Russian olive (FAC), and plains cottonwood (FAC). A sparse overstory of plains cottonwood (FAC) was also present. The upland areas surrounding this wetland were open and were dominated by smooth brome, blue gramma, and a mix of various other grasses and exotic weed species.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland K-1 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 30, 2005 generally resembled the mapped soil type even though the site had been highly disturbed by road construction in the past. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetland K-2:

Wetland K-2 (Table 2; Figures 9, 10 and 11; and Appendix B, Photo 33) occupied most of the drainage ditch on the north side of SH 58. In our best professional judgment, Wetland K-2 should be designated as non-jurisdictional since it eventually empties into the Juchem Ditch and, therefore, no outlet to WOTUS could be identified. The wetland probably would be impacted by Construction Alternative 2 of the proposed project (Figure 4). Data sheets for Data Points K-2a and K-2b are included in Appendix A. The estimated area of Wetland K-2 is included in Table 2. More detailed descriptions of the characteristics associated with Wetland K-2 are provided below.

Hydrology:

Wetland K-2, as part of the north drainage ditch for SH 58, receives groundwater seepage and precipitation runoff from the north side of SH 58 and drains southward through five small culverts constructed beneath SH 58. These culverts empty through Wetlands F-1, I-2, I-3, I-4, and I-5 into the main drainage ditch on the south side of the SH 58 frontage road (Wetlands J-1 through J-4) which flows into the Juchem Ditch on the south side of SH 58. Ponded and flowing water was present in much of Wetland K-2 at the time of the site visit on September 30, 2005.

Vegetation:

Wetland K-2 had very similar vegetation to that found in Wetlands J-1 through J-4. K-2 could be characterized as a mix of **PEM**, **PSS**, and **PFO6** (Cowardin et al. 1979) wetlands. A fairly high level of hydrophytic vegetative species diversity existed in the wetland. Wetland K-2 coincided primarily with the highway drainage ditch and the transition from upland to wetland was fairly abrupt in most places. A number of upland seep areas with obligate wetland vegetation were identified on the side of the hill adjacent to this wetland to the north of SH 58, however. Herbaceous vegetation identified within the wetland included watercress (OBL), duckweed (OBL), large duckweed (OBL), Baltic rush (OBL), showy milkweed (FAC), reed canarygrass (FACW+), Canada thistle (FACU), cattail (OBL), three-square rush (OBL), rabbitfoot grass (OBL), water speedwell (OBL), great bulrush (OBL), common spike-rush (OBL), small fruited bulrush (OBL), cowbane (*Oxypolis fendleri*(?)) (NI) and barnyard grass (FACW). Shrub and overstory species present along the length of the wetland included coyote willow (OBL), Russian olive (FAC), plains cottonwood (FAC), crack willow (FAC), Siberian elm (NI), and boxelder (FAC). The upland areas surrounding this wetland were generally forested or covered with shrubby vegetation with an herbaceous understory dominated by smooth brome and a mix of various other grasses and exotic weed species.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland K-2 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 30, 2005 generally resembled the mapped soil type even though the site had been highly disturbed by road construction in the past. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetlands K-3 and K-4:

Wetlands K-3 and K-4 (Table 2; Figures 9, 10 and 11; Appendix B, Photos 34 and 35) were isolated wetlands located immediately north of Wetland K-2 and SH 58. In our best professional judgment, Wetlands K-3 and K-4 should be designated as non-jurisdictional since they apparently fill and empty through groundwater seepage and some runoff and, therefore, have no defined outlet to WOTUS. The wetlands would be impacted by construction Alternative 2 of the proposed project (Figure 4). Data sheets for Data Points K-3a and K-4a are included in Appendix A. The estimated areas of Wetlands K-3 and K-4 are included in Table 2. More detailed descriptions of the characteristics associated with Wetlands K-3 and K-4 are provided below.

Hydrology:

Wetlands K-3 and K-4 were isolated wetlands perched on a terrace on the hillside immediately north of the SH 58 north right of way (ROW) ditch. Shallow ponded water was present in portions of Wetlands K-3 and K-4 at the time of the site visit on September 30, 2005 and again on January 14, 2006. Sustaining hydrology for both wetlands apparently originates from groundwater seepage from the hillside. No outlets were located.

Vegetation:

Wetlands K-3 and K-4 had very similar vegetation and could be characterized as a mix of **PEM** and **PSS** vegetative community types (Cowardin et al. 1979). These two rectangular shaped wetlands were occupied by dense homogeneous stands of cattail (OBL) mixed with great bulrush (OBL) and three-square rush (OBL) and were surrounded by dense stands of coyote willow (OBL). The transition from upland to wetland was gradual to abrupt. Overstory species present along the length of the wetlands included coyote willow (OBL), plains cottonwood (FAC), Russian olive (FAC), and Siberian elm (NI). The upland areas surrounding this wetland were generally forested or covered with shrubby vegetation with an herbaceous understory dominated by smooth brome and a mix of various other grasses and exotic weed species.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetlands K-3 and K-4 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 30, 2005 generally resembled the mapped soil type even though the site had been highly disturbed by road construction in the past. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS) or the *National List of Hydric Soils* (USDA 1991).

Wetland L-1:

Wetland L-1 (Table 2; Figures 9 and 11; and Appendix B, Photo 36) was an extremely narrow strip along both sides of the Bayou (Bayau) Ditch, an historic irrigation ditch which diverts flow from Clear Creek and flows northeast from the Study Area. Only the area of the Ditch in the immediate vicinity of the proposed Cabela's Drive crossing over Clear Creek at the east end of the Study Area was delineated by NRSI. Other portions of the Bayou (sic) Ditch to the west of this site, especially the reach between the Clear Creek out-take check dam structure and the Jefferson County Pedestrian Trail (see Figure 11) were in a much more natural condition and more closely resembled a heavily forested riparian corridor with associated **PEM** wetlands rather than a maintained irrigation ditch. The area of the Ditch which was assessed during the field work conducted for this project on September 26, 2005 (see Data Sheet L-1a in Appendix A) was a steeply channeled earthen ditch which had been relocated several years earlier during gravel mining operations associated with the Mt. Olivet South mining project (Dept. of the Army 2004). In our best professional judgment, Wetland L-1 should be designated as non-jurisdictional since it is directly associated with the Bayou Ditch which, to the best of our knowledge, has no outlet to WOTUS. The wetland could potentially be impacted by Alternatives 1, 2 and 3 of the proposed project (Figures 3, 4, and 5). A data sheet for Data Point L-1a is included in Appendix A. The estimated area of Wetland L-1 is included in Table 2. A more detailed description of characteristics associated with Wetland L-1 is provided below.

Hydrology:

Wetland L-1 was associated with the waterline along the edges of the Bayou (Bayau) Ditch, an historic irrigation ditch which diverts flow from Clear Creek. Wetland L-1 formed a very narrow strip along both sides of the Ditch in the area of assessment. At the time of the site visit, there was considerable flow being diverted from Clear Creek through the Bayou Ditch. The Mt. Olivet South gravel pit was located immediately to the north of the Ditch. No mining operations were occurring at the Mt. Olivet site at the time of the site visit. According to sources at Felsburg Holt & Ullevig (Maddoux 2005), the Mt. Olivet site is scheduled for reclamation and possible realignment of the Bayou Ditch prior to construction of the I-70/32nd Avenue Interchange project.

Vegetation:

Wetland L-1 could be characterized as **PSS** (Cowardin et al. 1979) wetland with low vegetative species diversity. The transition from upland to wetland along the steep sides of the Ditch was abrupt.

Vegetation within Wetland L-1 consisted of herbaceous species which included teasel (NI), reed canarygrass (FACW+), and goldenrod (FACU). Shrub species identified within the wetland consisted entirely of dense stands of coyote willow (OBL). Very scattered small Siberian elms (NI) and boxelders (FAC) were the primary overstory species. The upland areas surrounding the Ditch were mostly open and were dominated by a mix of various exotic weed species including field bindweed, prickly lettuce, sweet clover, poison hemlock, teasel, and many others. Boxelder, Siberian elm, plains cottonwood, and narrow-leaved cottonwood composed the scattered upland overstory which was primarily confined to the Clear Creek corridor immediately to the south.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland L as **Torrifluvents, very gravely, 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on September 26, 2005 closely resembled the mapped soil type. **Torrifluvents** are not listed as hydric soils on the Jefferson County local hydric soils list (NRCS 2003), nor are they listed as hydric soils in the *National List of Hydric Soils* (USDA 1991).

Wetland M-1:

Wetland M-1 (Table 2; Figures 9 and 12; and Appendix B, Photo 37) was located immediately southeast of the 44th Avenue/Youngfield Street intersection and immediately east of northbound I-70. This wetland occupied a short ROW drainage ditch located adjacent to the roadway intersection. In our best professional judgment, Wetland M-1 should be designated as non-jurisdictional since it empties into the Bayou (Bayau) Ditch and, therefore, evidenced no outlet to WOTUS that could be identified. The wetland could potentially be impacted by the city of Wheat Ridge proposed local project which would widen Youngfield Street from 38th Avenue to 44th Avenue (Figures 3, 4, and 5). A data sheet for Data Point M-1a is included in Appendix A. The estimated area of Wetland M-1 is included in Table 2. A more detailed description of characteristics associated with Wetland M-1 is provided below.

Hydrology:

Wetland M-1 was located in a short drainage ditch associated with the ROW of Youngfield Street and 44th Avenue. The ditch was parallel to and immediately south of 44th Avenue and was immediately east of Youngfield Street. It carries stormwater runoff from the ROW approximately fifty feet into the Bayou Ditch which it joins just south of 44th Avenue. At the time of the site visit on January 14, 2006, there was no water in Wetland M-1.

Vegetation:

Wetland M-1 could be characterized as interspersed **PSS** (Cowardin et. al 1979) wetland with low vegetative species diversity. The transition from upland to wetland was abrupt. Vegetation within this wetland consisted of herbaceous species which included teasel (NI), dock-leaved smartweed (OBL), and reed canarygrass (FACW+). Shrub species identified within the wetlands included coyote willow (OBL), and Siberian elm (NI). No overstory was present. The open upland areas surrounding these wetlands were dominated by smooth brome and other grasses mixed with various exotic weed species including field bindweed, prickly lettuce, teasel, sweet clover, poison hemlock, and others.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland M-1 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on January 14, 2006 closely resembled the mapped soil type. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetland N-1:

Wetland N-1 (Table 2; Figures 9 and 12; and Appendix B, Photo 38) was located in an I-70 on-ramp loop immediately northeast of the Ward Road/I-70 intersection and immediately north of westbound I-70. This wetland occupied a ROW drainage ditch which was oriented in a north-south direction which paralleled the east side of Ward Road. In our best professional judgment, Wetland N-1 should be designated as non-jurisdictional since it empties into a stormwater runoff holding pond with no outlet and, therefore, evidenced no connection to WOTUS that could be identified. The wetland could potentially be impacted by the city of Wheat Ridge proposed local project which would improve the I-70/Ward Road interchange (Figures 3, 4, and 5). A data sheet for Data Point N-1a is included in Appendix A. The estimated area of Wetland N-1 is included in Table 2. A more detailed description of characteristics associated with Wetland N-1 is provided below.

Hydrology:

Wetland N-1 was a short drainage ditch segment which carries stormwater runoff from a buried culvert which crosses beneath Ward Road to another buried culvert which carries runoff beneath the I-70 westbound to Ward Road on-off ramp complex to a large detention pond. At the time of the site visit on January 14, 2006, there was standing and slowly flowing water along the entire length of Wetland N-1.

Vegetation:

Wetland N-1 could be characterized as a **PEM** (Cowardin et. al 1979) wetland with low vegetative species diversity. The transition from upland to wetland was generally abrupt but gradual in some places. Vegetation within this wetland consisted of herbaceous species which included teasel (NI), cattail (OBL), duckweed (OBL), large duckweed (OBL), Canada thistle (FACU), Baltic rush (OBL), three-square rush (OBL), water speedwell (OBL), and goldenrod (FACU). Shrub species consisted entirely of coyote willow (OBL). A sparse overstory consisted of four small Siberian elms (NI). The open upland areas surrounding these wetlands were dominated by smooth brome and other grasses mixed with various exotic weed species including field bindweed, prickly lettuce, and a few others.

Soils:

Published soil survey data (Price and Amen 1980) listed the predominant soils associated with Wetland N-1 as **Alda-Niwot complex 0 to 2 percent slopes** (Table 1 and Figure 8). Soils characteristics determined during sampling at various locations at the site on January 14, 2006 closely resembled the mapped soil type. The **Alda-Niwot complex** is not listed as a hydric soil on the Jefferson County local hydric soils list (NRCS 2003) or the *National List of Hydric Soils* (USDA 1991).

Wetland Boundaries:

The approximate boundaries of the thirty-three delineated wetlands within the project site are indicated in Figures 10, 11 and 12. The approximate locations of sampled Data Points are provided in Figures 10 and 11. The respective data sheets for all Data Points are provided in Appendix A. **Note: Although we have provided in this report our best professional estimate of USACE regulatory jurisdiction, these wetlands may or may not be jurisdictional wetlands under the USACE regulatory authority depending upon the most current legal guidance under which the Corps is operating. It will be necessary for the Corps to make that determination at a future date.**

No wetlands were identified during this assessment in the area if the I-70/32nd Avenue interchange, the I-70 ROW from 27th Avenue to Ward Road, the Youngfield Street ROW from 27th Avenue to 44th Avenue (other than Wetland M-1), or the proposed 40th Avenue underpass beneath I-70. The Clear Creek channel beneath I-70 and Youngfield Street was not assessed.

SUMMARY

Wetland boundaries for thirty-one specific wetland polygons were delineated by NRSI between September 20 and September 30, 2005 using procedures outlined in the *1987 Wetland Delineation Manual* (USACE 1987). Two additional wetlands (M-1 and N-1) were delineated on January 14, 2006. Wetlands B-1, C-1, C-2, C-3, C-4, C-5, C-6, and C-7 (Figures 9, 10 and 11) were estimated by the researchers, using best professional judgment, to be jurisdictional wetlands under the CWA (Section 404) pending USACE concurrence. The hydrology of these wetlands was determined to be directly connected to Clear Creek, a Water of the U.S.

The remaining delineated wetlands, i.e. Wetlands A-2, A-3, A-4, D-1, E-1, E-2, F-1, G-1, H-1, I-1, I-2, I-3, I-4, I-5, J-1, J-2, J-3, J-4, K-1, K-2, K-3, K-4, L-1, M-1, and N-1 (Figures 9, 10, 11, and 12), were estimated, again using best professional judgment, to be non-jurisdictional wetlands under the CWA (Section 404), also pending USACE concurrence at a future date. The hydrology of these wetlands was determined to be either isolated (Wetlands A-2, A-3, A-4, D-1, K-3, and K-4) and covered by the *SWANCC* ruling (531 U.S. 159 [2001]) guidance (EPA and USACE 2003) or associated with water flow into irrigation ditches with no return flow into WOTUS (also covered by the *SWANCC* guidance). Physical characteristics and estimated jurisdictional status for all delineated wetlands are provided in Table 2.

No wetlands were identified during this assessment in the area of the I-70/32nd Avenue interchange, the I-70 ROW from 27th Avenue to Ward Road, the Youngfield Street ROW from 27th Avenue to 44th Avenue (other than Wetland M-1), or the proposed 40th Avenue underpass beneath I-70. The Clear Creek channel beneath I-70 and Youngfield Street was not assessed.

This delineation report is intended to be submitted to USACE for use in making a jurisdictional determination under Section 404 of the CWA. **The wetlands described in this report may or may not be jurisdictional wetlands under USACE regulatory authority depending upon the most current legal guidance under which the Corps is operating.**

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Table 1. Key to hydric soil types found in Jefferson County, Colorado (NRCS 2003).^a

Symbol	Map Unit Name	Hydric Soil Component	Location
1	Alda loam, 0 to 2 % slopes	Fluvaquent inclusions	Flood Plain
2	Alda-Niwot, 0 to 2 % slopes	Fluvaquent inclusions	Oxbows
6	Arvada clay loam 0 to 2%	Inclusions	Oxbows
21	Cryofluvaquents 0 to 5%	Cryaquent inclusions	Flood Plain
34	Denver Urban Land Complex 0 to 2 %	Inclusions	Flood Plain
40	Earcree complex 0 to 15%	Inclusions	Flood Plain
41	Englewood clay loam 0 to 2%	Inclusions	Swales
44	Englewood Urban Land 0 to 2%	Inclusions	Flood Plain
50	Fluvaquents, sandy, 0 to 2%	Inclusions	Flood Plain
68	Kittredge-Venable Complex 0 to 15%	Venable soils	Flood Plain
88	Loveland clay loam 0 to 1%	Entire soil type	Flood Plain
89	Loveland Variant, gravely sandy loam	Inclusions	Flood Plain
144	Rosane sandy loam 0 to 3%	Entire soil type	Flood Plain
145	Rosane-Venable fine sandy loams	Entire soil type	Flood Plain
170 & 171	Venable loam 0 to 9%	Entire soil type	Flood Plain
172	Wann fine sandy loam 0 to 2%	Inclusions	Flood Plain

^a Provided courtesy of Thomas Weber, Asst. State Soil Scientist, USDA, Natural Resources Conservation Service, Lakewood, Colorado, November 2003 (NRCS 2003).

Table 2. Physical characteristics of wetlands delineated within the I-70/32nd Avenue Interchange EA Study Area, city of Wheat Ridge, Jefferson County, Colorado.

Wetland ID^a	Wetland Type	Jurisdictional Wetland?^b	Estimated Total Area of Wetland (sq. ft.)^c
A-2	Palustrine Emergent	No	950
A-3	Palustrine Emergent	No	1724
A-4	Palustrine Emergent	No	16,840
B-1	Palustrine Emergent/Scrub-shrub	Yes	24,110
C-1	Palustrine Emergent	Yes	110
C-2	Palustrine Scrub-shrub	Yes	539
C-3	Palustrine Forested	Yes	4092
C-4	Palustrine Emergent/Scrub-shrub	Yes	4027
C-5	Palustrine Scrub-shrub	Yes	1621
C-6	Palustrine Emergent/Scrub-shrub	Yes	53
C-7	Palustrine Emergent/Scrub-shrub	Yes	2013
D-1	Palustrine Scrub-shrub	No	2256
E-1	Palustrine Scrub-shrub	No	243
E-2	Palustrine Scrub-shrub	No	557
F-1	Palustrine Emergent/Scrub-shrub	No	4280
G-1	Palustrine Emergent/Scrub-shrub	No	3067
H-1	Palustrine Emergent	No	87
I-1	Palustrine Scrub-shrub	No	598
I-2	Palustrine Emergent	No	636
I-3	Palustrine Emergent	No	377
I-4	Palustrine Emergent	No	96
I-5	Palustrine Emergent	No	7140
J-1	Palustrine Emergent/Scrub-shrub/Forested	No	18220
J-2	Palustrine Emergent/Scrub-shrub/Forested	No	14180
J-3	Palustrine Emergent/Scrub-shrub/Forested	No	9406
J-4	Palustrine Emergent/Scrub-shrub	No	2244
K-1	Palustrine Emergent	No	762
K-2	Palustrine Emergent/Scrub-shrub/Forested	No	34660
K-3	Palustrine Emergent/Scrub-shrub	No	748
K-4	Palustrine Emergent/Scrub-shrub	No	1470
L-1	Palustrine Scrub-shrub	No	1315
M-1	Palustrine Scrub-shrub	No	279
N-1	Palustrine Emergent	No	5260

^aA-1 is omitted since it did not meet the vegetation requirements to qualify as a wetland (U.S. Army Corps of Engineers 1987).

^bEstimated by NRSI using best professional judgment. Final determination is to be made by the U.S. Army Corps of Engineers.

^cWetland area is the estimated total delineated area of the wetland (see Figures 9, 10, and 11).

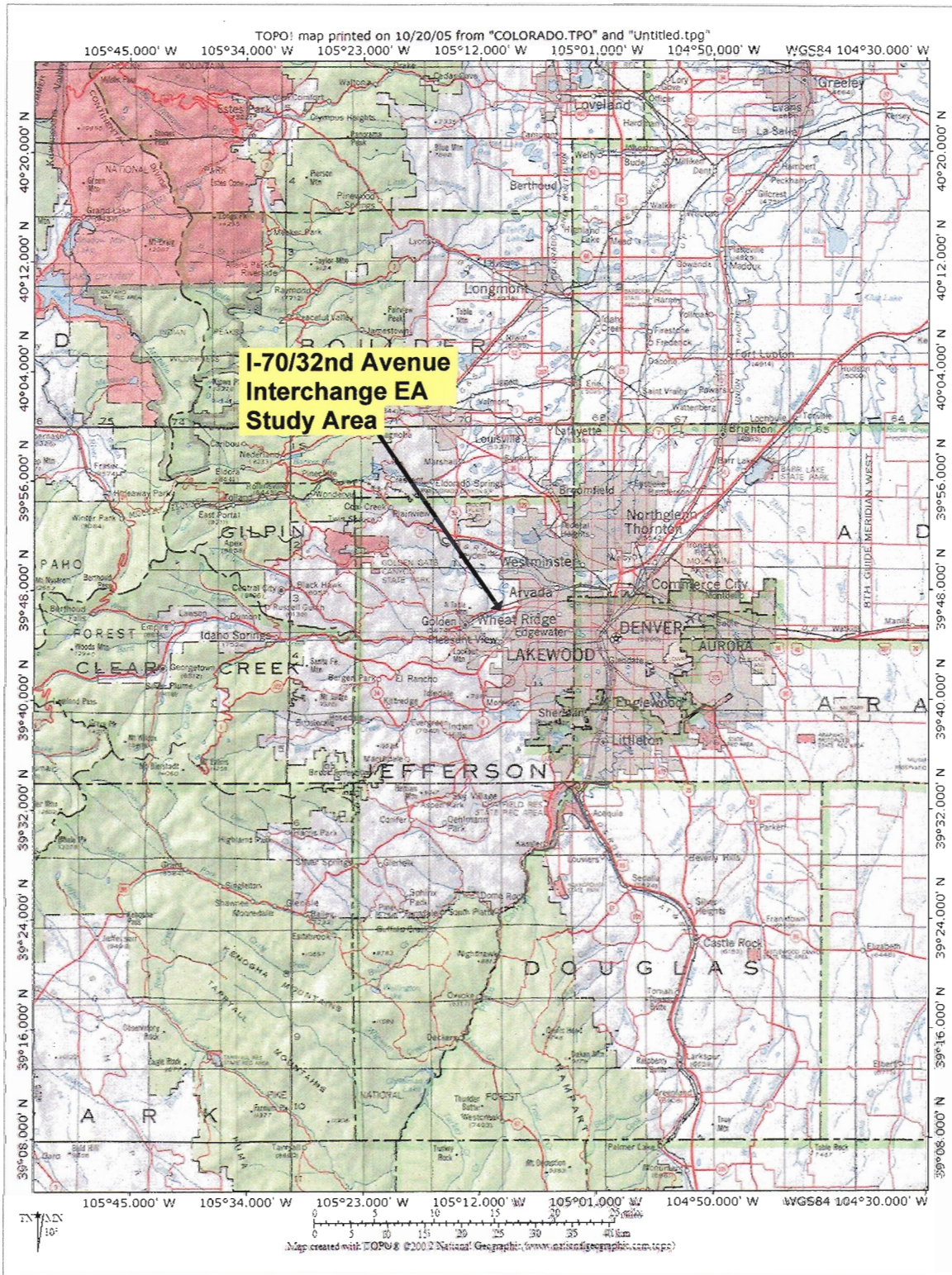


Figure 1. General location of the I-70/32nd Avenue Interchange EA Study Area, city of Wheat Ridge, Jefferson County, Colorado.

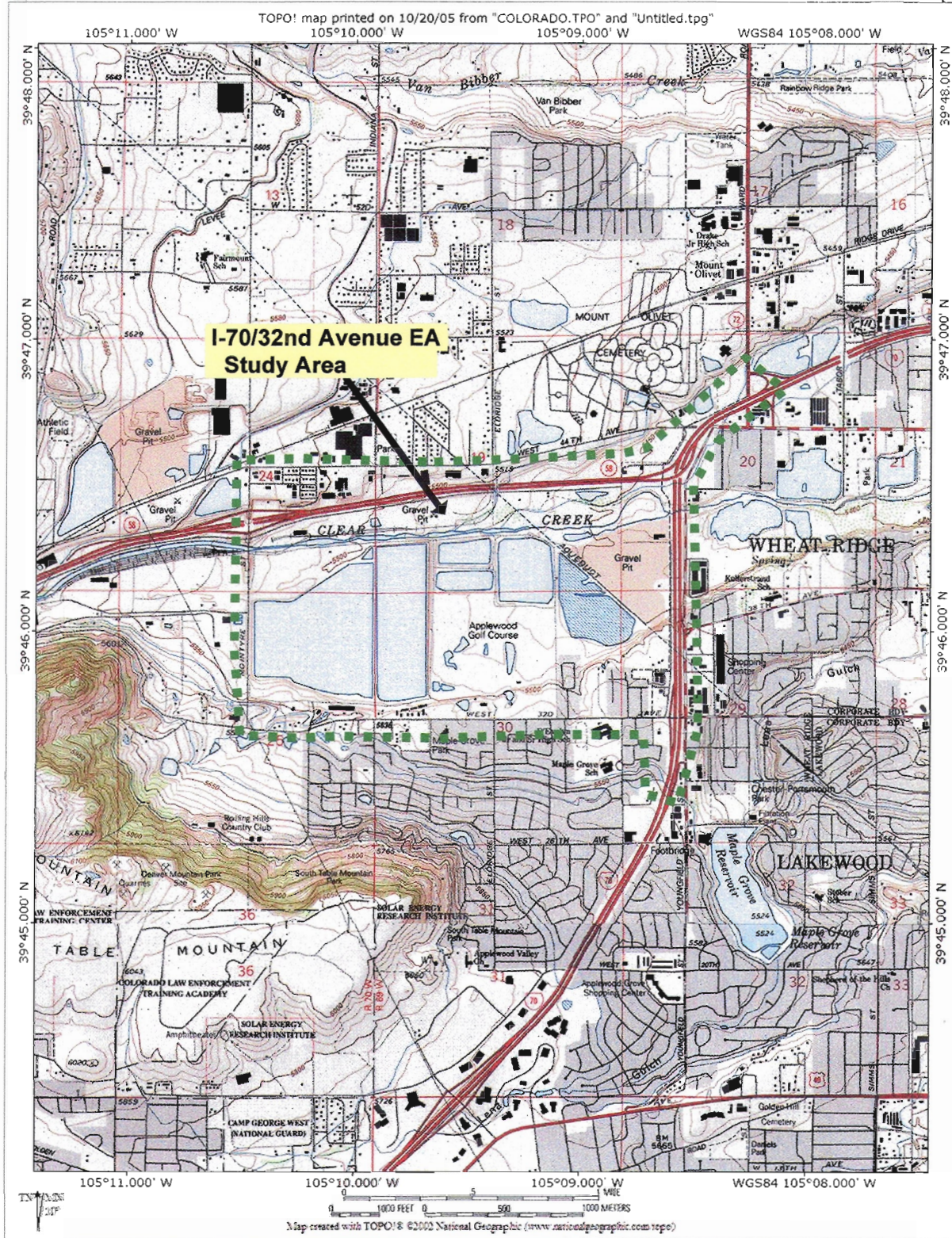


Figure 2. Topographic map (1965 rev. 1994 USGS 7.5' Golden, CO quadrangle) showing the approximate boundary of the I-70/32nd Avenue Interchange EA Study Area, city of Wheat Ridge, Jefferson County, Colorado.

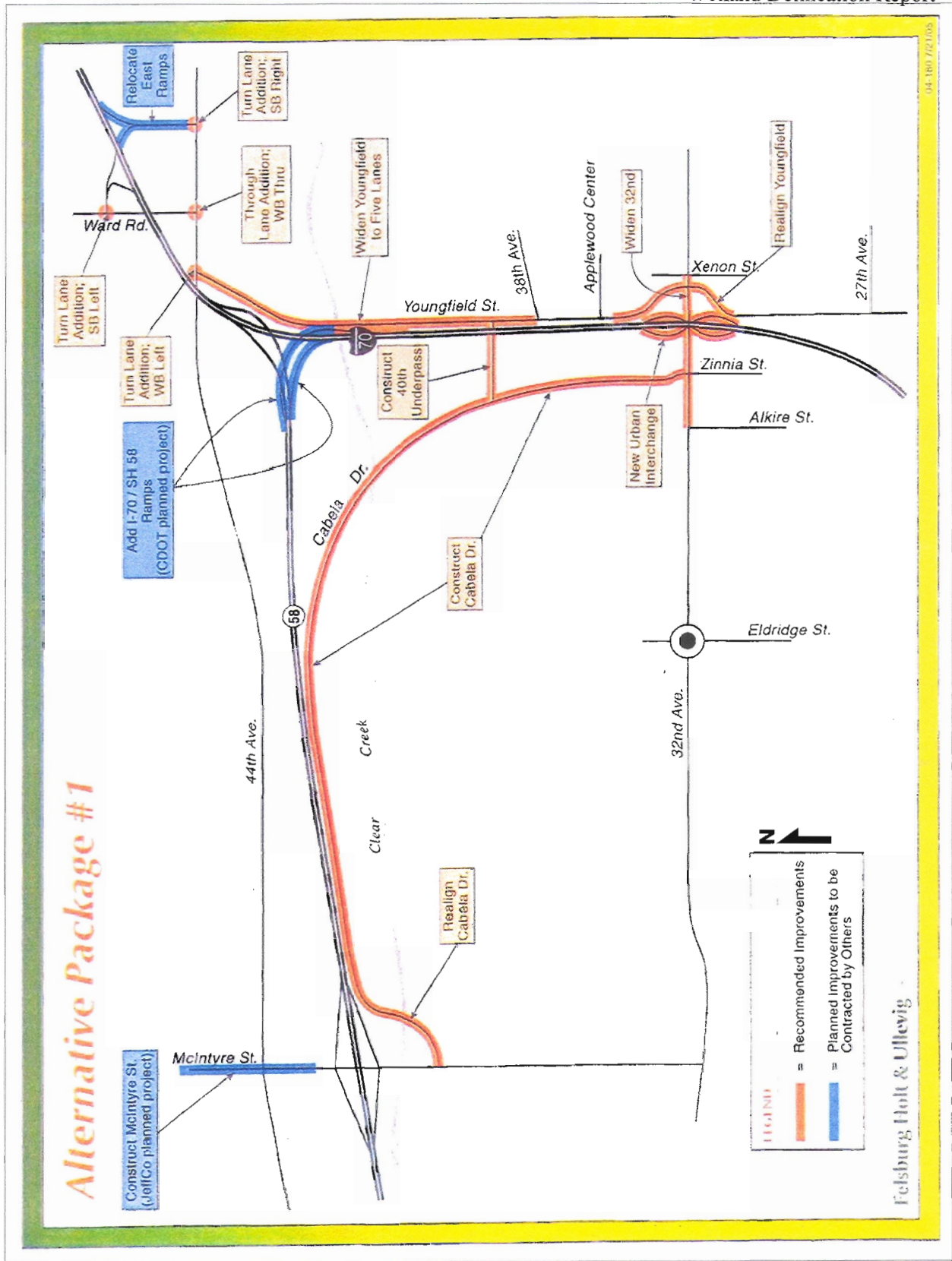


Figure 3. Proposed Alternative Construction Package #1 for the I-70/32nd Avenue Interchange Project E.A, city of Wheat Ridge, Jefferson County, Colorado as presented by Felsburg Holt & Ullevig in July 2005.

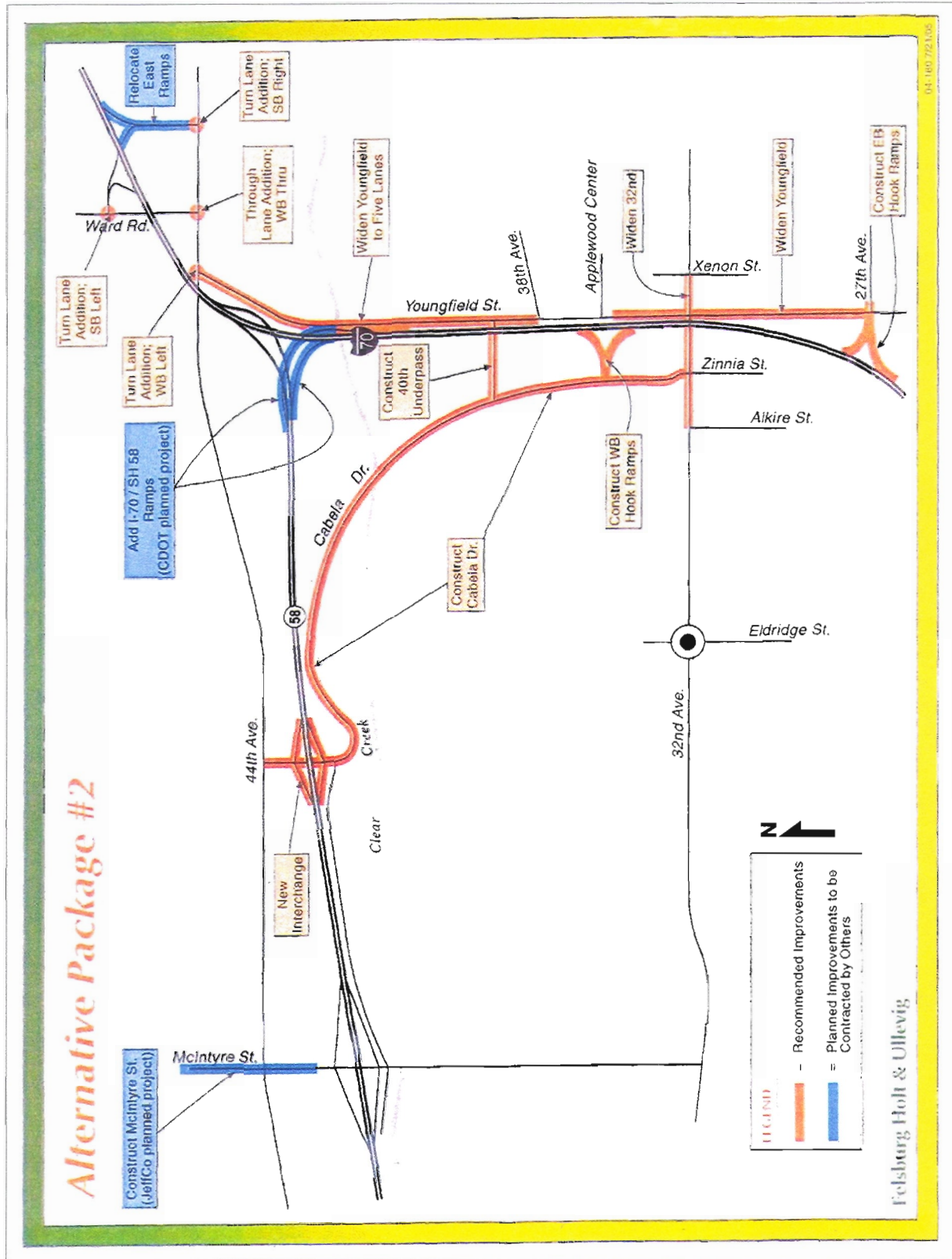


Figure 4. Proposed Alternative Construction Package #2 for the I-70/32nd Avenue Interchange Project EA, city of Wheat Ridge, Jefferson County, Colorado as presented by Felsburg Holt & Ullevig in July 2005.

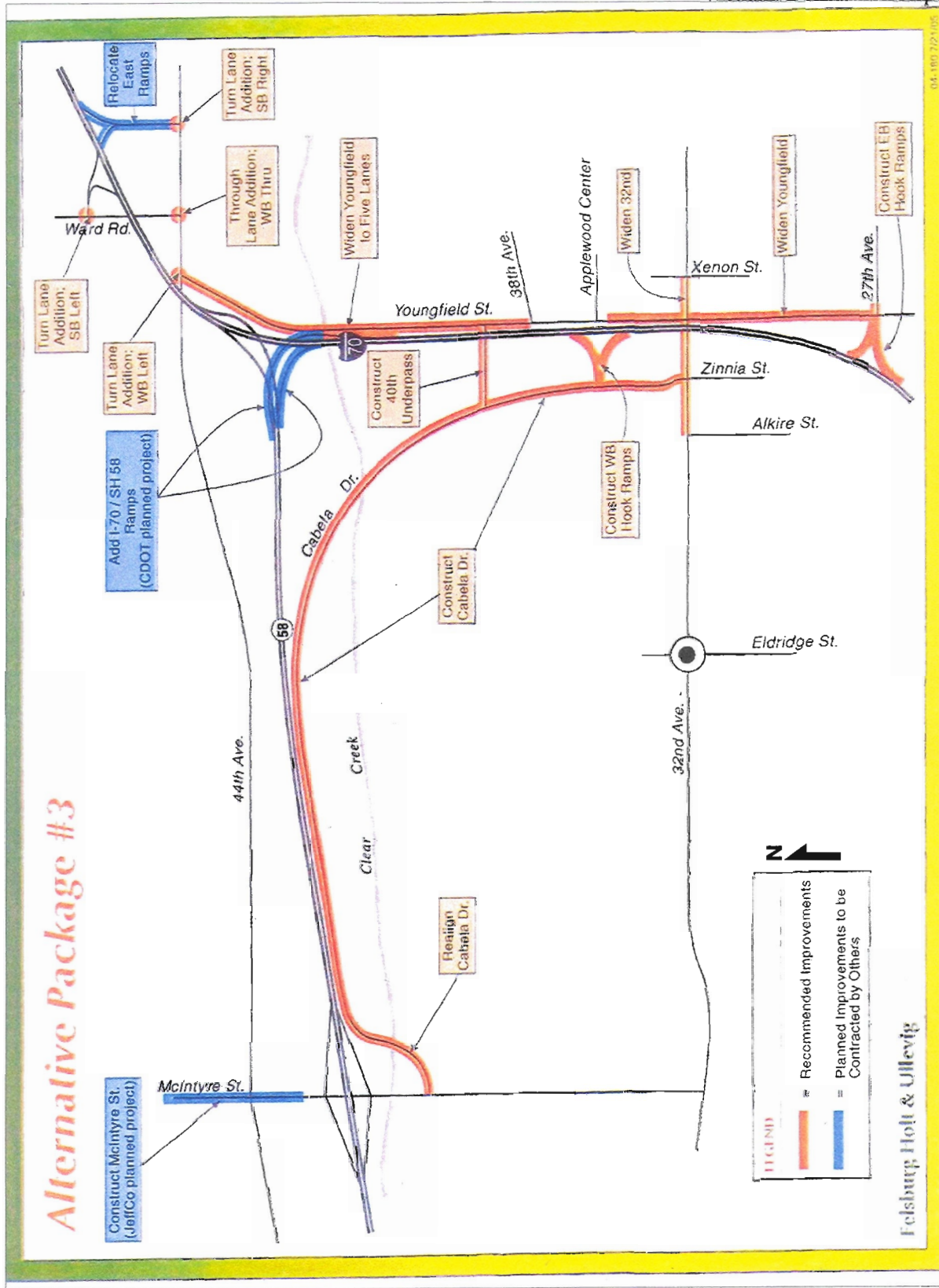


Figure 5. Proposed Alternative Construction Package #3 for the I-70/32nd Avenue Interchange Project EA, city of Wheat Ridge, Jefferson County, Colorado as presented by Felsburg Holt & Ullevig in July 2005.

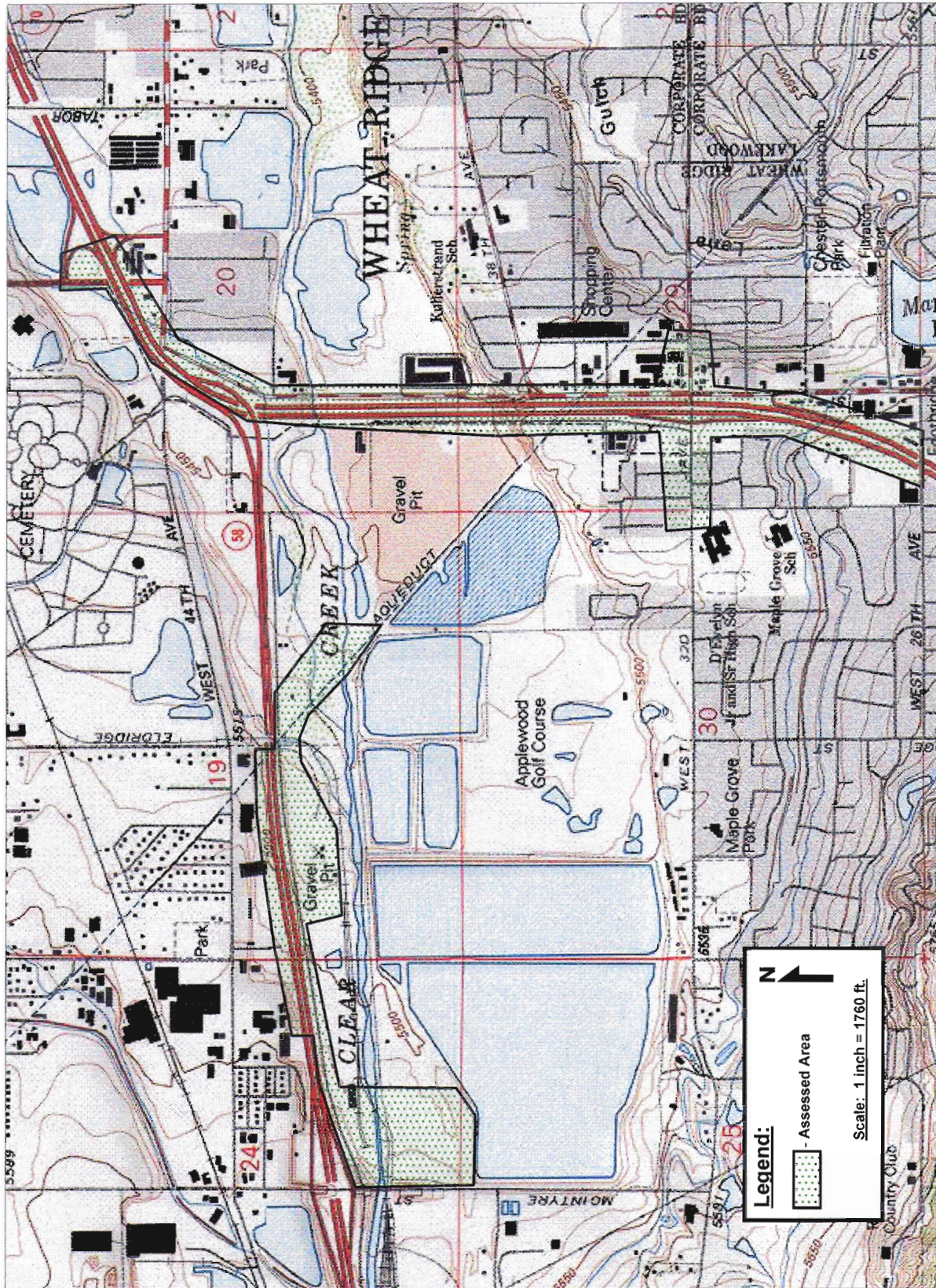


Figure 6. Map (1965 rev. 1994 USGS 7.5' Golden, CO quadrangle) showing the boundaries of the areas assessed by NRSI for wetlands in September 2005 within the I-70/32nd Avenue Interchange EA Study Area, city of Wheat Ridge, Jefferson County, Colorado.

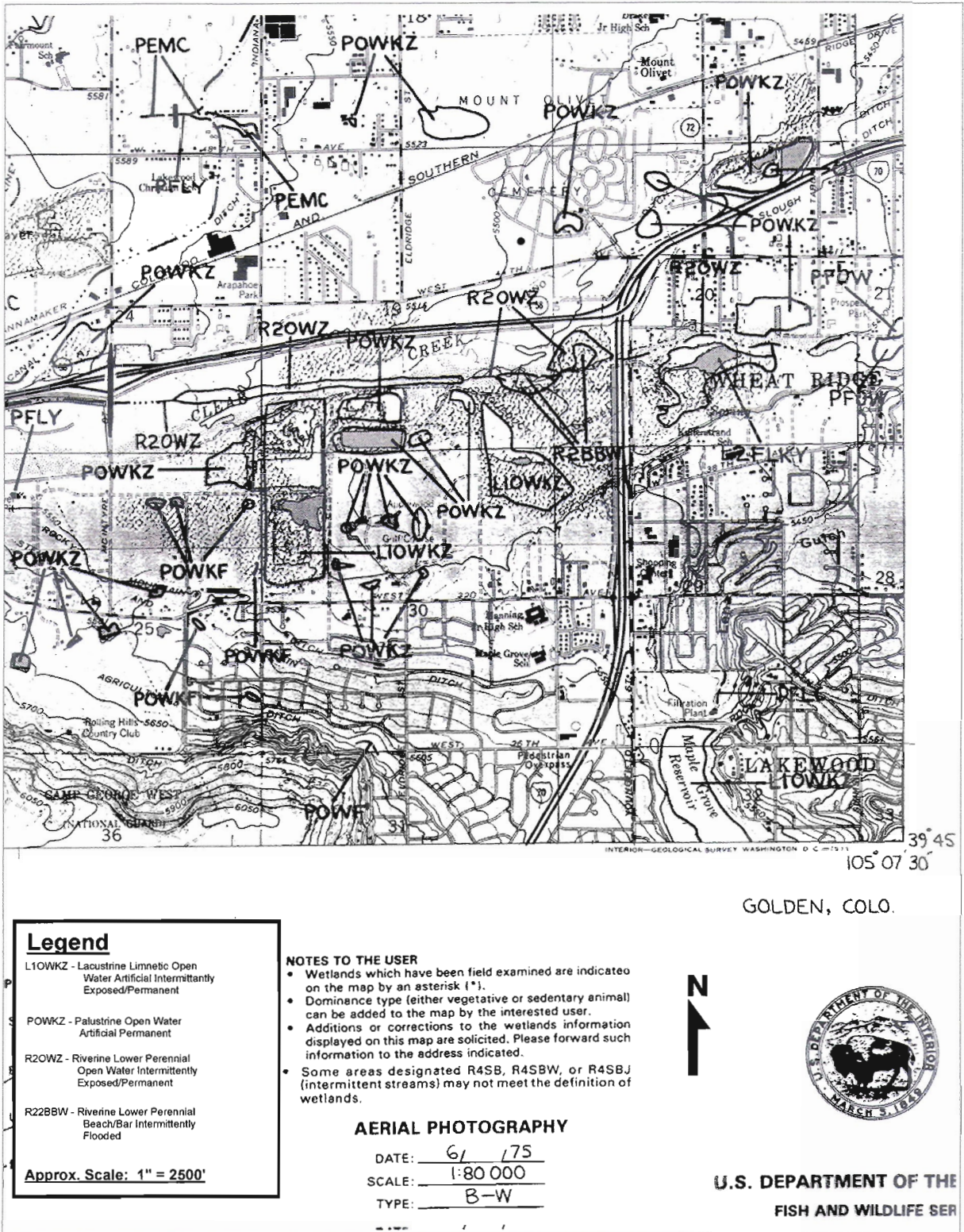


Figure 7. USFWS National Wetlands Inventory (NWI) map, based upon a 1965 USGS 7.5' Golden, CO quad map and 1975 aerial photography, showing locations and types of wetlands within the I-70/32nd Ave. Interchange Study Area, Jefferson County, Colorado.

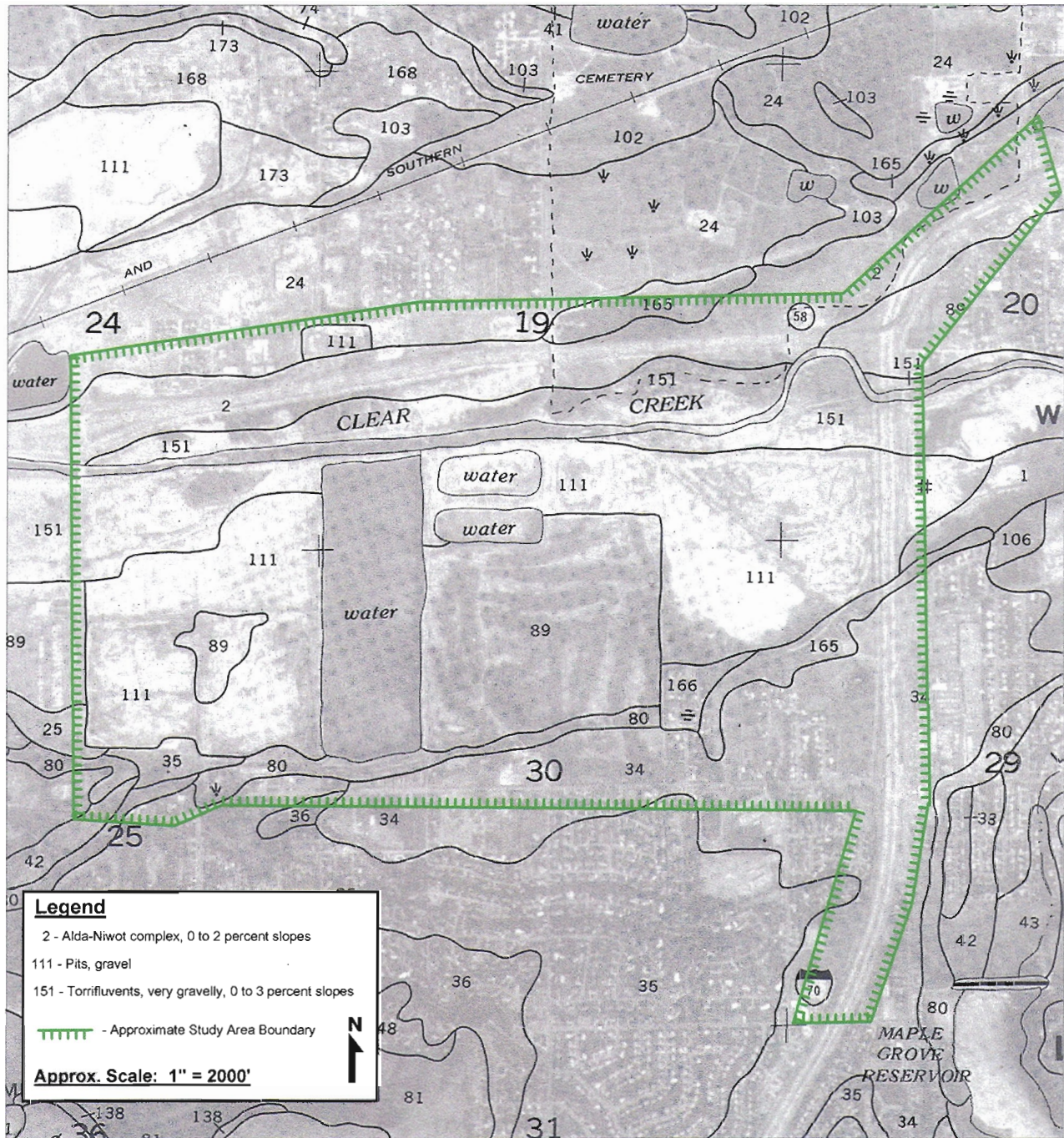


Figure 8. U.S. Department of Agriculture Soil Survey map (Price and Amen 1980) showing the I-70/32nd Avenue Interchange EA Study Area, city of Wheat Ridge, Jefferson County, Colorado.

I-70/32nd Avenue Interchange EA Wetland Delineation

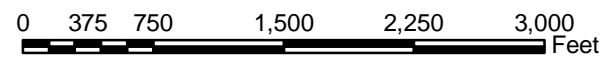
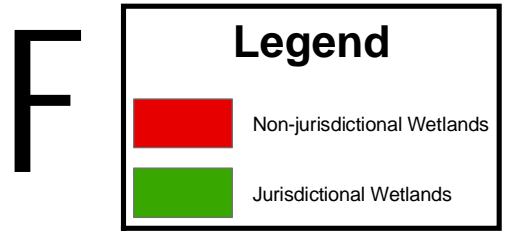
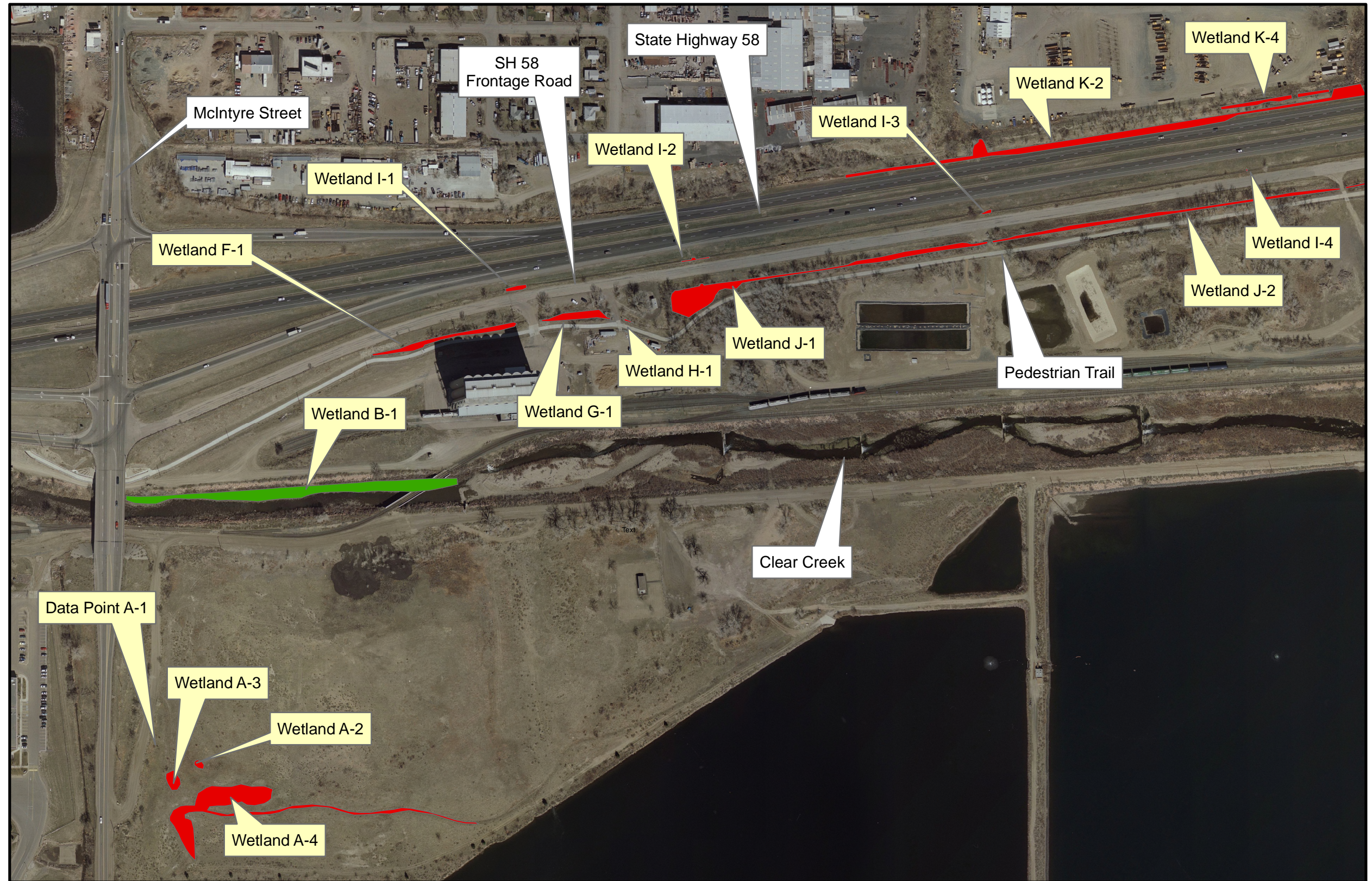


Figure 9. Aerial photograph (2004) showing an overview of the locations of wetlands delineated in September 2005 by NRSI within the I-70/32nd Avenue Interchange EA Study Area, city of Wheat Ridge, Jefferson County, Colorado.

I-70/32nd Avenue Interchange EA Wetland Delineation



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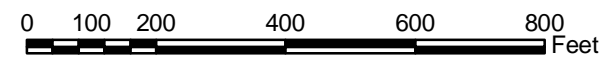
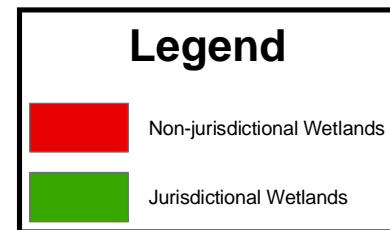
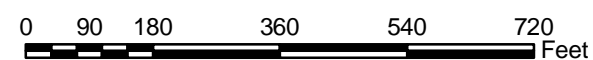
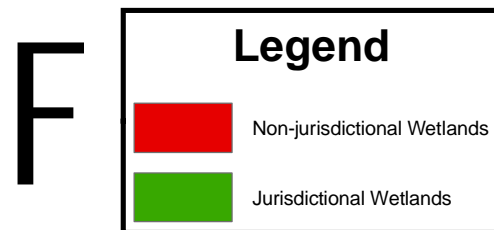
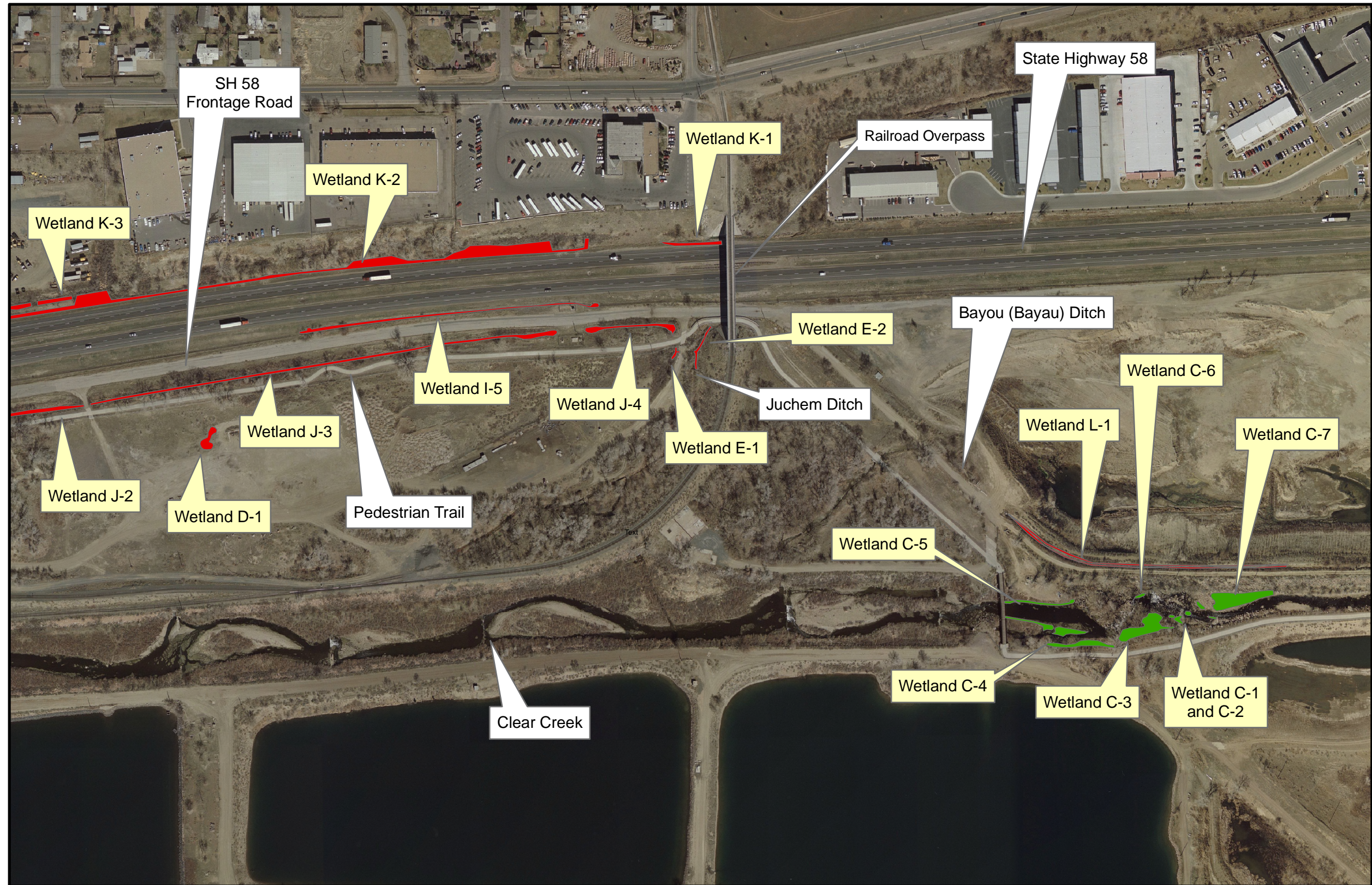


Figure 10. Aerial photograph (2004) of the eastern end of the I-70/32nd Avenue Interchange EA Study Area, city of Wheat Ridge, Jefferson County, Colorado showing approximate locations and boundaries of wetlands as delineated in September 2005 by NRSI.



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Figure 11. Aerial photograph (2004) of the western end of the I-70/32nd Avenue Interchange EA Study Area, city of Wheat Ridge, Jefferson County, Colorado showing approximate locations and boundaries of wetlands as delineated in September 2005 by NRSI.





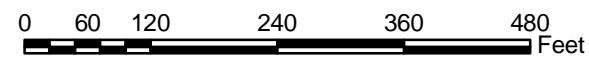
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Legend	
	Non-jurisdictional Wetlands
	Jurisdictional Wetlands



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Figure 12. Aerial photograph (2004) showing the location of Wetlands M-1 and N-1 on January 14, 2006 in the I-70/32nd Avenue Interchange EA Study Area, city of Wheat Ridge, Jefferson County, Colorado.



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