

1  
2 **BOULDER COUNTY HABITAT ASSESSMENT**  
3 **FOR 6655 TWIN LAKES ROAD, 6500 TWIN LAKES ROAD, AND 0 KALUA**  
4 **ROAD**  
5



6  
7 ***Prepared for:***

8 Boulder County Housing Authority  
9 2025 14<sup>th</sup> Street  
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20 FHU Reference No. 116168-01

21  
22 August 2016  
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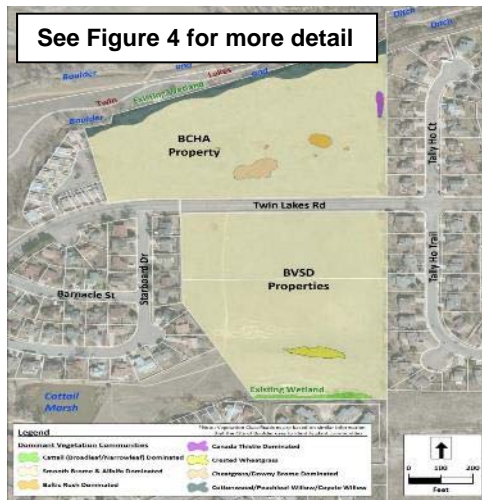
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## 1 EXECUTIVE SUMMARY

2 This report is a summary of the wildlife habitat assessment conducted for Parcels  
3 #146311300011 (6655 Twin Lakes Rd), #146311300009 (6500 Twin Lakes Rd), and  
4 #146314200001 (0 Kalua Rd). This habitat assessment is based on four field surveys by  
5 Felsburg Holt and Ullevig (FHU) staff on June 3<sup>rd</sup>, 2016, June 22<sup>nd</sup>, 2016, July 22<sup>nd</sup>, 2016, and  
6 August 17<sup>th</sup>, 2016 in addition to a review of existing publicly available information (National  
7 Wetland Inventory [NWI], Colorado Natural Heritage Program [CNHP], Boulder County), and  
8 other readily available data sources.

9 The project site was historically shortgrass/mixed grass prairie that is now fragmented by  
10 residential development and dominated by non-native vegetation. It has two wetlands at either  
11 end of the project site, habitat for foraging wildlife, nesting habitat for Western Meadowlark  
12 (*Sturnella neglecta*), and several existing wildlife movement corridors.



13 Based on project site conditions and wildlife habitat and movement identified as a part of this  
14 wildlife habitat assessment, FHU encourages the following recommendations be considered as  
15 part of future opportunities to facilitate wildlife during the site planning process:

16 Measures During Site Design: Consider movement activities of wildlife through the project site,  
17 provide avenues for movement and native vegetation landscaping, type of night-lighting that  
18 would be used, seasonal restrictions and buffers on various human activities during breeding  
19 periods, additional set-backs from wetland/riparian areas, and location of units to provide more  
20 movement for wildlife.

21 Measures During and After Construction: Incorporate adaptive management activities to  
22 facilitate wildlife use before, during, and after construction, consider seasonal restrictions on  
23 construction activities during sensitive wildlife periods, consider seasonal restrictions on human  
24 and pet activities (barriers around nesting locations, enforce regulations on pets roaming free  
25 during bird nesting periods, incorporate species-specific best management practices (BMPs)  
26 during construction activities.





1   **1.0   INTRODUCTION**

2   This habitat assessment was performed for the Boulder County Housing Authority (BCHA) to  
3   assess the project site as a part of pre-development fact finding. This document describes the  
4   project sites habitat and the species observed on multiple site visits, which occurred in spring  
5   and summer of 2016.

6   **1.1   Project Background**

7   BCHA has proposed the development of affordable housing on the project site. This  
8   development project is seeking wildlife habitat information as part of the early planning stages.

9   **1.2   Site Description**

10  The project site consists of three parcels of land bisected by Twin Lakes Rd:

- 11       • 6655 Twin Lakes Rd is 9.97 acres in size and is undeveloped. The parcel is owned by  
12       BCHA, and has a Boulder County Assessor Parcel Identification Number of  
13       #146311300011.
- 14       • 6500 Twin Lakes Rd is 3.95 acres in size and is also undeveloped. 6500 Twin Lakes Rd  
15       is owned by Boulder Valley School District (BVSD), and has a Boulder County Assessor  
16       Parcel Identification Number of #146311300009.
- 17       • 0 Kalua Rd is 6.08 acres in size and is undeveloped. 0 Kalua Rd is owned by BVSD, and  
18       has a Boulder County Assessor Parcel Identification Number of #146314200001.

19  The project is located in Boulder County, Colorado, in Sections 11 and 14, Township 1 North,  
20  Range 70 West (Latitude 40.05908° and Longitude -105.19868°). See **Figure 1: Vicinity Map**.

21  The project site is bordered by residential developments to the south, east, and west. The Twin  
22  Lakes Open Space, Boulder and Left Hand Ditch, and Boulder and Whiterock Ditch are located  
23  north of 6655 Twin Lakes Rd, and the 6500 Twin Lakes Rd parcel is located to the south, just  
24  south of the paved Twin Lakes Rd. The 6500 Twin Lakes Rd parcel is also bordered by  
25  residential developments to the east and west and the paved Twin Lakes Rd abuts the parcel to  
26  the north. The 0 Kalua Rd parcel abuts the 6500 Twin Lakes Rd parcel to the south.

27  The 0 Kalua Rd parcel has residential developments to the east, west, and south along with a  
28  drainage ditch just north of the southern residential properties. The Coen/Johnson Trust, a large  
29  undeveloped parcel of land owned by the Gunbarrel Public Improvement District and managed  
30  by Boulder County Parks and Open Space, is also located outside of the project site to the  
31  southeast (**Figure 2: Project Location and Vicinity Map**).



Figure 1 Project Location and Vicinity Map

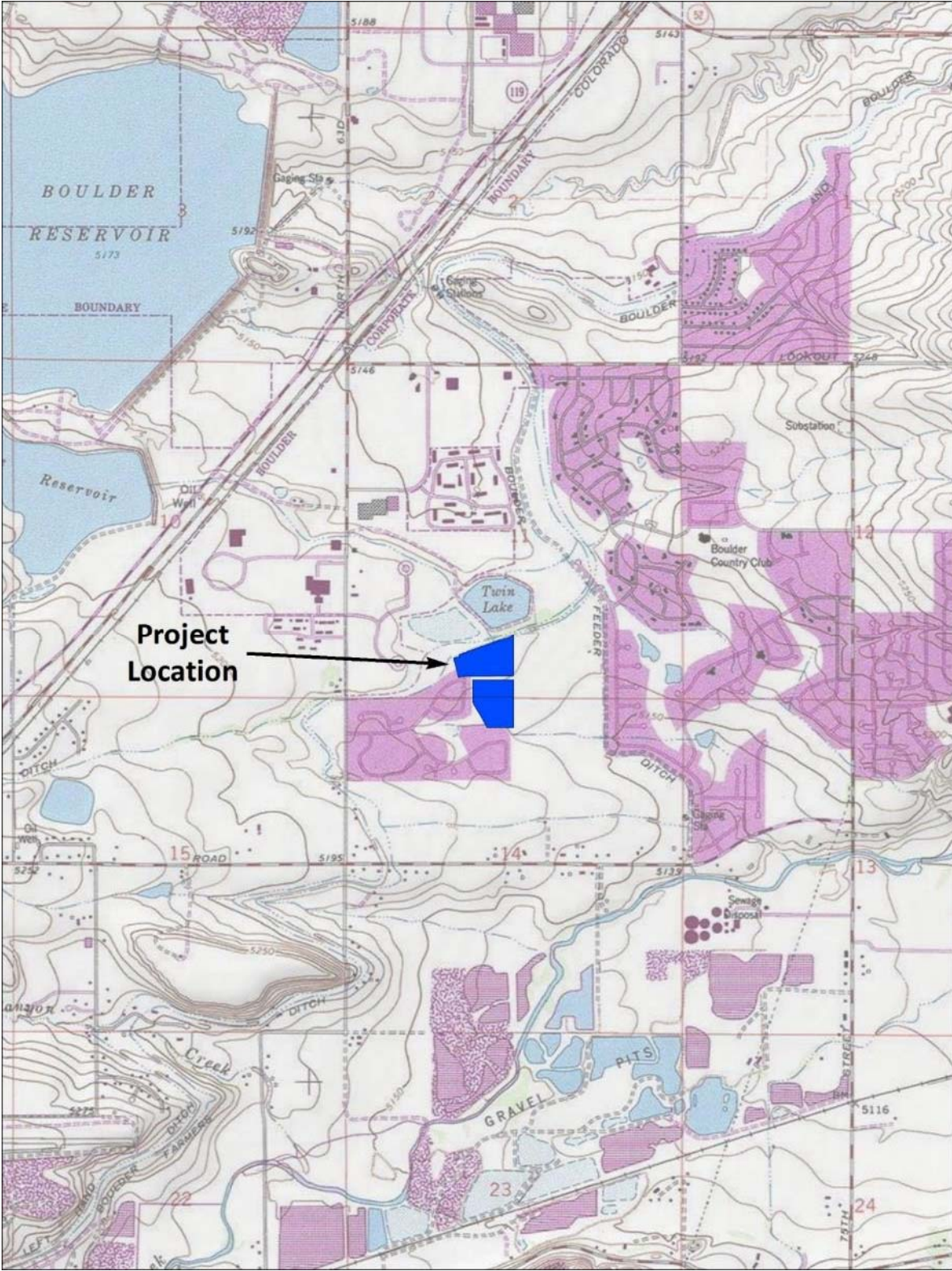






Figure 2 Project Site Map





1    **2.0    METHODOLOGY**

2    *2.1    Regulatory Background*

3    This section identifies important federal and state regulations and the biological resources they  
4    protect which could affect this project site. These federal and state regulations include:

- 5        • The Clean Water Act (CWA) of 1972, which protects wetlands, open water, and other  
6        Waters of the US (WUS);
- 7        • The Endangered Species Act (ESA) of 1973, which protects federally threatened and  
8        endangered species and their habitat;
- 9        • The Migratory Bird Treaty Act (MBTA) of 1918, which protects a vast majority of birds  
10       found in Colorado and their active nests;
- 11       • The Colorado Nongame, Endangered, or Threatened Species Conservation Act, which  
12       provides specific protections for state threatened and endangered species and their  
13       habitat; and
- 14       • The Colorado Noxious Weed Act of 1996, (rev. 2004), which requires management  
15       actions for noxious weeds, depending on listing categories.

16    This section describes the initial wildlife and vegetation survey completed on the project site for  
17    this study. The survey included a desktop review of relevant databases and aerial photography,  
18    and site visits that occurred on June 3<sup>rd</sup>, June 22<sup>nd</sup>, July 22<sup>nd</sup>, and August 17<sup>th</sup>. All site visits  
19    were conducted in 2016.

20    *2.2    Field Surveys*

21    On June 3<sup>rd</sup>, 2016, three FHU environmental scientists (Keith Hidalgo, Neal Goffinet, and Brian  
22    Fauver) surveyed the project site. This survey consisted of east/west transects spaced  
23    approximately every 25 feet, in which FHU staff documented plant and wildlife species detected.  
24    These observations were documented in a species list (**Appendix A: List of Observed Flora &  
25    Fauna**) and unique features (e.g. wetlands and wildlife corridors) were identified. A follow up  
26    visit, conducted on June 22<sup>nd</sup>, 2016, was completed by Keith Hidalgo to identify any additional  
27    species and to be present during a project geo-technical survey. A third survey was conducted  
28    on July 22<sup>nd</sup>, 2016 to determine presence of federally threatened plants. None were found in the  
29    likely habitat of the project site. A fourth field survey was conducted on August 17<sup>th</sup>, 2016.  
30    These four surveys were spaced sequentially to see vegetation changes at the project site from  
31    spring to late summer, and to survey for federally threatened plant species at the appropriate  
32    time of year. Refer to **Appendix B: Site Photographs** for conditions encountered during the  
33    field surveys.

34    The vegetative species observed during the field visits represent the identification of plant  
35    species visible during the time of the surveys and should not be considered comprehensive.  
36    Further field studies conducted earlier or later in the growing season could reveal other species  
37    within the project site, due to seasonal prominence of certain plants. However, additional  
38    surveys would not change the overall findings of this study.





1    **3.0    HABITAT ASSESSMENT**

2    The project site is located in Boulder County, Colorado, at approximately 5,200 feet above sea  
3    level. It is dominated by smooth brome (*Bromus inermis*) grass, with native and introduce trees  
4    surrounding the perimeter on the north side of the project site. There are two areas containing  
5    wetland vegetation found within the Boulder and Whiterock Ditch alignment to the north and  
6    another wetland area associated with an excavated ditch which drains west-to-east along the  
7    southern edge of 0 Kalua Rd.

8    The project site is in the Front Range Fans ecoregion. This ecoregion (US Environmental  
9    Protection Agency [USEPA], 2006) is described as:

10           Streams tend to be cooler than in other High Plains regions and contain  
11           many Front Range aquatic species. The soils of the region have more  
12           outwash gravels than regions farther east and occupy old terraces,  
13           benches, and alluvial fans. The soils are formed from materials  
14           weathered from arkosic sedimentary rock, gravelly alluvium, and redbed  
15           shales and sandstone. Some soils have a high shrink-swell potential.  
16           Land use is changing from mostly cropland and rangeland to more  
17           extensive urban development. Development has led to an increase in  
18           manmade lakes and gravel pits dotting the region.

19    **3.1    Historic Site Conditions**

20    The project site historically contained short-grass and mixed-grass prairie, pre-development  
21    (October 1858, first non-native settlement). If the project site and surrounding areas had  
22    remained undisturbed, they most likely would have been classified within the Dry Mixedgrass  
23    Prairie Group (G331), with vegetation dominated by Blue Grama (*Bouteloua gracilis*), Needle-  
24    and-thread grass (*Hesperostipa comata*), and western wheatgrass (*Pascopyrum smithii*) (U.S.  
25    National Vegetation Classification [USNVC], 2016). It is located between two drainages, Boulder  
26    Creek and St. Vrain Creek and may have been part of the Boulder Creek riparian corridor at one  
27    point, as seen on the 1937 and 1967 aerials (**Appendix C: Historic Aerials**).

28    These ecologic conditions were modified through human activities throughout the 1800-1900's,  
29    including grass species introduced to improve pasture for livestock, as described by the Twin  
30    Lakes Open Space – Resource Evaluation: (Boulder County Parks and Open Space [BCPOS],  
31    2004)

32           Agriculture and grazing altered the plains dramatically and growing cities  
33           covered open land. In the Gunbarrel/Boulder Reservoir area the once  
34           extensive wetlands have been transformed for industrial, agriculture, and  
35           residential uses. Remnants of native riparian and wetland ecosystems  
36           remain and artificial waterways create new habitat.

37    **3.2    Historic Land Use**

38    Five historic aerial photos of the project were obtained from the Colorado Aerial Photo Service  
39    in August 2016 (**Appendix C: Historic Aerials**). The photos were taken in 1937, 1967, 1972,  
40    1985, and 1995. Prior to 1972, the land was used as pasture land and dryland agriculture to





1 facilitate the growth in the region since the first gold seekers came to the area in 1858. The Twin  
2 Lakes are present in all the photos and were built to facilitate irrigation in the area. Most of the  
3 surrounding land around the project site was developed into suburban residences between  
4 1972 and 1985. The Red Fox Hills subdivision, to the east of the project site, was developed  
5 between 1985 and 1995.

6 As identified in **Section 3.1**, in the first two photos (1937, 1967) a riverine water feature is  
7 present. This feature is gone in 1972, suggesting it was channelized into a canal system. This  
8 canal is most likely the source of hydrology for the wetland at the southern boundary of 0 Kalua  
9 Rd, which then flows into Boulder Supply Canal to the east.

10 Twin Lakes open space to the north of the project site and the Coen/Johnson Trust to the  
11 southeast of the project site remain undeveloped.

### 12 3.3 Existing Site Conditions in 2016

13 The natural characteristics of the project site and adjacent lands have been heavily disturbed  
14 through grazing, agriculture, and development. This has led to a monoculture of non-native  
15 plants and grasses. A monoculture is defined here as an area dominated by a small number of  
16 species. This process is described by Dogra et al. (2010):

17 Disturbed and unattended habitats are more prone to the invasion as  
18 compare to the well-managed ecosystems and habitats. The habitats  
19 which have more diverse communities are highly competitive and resist  
20 invasion (Crawley, 1987). For example, direct competition with the native  
21 flora can result in monocultures of an alien species...

22 The plant communities on both parcels were dominated by smooth brome, alfalfa (*Medicago*  
23 *spp.*), and field pennycress (*Thlaspi arvense*), with wetlands on the southernmost and  
24 northernmost edges of the property. The wildlife habitat provided by the parcels was mostly  
25 utilized for forage and travel, with the exception of a few small-sized wildlife species living in  
26 both parcels. Based on the field surveys, no threatened or endangered species were identified  
27 inhabiting the project site.

28 Several bird species were observed, including: Common Grackle (*Quiscalus quiscula*), Red-  
29 winged Blackbird (*Agelaius phoeniceus*), Eurasian Collared-Dove (*Streptopelia decaocto*),  
30 Western Meadowlark (*Sturnella neglecta*), and Barn Swallow (*Hirundo rustica*). A complete list  
31 of observed flora and fauna during the field surveys is provided in **Appendix A**.

32 Three potential wildlife corridors were also identified, one running north/south and two running  
33 east/west. Wildlife sign was identified along these corridors including: coyote (*Canis latrans*),  
34 deer (*Odocoileus spp.*), and raccoon (*Procyon lotor*). Photographs of the project site can be  
35 found in **Appendix B**. These corridors connect to habitats associated with: Twin Lakes Open  
36 Space, riparian corridors adjacent to the Boulder and Left Hand Ditch and the Boulder and  
37 Whiterock Ditch, the Coen/Johnson Trust, and a drainage that passes through the Twin Lakes  
38 Neighborhood on the south side of the project site.



1    3.4    Soils

2    There are two types of soils present at the project site as retrieved from the US Department of  
3    Agriculture (USDA) Natural Resources Conservation Service's (NRCS), Web Soil Survey. They  
4    are: Longmont clay (LoB), 0 to 3 percent slopes and Nunn clay loam (NuB), 1 to 3 percent  
5    slopes (NRCS, 2016). The LoB area consisted of 4.7-acres, or 23 percent of the project site  
6    while the NuB soil took up 16-acres, or 77 percent of the project site. The LoB soil is located at  
7    the southern edge of 0 Kalua Rd, and in a swathe on the southern edge of 6655 Twin Lakes Rd.  
8    **(Figure 3: NRCS Soil Map)** Both these areas were noted as having different plant communities.

9    Several soil samples were taken in the southern section of 6655 Twin Lakes Rd. Soil samples  
10    taken in the top 18-inches of the soil contained no hydric indicators and the soil colors were  
11    indicative of upland areas. Soil colors identified (Munsell, 1998) included one sample with a  
12    color of 10YR 4/3, and another sample of 10YR 5/3. Neither sample contained redox  
13    concentrations or other clear indicators of hydric soil. Additional soil sampling was completed as  
14    part of the wetland delineation (Apex 2016a & 2016b).

15

DRAFT



1 **Figure 3 NRCS Soil Map**



2





1    3.5    *Vegetation*

2    In the Twin Lakes Open Space – Resource Evaluation (BCPOS, 2004), the project site is  
3    described as containing the following vegetative communities:

4            “Wetland fringe, forested riparian, and upland grass communities  
5            comprise the vegetation surrounding Twin Lakes. These communities are  
6            heavily disturbed and the predominant vegetative covering is weedy  
7            species and pasture grasses.”

8    Seven dominant plant communities were identified on the project site: a broadleaf cattail (*Typha*  
9    *latifolia*) and narrow leaf cattail (*Typha angustifolia*) community, a smooth brome and alfalfa  
10    community, a Baltic rush (*Juncus balticus*) community, a Canada thistle (*Cirsium arvense*)  
11    community, a cheatgrass/downy brome (*Bromus tectorum*) community, a cottonwood/peachleaf  
12    willow (*Salix amygdaloides*) and sandbar willow (*Salix interior*) community, and a crested  
13    wheatgrass (*Agropyron cristatum*) community.

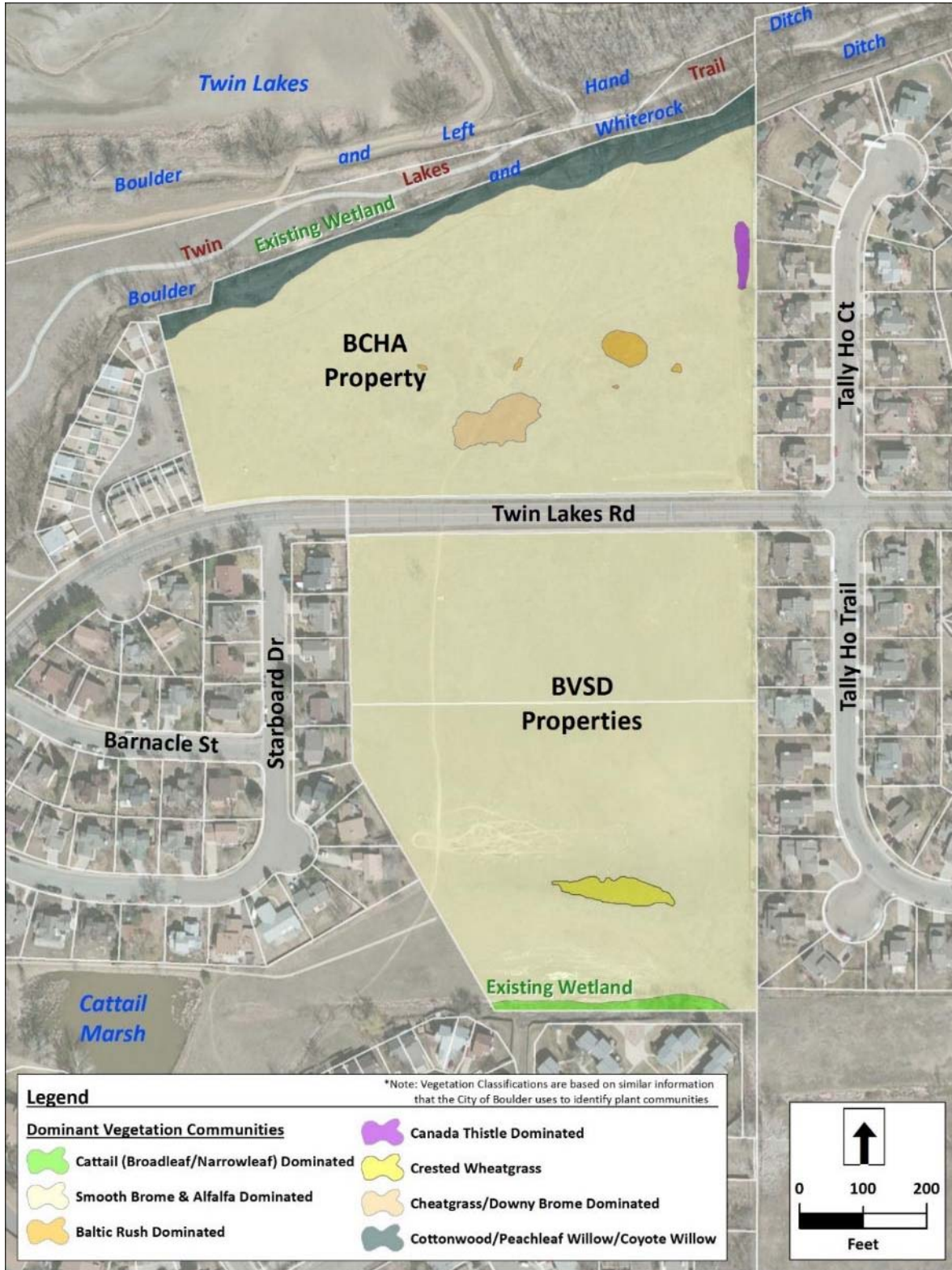
14    The smooth brome and alfalfa community occupied the majority of the project site. Other plants  
15    of note identified in this community were a sedge species (*Carex spp.*) which was evenly  
16    distributed throughout the site, occupying dry upland areas as well as depressed micro-  
17    topography. Leafy spurge (*Euphorbia esula*), field bindweed (*Convolvulus arvensis*), common  
18    teasel (*Dipsacus fullonum*), poison hemlock (*Conium maculatum*), and a few showy milkweeds  
19    (*Asclepias speciosa*) plants were near the wetland area at the southern end of 0 Kalua Rd.

20    The two wetland vegetative communities were on the northernmost boundary and the  
21    southernmost boundary of the project site. The broadleaf and narrowleaf cattail community is  
22    located in 0 Kalua Rd, in a wetland identified by Apex Companies, LLC. (2016a). Other species  
23    present in that wetland include: common teasel, softstem bulrush (*Schoenoplectus*  
24    *tabernaemontani*), golden rod (*Salidago spp.*), and Rocky Mountain hemlockparsley  
25    (*Conioselinum scopulorum*). The cottonwood/peachleaf willow and sandbar willow community  
26    was present only in the northern wetland identified by Apex Companies, LLC. (2016b). This  
27    wetland is on the northernmost edge of the project site and abuts the Boulder and Whiterock  
28    Ditch. Other notable species in this community are reed canarygrass (*Phalaris arundinacea*),  
29    and plains cottonwood (*Populus deltoides*).

30    The remaining vegetative communities included pockets of dominant species located within the  
31    smooth brome and alfalfa community. There are two Baltic rush communities, both located in  
32    the central area of 6655 Twin Lakes Rd, in small depressed micro-topographic areas. The  
33    Canada thistle community is on the easternmost boundary of 6655 Twin Lakes Rd, and the  
34    crested wheatgrass community is in a central east/west band in the center of 0 Kalua Rd. These  
35    plant communities are shown on the project site in **Figure 4: Vegetation Map**.



Figure 4 Vegetation Map







1    3.6    *Noxious Weeds*

2    The Colorado Noxious Weed Act requires the control of the plant species designated as  
 3    “noxious weeds.” According to the Colorado Department of Agricultural (CDA), noxious weeds  
 4    are plants that reduce agricultural productivity, lower real estate values, endanger human health  
 5    and well-being, and damage scenic values (CDA, 2016). The state has divided the noxious  
 6    weeds into three groups: Lists A, B, and C. In addition, the state also has a Watch List for newly  
 7    introduced noxious weeds that may become listed in the future because they exhibit similar  
 8    characteristics as listed noxious weeds.

9    List A includes 25 plant species that have very limited to no distribution in Colorado and are  
 10    designated for immediate eradication. List B includes 37 species that are locally common but  
 11    are managed to stop continued spreading. List C includes 16 species that are generally  
 12    widespread and are not managed to stop spreading but identified for additional education,  
 13    research, and biological control. The Watch List contains 24 plant species; this Watch List is  
 14    intended to serve advisory and educational purposes only and is used to locate and report  
 15    distributions of these species for future designation as noxious weeds.

16    The project team reviewed preliminary data from the Boulder County Noxious Weed Management  
 17    Plan and the list of Colorado Noxious Weed Species (Boulder County 2004, CDA 2016). Based  
 18    on field surveys, noxious weeds were found within the project site. Most weeds were scattered  
 19    in low densities throughout the project site, while downy brome and Canada thistle was found in  
 20    a few dense patches in 6655 Twin Lakes Rd.

21    A list of noxious weeds found within the project site during the field surveys is in (**Table 1**).

22    **Table 1            Noxious Weeds Present within the Project Site**

Common Name	Species Name	Colorado Classification	Boulder County Classification	Density
Leafy Spurge	<i>Euphorbia esula</i>	B	A	Common
Common Teasel	<i>Dipsacus fullonum</i>	B	B	Common
Canada Thistle	<i>Cirsium Arvense</i>	B	B	Uncommon
Scotch Thistle	<i>Onopordum acanthium</i>	B	B	Uncommon
Field Bindweed	<i>Convolvulus arvensis</i>	C	N/A	Common
Downy Brome	<i>Bromus tectorum</i>	C	N/A	Dense Patch
Poison Hemlock	<i>Conium maculatum</i>	C	N/A	Uncommon

23    Source: Boulder County Noxious Weed Management Plan (2004), Colorado Noxious Weed Species (2016)

24    3.7    *Wildlife*

25    This section discusses the wildlife species that are known or are potentially present in the  
 26    project site. Information on species distribution was obtained from Colorado Parks and Wildlife  
 27    (CPW) data, U.S. Fish and Wildlife Service (USFWS) data, and Boulder County. Species  
 28    information was collected during field surveys conducted in 2016.



1 Based on the habitat present in and adjacent to the project site, mammals, birds, reptiles, and  
2 amphibians could occur within the project site. The following section briefly describes species  
3 that were either observed during field visits or are likely to occur based on the presence of  
4 suitable habitat. CPW does not classify any of the project site as critical wildlife habitat, rare  
5 plant areas, significant natural communities, or significant riparian areas. Also, based on  
6 information from the USFWS, there is no Critical Habitat for threatened and endangered species  
7 present at or near the project site.

### 8 3.8 Wildlife Corridors

9 Three separate existing wildlife corridors were identified based on observed wildlife sign and  
10 location of blocks of undeveloped land. The first wildlife corridor runs from the northeast corner  
11 of 6655 Twin Lakes Rd, across Twin Lakes Rd. and continues to the southwest corner of 0  
12 Kalua Rd, on the informal trail. Coyote scat was identified on this wildlife corridor. This area was  
13 heavily used by recreationalists, destroying any potential tracks left by other wildlife species.  
14 While this corridor seems to be used often by wildlife, it appears wildlife use it based on ease of  
15 travel, rather than any habitat features it provides. This corridor follows the informal recreation  
16 trail and connects the Twin Lakes Open Space to the un-named drainage ditch which runs by  
17 Boulder Twin Lakes Inn, as well as the second wildlife corridor identified below.

18 The second wildlife corridor parallels the southern boundary of 0 Kalua Rd. This corridor runs  
19 along the ditch which has a wet, clay like substrate which contained several animal tracks,  
20 including raccoon, deer, and coyote. This corridor connects the un-named drainage ditch, which  
21 runs by the Boulder Twin Lakes Inn, to the Coen/Johnson Trust, a large conservation easement  
22 to the southeast of the project site.

23 The third wildlife corridor runs east-west at the northern boundary of the project site. Several  
24 species of mammals and birds were encountered in this corridor, as well as a diversity of tree  
25 and shrub species. This corridor is at the southern edge of the Boulder and Whiterock Ditch,  
26 which is adjacent to the Twin Lakes Open Space and Boulder and Left Hand Ditch and regional  
27 trail. These open space and riparian corridors found to the north and south of our project site  
28 contain a large diversity of species. These two corridors connect to a large undeveloped  
29 property east of the project site to a series of smaller undeveloped properties west of the project  
30 site.

### 31 3.9 Mammals

32 Small mammals such as eastern cottontail rabbits (*Sylvilagus floridanus*), field mice (*Mus*  
33 *musculus*), meadow voles (*Microtus pennsylvanicus*), and fox squirrels (*Sciurus niger*) were  
34 documented on 6655 Twin Lakes Rd. The cottontail rabbits and field mice were evenly  
35 dispersed throughout the project site. Meadow voles were concentrated in smaller, rush  
36 dominated areas in the south central portion of 6655 Twin Lakes Rd., and the fox squirrels  
37 encountered were located in the trees around the northern perimeter of the project site.

38 6500 Twin Lakes Rd and 0 Kalua Rd contained fewer species encountered, but more animal  
39 sign. A red fox and a raccoon carcass were found on 0 Kalua Rd. Other mammal sign was  
40 documented, including: coyote tracks and scat, mule deer or whitetail deer tracks, and raccoon  
41 tracks. All of the mammal sign encountered was along wildlife corridors, with the exception of  
42 the red fox and raccoon carcasses, which were under a tree in the center part of 0 Kalua Rd.



1 The coyote scat was found along the north/south informal trail, and the other animal tracks were  
2 found along the east/west wetland feature in the southern part of O Kalua Rd.

### 3 3.10 Reptiles and Amphibians

4 An individual common garter snake (*Thamnophis sirtalis*) was identified on 6500 Twin Lakes Rd  
5 in a small depression, which could be a hibernarium. Additionally, several different terrestrial  
6 western garter snake (*Thamnophis elagans*) individuals were found interspersed throughout the  
7 project site.

### 8 3.11 Migratory Birds

9 The vast majority of birds found in Colorado and their nests are protected under the MBTA of  
10 1918. Disturbance of migratory bird nests, if active, is prohibited. Removal of active bird nests  
11 requires a MBTA permit from the USFWS.

12 Two pairs of ground-nesting bird species (Western Meadowlark and Mallard [*Anas*  
13 *platyrhynchos*]) were detected. The Western Meadowlark was detected on 6500 Twin Lakes Rd.  
14 FHU staff located a nest containing young birds and placed barrier cones approximately 25  
15 yards away from the nest to protect it from human disturbance. The Mallard nest was located on  
16 6655 Twin Lakes Rd and contained a non-viable egg with egg fragments of hatched and fledged  
17 young. It is important to note that Western Meadowlarks and Mallards are protected under the  
18 MBTA, as well as any active nest (containing eggs or hatchlings). Refer to **Figure 5: Wildlife**  
19 **Activity Map**.

20 Other bird species were observed foraging for food (primarily insects), collecting nesting  
21 material, or traveling through the project site and not nesting within the project site itself. The  
22 area which contained the most wildlife activity was along the Boulder and Whiterock Ditch,  
23 where American Robin (*Turdus migratorius*), Common Grackle, Red-winged Blackbird, Tree  
24 Swallow (*Tachycineta bicolor*), and Blue Jay (*Cyanocitta cristata*) species were observed.

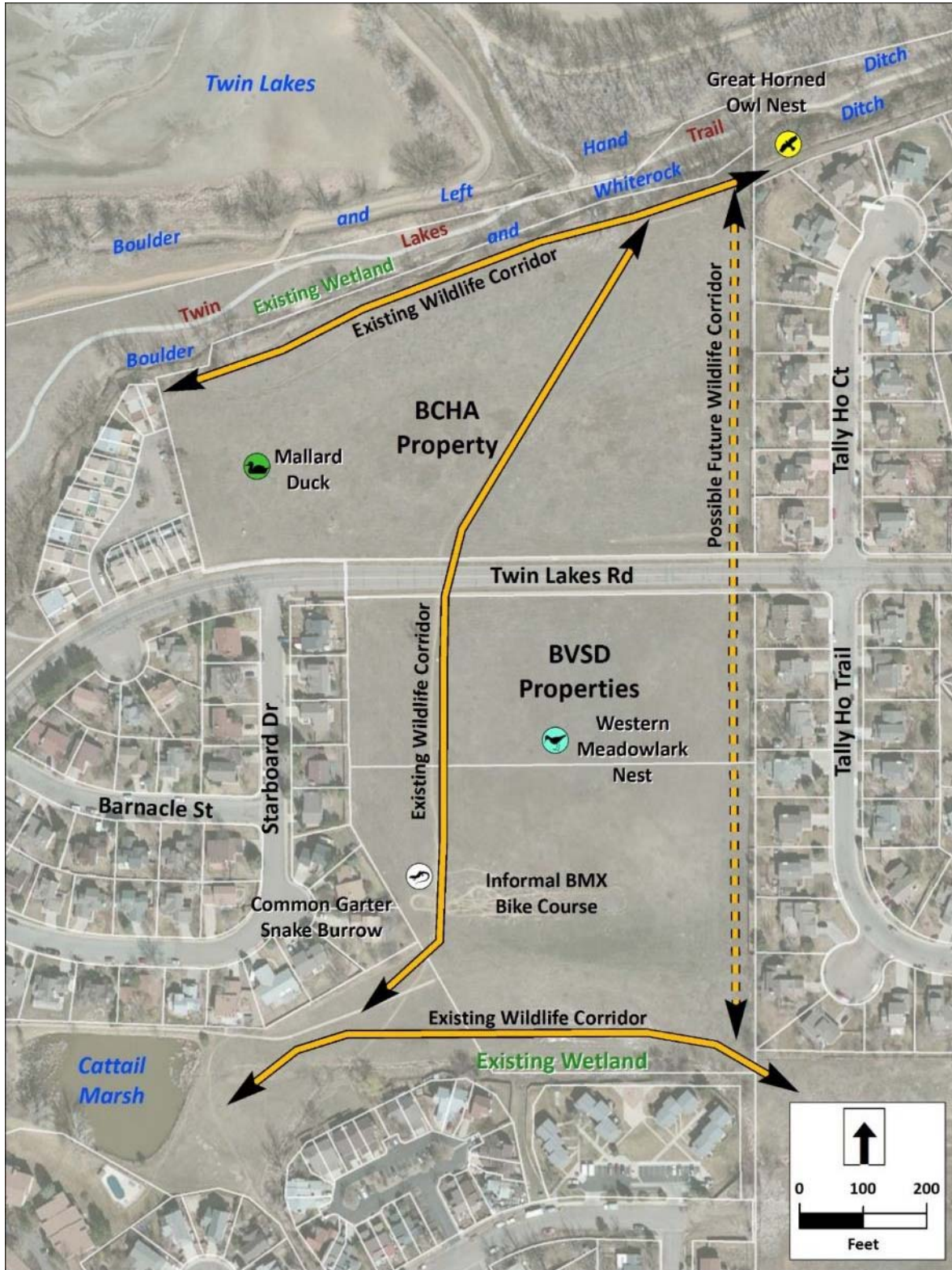
### 25 3.12 Other Raptors

26 Two other raptors (birds of prey) were found near but outside the project site. A Great Horned  
27 Owl (*Bubo virginianus*) nest is north of and outside of the project site, and an American Kestrel  
28 (*Falco sparverius*) was seen perching in a single Siberian elm (*Ulmus pumila*) tree in the 6500  
29 Twin Lakes Rd, and was later observed using a nest box just east of the project site in a private  
30 resident's backyard. The Great Horned Owl nest is located approximately 100 feet northeast  
31 and outside of the project site's parcel boundary. This nest is currently in-active but will likely be  
32 used by the same Great Horned Owl pair in 2017 (**Figure 5**).





Figure 5 Wildlife Activity Map





1    3.13    *State and Federally Protected Species*

2    FHU used the USFWS's Information, Planning, and Conservation System (IPaC) and the CPW  
3    Species Profile website to identify the latest information on state and federal protected species  
4    that may occur in the project site. IPaC listed 13 state and federal protected species which could  
5    be present in the project site. However, suitable habitat is not present for these species. **Table**  
6    **2: State and Federal Threatened & Endangered Species** includes a list of federal and state-  
7    listed species that can potentially be found on the project site or potentially have habitat present  
8    (USFWS, 2016; CPW, 2016).

9    3.14    *Federally Threatened Plant Species*

10    A field survey was conducted for the Ute ladies'-tresses orchid (*Spiranthes diluvialis*), and the  
11    Colorado Butterfly Plant (*Oenothera coloradensis ssp. coloradensis*) on July 22, 2016. The  
12    survey took place when the plants were blooming in reference areas along the Colorado Front  
13    Range (Golden, CO; Westminster, CO; Boulder, CO). Both species require a significant amount  
14    of moisture, and are found in areas near water features. The survey concentrated on likely  
15    habitat in the project site –the Boulder and Whiterock Ditch wetland and the southern wetland.  
16    While two relatives of the Colorado butterfly plant were found (Velvetweed [*Oenothera curtiflora*]  
17    and Scarlet Gaura [*Gaura coccinea*]), there were no occurrences of the Colorado butterfly plant  
18    or Ute ladies'-tresses orchid in either wetland. See **Appendix D: Threatened Plant Surveyor**  
19    **Qualifications**.

20    3.15    *Boulder County Species of Special Concern*

21    Field surveys for Boulder County Species of Special Concern were guided by neighborhood  
22    observations of flora and fauna. These observations were obtained through email, and sent to  
23    FHU staff prior to the final site visit on August 17<sup>th</sup>, 2016. Each species observation was  
24    assessed during a desktop review of NatureServe (2016), and searched for during the site visit.  
25    The habitat descriptions on NatureServe aided FHU staff in evaluating the project site for  
26    potential breeding or foraging utilization. Finally, each observation was noted if FHU staff  
27    detected the species on the project site. A list of neighborhood observations can be found in  
28    **Appendix E: Boulder County Species of Special Concern**, which was submitted to Boulder  
29    County by the Twin Lakes Action Group.





1

2 **Table 2 State and Federal Threatened & Endangered Species Found within Boulder County**

3

Common Name	Status	Habitat Description	Results of Assessment
<b>BIRDS</b>			
Least Tern ( <i>Sterna antillarum</i> )	FE	Sea beaches, bays, large rivers, salt flats. Along coast generally where sand beaches close to extensive shallow waters for feeding. Inland, found along rivers with broad exposed sandbars, lakes with salt flats nearby.	Not present. Only relevant if water-related activities or use occurs in the N. Platte, S. Platte, and Laramie River Basins. Therefore, no impacts are expected.
Mexican Spotted Owl ( <i>Strix occidentalis lucida</i> )	FT, ST	Mexican Spotted Owls inhabit forested mountains and canyons with mature trees that create high, closed canopies, which are good for nesting.	No habitat present, therefore, no impacts are expected.
Piping Plover ( <i>Charadrius melodus</i> )	FT	Sandy beaches, tidal flats. Nests in open sandy situations near water, in a variety of settings: beaches along Atlantic Coast and Great Lakes; sandbars along major rivers on northern Great Plains; gravel or sand flats next to alkali lakes.	Not present. Only relevant if water-related activities or use occurs in the N. Platte, S. Platte, and Laramie River Basins. Therefore, no impacts are expected.
Whooping Crane ( <i>Grus americana</i> )	FE	Muskeg (summer); prairie pools, marshes. Current breeding habitat is in remote northern forest, in areas of muskeg (swampy coniferous woods with numerous lakes and ponds). Formerly also nested in prairie marshes.	Not present. Only relevant if water-related activities or use occurs in the N. Platte, S. Platte, and Laramie River Basins. Therefore, no impacts are expected.



Common Name	Status	Habitat Description	Results of Assessment
<b>FISHES</b>			
Greenback Cutthroat Trout ( <i>Oncorhynchus clarki stomias</i> )	FT	Greenback cutthroat trout are coldwater fish belonging to the trout, salmon and whitefish family. They have dark, round spots on the sides and tail and two colorful blood-red stripes on each side of the throat under the jaw, hence the name "cutthroat." During the spring spawning season, the entire belly may become crimson red.	No habitat present, therefore, no impacts are expected.
Pallid Sturgeon ( <i>Scaphirhynchus albus</i> )	FE	Pallid sturgeon have a flattened shovel-shaped snout; a long, slender, and completely armored caudal peduncle (the tapered portion of the body which terminates at the tail); and lack a spiracle (small openings found on each side of the head).	Not present. Only relevant if water-related activities or use occurs in the N. Platte, S. Platte, and Laramie River Basins. Therefore, no impacts are expected.
<b>FLOWERING PLANTS</b>			
Colorado Butterfly Plant ( <i>Oenothera coloradensis</i> spp. <i>coloradensis</i> )	FT	It is a regional endemic restricted to Laramie and Platte counties in Wyoming, and Larimer, Jefferson, and Weld counties in Colorado. Of the known populations of the Colorado butterfly plant, the vast majority occur on private lands managed primarily for agriculture and livestock.	Potential habitat is present along the Boulder and Whiterock Ditch and the southern drainage ditch. None were found during a typical blooming season survey. No impacts are expected since no individuals were detected during the field surveys.



Common Name	Status	Habitat Description	Results of Assessment
Ute ladies'-tresses orchid ( <i>Spiranthes diluvialis</i> )	FT	Known primarily from moist meadows associated with perennial stream terraces, floodplains, and oxbows at elevations between 4,300 - 6,850 feet. Additional vegetation and hydrology types occupied include seasonally flooded river terraces, subirrigated or spring-fed abandoned stream channels and valleys, and lakeshores. In addition, 26 populations have been discovered along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside barrow pits, reservoirs, and other human-modified wetlands.	Potential habitat is present along the Boulder and Whiterock Ditch and the southern drainage ditch. None were found during a typical blooming season survey. No impacts are expected since no individuals were detected during the field surveys.
Western Prairie Fringed Orchid ( <i>Platanthera praeclara</i> )	FT	Occur most often in mesic to wet unplowed tallgrass prairies and meadows but have been found in old fields and roadside ditches.	Not present. Only relevant if water-related activities or use occurs in the N. Platte, S. Platte, and Laramie River Basins. Therefore, no impacts are expected.
<b>MAMMALS</b>			
Canada Lynx ( <i>Lynx canadensis</i> )	FT	Forests with boreal features extend south into the contiguous United States along the North Cascade and Rocky Mountain Ranges in the west, the western Great Lakes Region, and northern Maine. Within these general forest types, lynx are most likely to persist in areas that receive deep snow and have high-density populations of snowshoe hares, the principal prey of lynx.	No habitat present, therefore, no impacts are expected.
North American Wolverine ( <i>Gulo gulo luscus</i> )	PT	The wolverine is the largest terrestrial member of the family Mustelidae. Wolverines in the Lower 48 live in rugged, remote country, spending most of their time in high elevations near or above timberline.	No habitat present, therefore, no impacts are expected.





1    3.16    *Wetland and Other Waters of the U.S.*

2    In 1972, the US Congress passed the CWA to protect the quality of WUS, including adjacent  
3    wetlands. Section 404 of the CWA defines WUS as all traditional navigable waters (TNWs) and  
4    their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters,  
5    and all impoundments of these waters. The US Army Corps of Engineers (USACE) Regulatory  
6    Program administers and the USEPA enforces Section 404 of the CWA.

7    Prior to engaging in on-site field surveying activities, a desktop review was conducted to  
8    determine the likely presence of wetlands and WUS in the project site. Using NWI data from the  
9    USFWS, several hydrologic features were depicted near the project site, but only two within the  
10   project site. This first is Boulder and Whiterock Ditch, which is a riverine unknown perennial with  
11   an unconsolidated bottom that is semipermanently flooded and was excavated (L1UBHx). The  
12   second feature is an intermittent riverine streambed that is seasonally flooded (R4SBC), and  
13   runs along the southern edge of 0 Kalua Rd (**Figure 6: NWI Mapping**).

14   **Table 3** summarizes wetlands found by the desktop review and confirmed by a wetland  
15   delineation completed by Apex Companies, LLC. (Apex 2016a & 2016b).

16   **Table 3            Summary of the Wetlands in or near the Project Site**

Wetland Identifier	Remarks
Boulder and Whiterock Ditch	This wetland feature has been delineated as a <i>Freshwater Emergent Wetland</i> .
Southern Wetland	This wetland feature has been delineated as a <i>Freshwater Emergent Wetland</i>

17    Source: Apex 2016a & 2016b

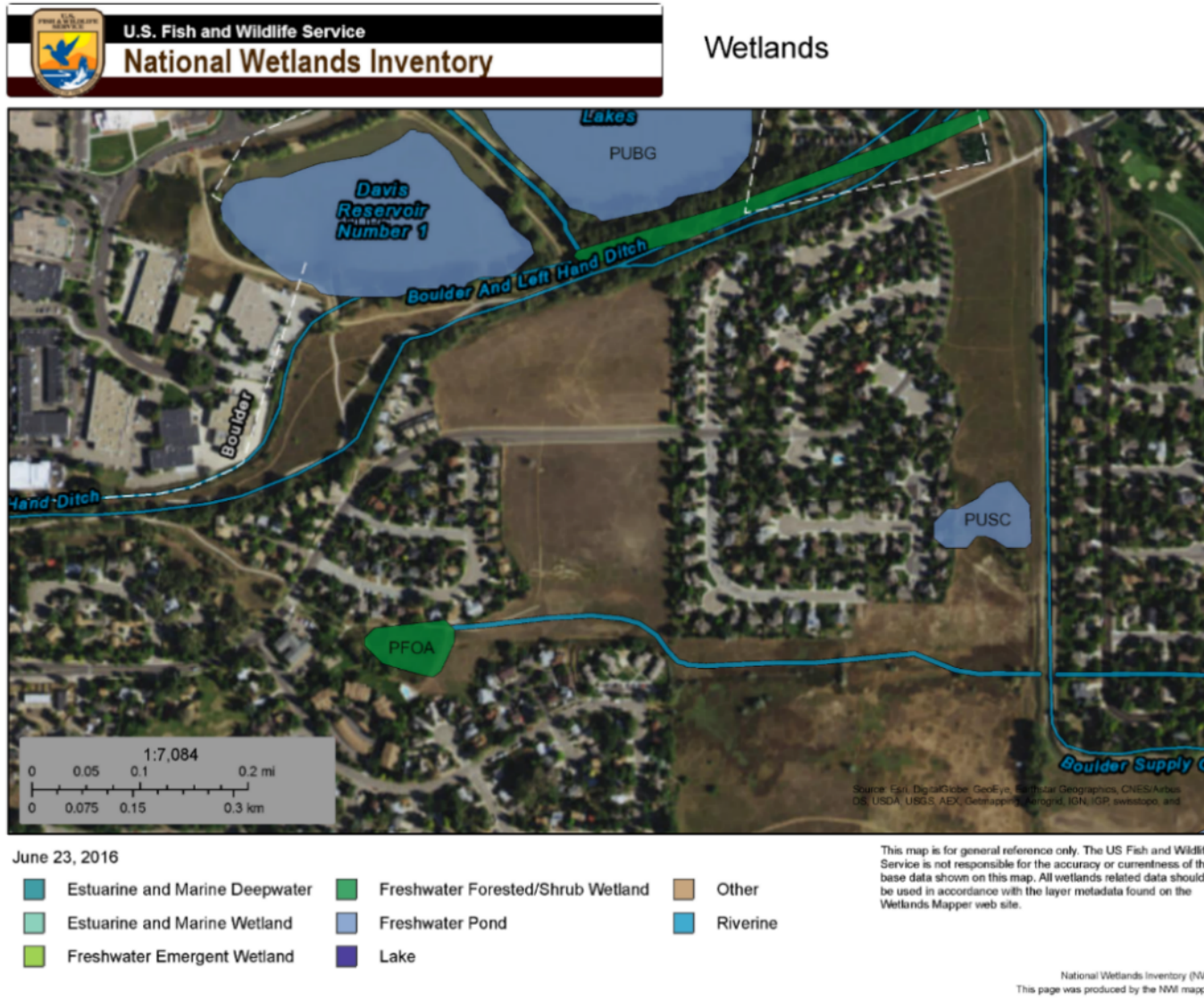
18    3.17    *Waters of the U.S.*

19    The wetland feature at the southern edge of 0 Kalua Rd as well as Boulder and Whiterock Ditch  
20    could be considered WUS within the CWA jurisdiction (as defined by 33 Code of Federal  
21    Regulations Part 328). When flowing, the wetland at the southern edge of 0 Kalua Rd likely  
22    connects to the Boulder Supply Canal to the east. The specific WUS indicators include relatively  
23    permanent waters (RPWs) that flow directly or indirectly into a TNW and wetlands directly  
24    abutting RPWs that flow directly or indirectly into TNW. Any wetlands identified directly abutting  
25    these RPWs would likely be considered jurisdictional as well.





Figure 6 NWI Mapping





1 **4.0 RECOMMENDED MEASURES**

2 Based on project site conditions and wildlife habitat and movement identified as a part of this  
3 wildlife habitat assessment, FHU recommends the following be considered as part of future  
4 opportunities to facilitate wildlife during the site planning process:

5 **4.1 Measures During Site Design**

- 6 • Consider movement activities of wildlife from Twin Lakes Open Space to other open  
7 space and easement properties to the southeast and the southwest.
- 8 • Provide avenues for movement and native vegetative landscaping to enhance habitat  
9 and cover for movement (nesting habitat, cover for small and large animals). Include a  
10 variety of plant sizes to create visual interest and include differing canopy heights to  
11 increase the number of species using the site.
- 12 • Consider appropriate night-lighting that does not affect migratory birds migrating at night.
- 13 • Consider seasonal restrictions on various activities when active migratory bird nests are  
14 found and incorporate appropriate buffers around these nests.
- 15 • Incorporate additional set-backs (beyond the existing 35-foot easement) from  
16 wetland/riparian areas.
- 17 • Locate and space units and infrastructure to allow wildlife activity/movement to persist.

18 **4.2 Measures During and After Construction**

- 19 • Incorporate adaptive management activities to facilitate wildlife use before, during, and  
20 after construction.
- 21 • Consider seasonal restrictions on construction activities during sensitive wildlife periods.
- 22 • Consider seasonal restrictions on human and pet activities (barriers around nesting  
23 locations, enforce regulations on pets roaming free during bird nesting periods).
- 24 • Incorporate species-specific best management practices (BMPs) during construction  
25 activities. Coordinate with Colorado Parks and Wildlife (CPW) to identify BMPs for  
26 species found on the project site or use measures similar to ones identified in the  
27 Colorado State Wildlife Action Plan (SWAP) (CPW 2015).
- 28 • Incorporate noxious weed treatment to manage the detected List B noxious weed  
29 species found on the site.
- 30 • Consider including signage at Twin Lakes Rd. to warn motorists about wildlife movement  
31 across road.



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DRAFT



1    **6.0    SURVEYOR QUALIFICATIONS**

2    **Keith Hidalgo, CE, PWS, AMB**

3    M.A.S., Environmental Policy & Management  
4    University of Denver, 2011

5    B.S., Wildlife Biology  
6    Colorado State University, 2001

7    Keith has 15 years of experience in the environmental industry. He performs specialized field  
8    work for various biological resources. Resources that Keith reports on continuously for clients  
9    over the years include: threatened and endangered species and their habitats, wetland  
10    delineations and 404 permitting, MBTA breeding bird surveys, recommends MBTA mitigation  
11    and adaptive management techniques on construction projects, conducts Bald Eagle and other  
12    raptor surveys, and analyzes potential impacts to species. Keith writes biological technical  
13    reports for various projects and provides unique GIS services to facilitate accurate screening of  
14    key biological resources which would affect project permitting under various federal and state  
15    laws, regulations, and statutes.

16    Keith also provides existing conditions documentation and project management in support of  
17    NEPA projects, including Environmental Impact Statements (EIS's), Environmental  
18    Assessments (EAs), and Categorical Exclusions (CatExs/CEs).

19    **Neal Goffinet**

20    B.S., Natural Resources and Environmental Science, Minor in Soil Science  
21    Purdue University, 2013

22    Recently graduated, Neal has been working in the environmental industry as an intern and full  
23    time environmental scientist for the last six years. He has performed and submitted numerous  
24    environmental analysis documents including EAs and CatExs/CEs under NEPA. He has  
25    experience working with various water quality related permits and mitigation activities in both  
26    Colorado and Indiana including Section 404 Permits, wetland mitigation and monitoring plans,  
27    and erosion and sediment control plan design. Neal also has extensive experience conducting  
28    field work activities such as wetland delineations, threatened and endangered species surveys,  
29    erosion and sediment control inspections, and mitigation monitoring.

30    **Brian Fauver**

31    B.S., Resource Conservation, Minor in Restoration Ecology  
32    University of Montana, 2012

33    M.S., Human Dimensions of Natural Resources,  
34    Colorado State University, 2016 (on-going)

35    Brian is expecting to receive his Masters of Science in December, 2016. He has been working  
36    in the environmental field for the past six years conducting studies and monitoring projects in  
37    forest, alpine, and grassland ecosystems for university, NGO, and government agencies. He  
38    has experience in identification of mammals, flowering plants, and grasses. He has worked on  
39    invasive plant monitoring, rare and endangered species monitoring, wetland delineations,  
40    habitat assessments, groundwater monitoring, and other environmental documentation.

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## Appendix A

### List of Observed Flora and Fauna

Common Name	Scientific Name	Estimated Abundance*	6655 Twin Lakes Rd	6500 Twin Lakes Rd	0 Kalua Rd
<b>Trees &amp; Shrubs</b>					
Sandbar willow	<i>Salix interior</i>	Uncommon	X		X
Plains cottonwood	<i>Populus deltoides</i>	Edges of Project Site	X		
Peachleaf willow	<i>Salix amygdaloides</i>	Common	X		
Russian olive	<i>Elaeagnus angustifolia</i>	Uncommon	X	X	X
Chokecherry	<i>Prunus virginianus</i>	Uncommon	X		
Siberian elm	<i>Ulmus pumila</i>	Uncommon	X		X
<b>Plants</b>					
Smooth brome	<i>Bromus inermis</i>	Dominant	X	X	X
Alfalfa	<i>Medicago spp.</i>	Dominant	X	X	X
Field pennycress	<i>Thlaspi arvense</i>	Dominant		X	X
Yellow salsify	<i>Tragopogon dubius</i>	Common	X	X	X
Field bindweed	<i>Convolvulus arvensis</i>	Common		X	X
Sedge	<i>Carex spp.</i>	Common		X	
Common teasel	<i>Dipsacus fullonum</i>	Common			X
Softstem bulrush	<i>Schoenoplectus tabernaemontani</i>	Common			X
Leafy spurge	<i>Euphorbia esula</i>	Common		X	X
Broadleaf cattail	<i>Typha latifolia</i>	Uncommon			X
Narrowleaf Cattail	<i>Typha angustifolia</i>	Uncommon			X
Prickly lettuce	<i>Lactuca serriola</i>	Uncommon		X	X
Golden rod	<i>Salidago spp</i>	Uncommon			X
Crested wheatgrass	<i>Agropyron cristatum</i>	Uncommon		X	X
Rocky Mountain hemlockparsley	<i>Conioselinum scopulorum</i>	Uncommon			X
Scarlet gaura	<i>Gaura coccinea</i>	Uncommon		X	X
Spikerush spp.	<i>Eleocharis spp.</i>	Uncommon	X	X	
Common threesquare	<i>Schoenoplectus pungens</i>	Uncommon			X
Downy brome	<i>Bromus tectorum</i>	Uncommon	X		
Reed canarygrass	<i>Phalaris arundinacea</i>	Uncommon	X		
Showy milkweed	<i>Asclepias speciosa</i>	Uncommon			X
Wild asparagus	<i>Asparagus officinalis</i>	Uncommon		X	
Common mullein	<i>Verbascum thapsus</i>	Uncommon	X	X	
Pursh seepweed	<i>Suaeda calceoliformis</i>	Uncommon			X
Dotted blazing star	<i>Liastris punctata</i>	Uncommon		X	





Common chicory	<i>Cichorium intybus</i>	Uncommon	X	X	
Scotch thistle	<i>Onopordum acanthium</i>	Uncommon		X	X
Curlycup gumweed	<i>Grindelia squarrosa</i>	Uncommon		X	
Sage	<i>Artemisia spp.</i>	Uncommon		X	
Poison hemlock	<i>Conium maculatum</i>	Uncommon		X	
Baltic rush	<i>Juncus balticus</i>	Uncommon		X	
Canada thistle	<i>Cirsium arvense</i>	Uncommon		X	
Prickly pear	<i>Opuntia spp</i>	Uncommon	X		
<b>Birds</b>					
Common Grackle	<i>Quiscalus quiscula</i>	Common	X	X	X
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Common	X	X	
Eurasian Collared-Dove*	<i>Streptopelia decaocto</i>	Common	X	X	
American Robin	<i>Turdus migratorius</i>	Common	X	X	
Tree Swallow	<i>Tachycineta bicolor</i>	Common	X	X	
Blue Jay	<i>Cyanocitta cristata</i>	Uncommon	X		
Mallard	<i>Anas Platyrhynchos</i>	Uncommon	X		
Western Meadowlark	<i>Sturnella neglecta</i>	Uncommon		X	
<b>Mammals</b>					
Eastern cottontail rabbit	<i>Sylvilagus floridanus</i>	Common	X	X	X
Fox squirrel	<i>Sciurus niger</i>	Common	X		
Meadow vole (sign)	<i>Microtus pennsylvanicus</i>	Common	X	X	X
Field mouse	<i>Mus musculus</i>	Common	X	X	X
Coyote (sign)	<i>Canis latrans</i>	Uncommon	X		X
Raccoon (sign)	<i>Procyon lotor</i>	Uncommon			X
Deer (sign)	<i>Odocoileus spp.</i>	Uncommon			X
Red Fox (carcass)	<i>Vulpes vulpes</i>	Uncommon			X
<b>Reptiles</b>					
Western terrestrial garter snake	<i>Thamnophis elegans</i>	Common	X	X	X
Common garter snake	<i>Thamnophis sirtalis</i>	Uncommon			X
*This species is not protected by the MBTA Note: Uncommon: fewest individuals observed, Common: individuals regularly observed, Dominant: most individuals observed					

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## Appendix B Site Photographs

	
8/17/16: Vegetation of wetland on O Kalua Rd.	8/17/16: Chicory on O Kalua Rd.
	
8/17/16: Rabbit carcass, most likely a coyote kill	8/17/16: Crawfish remains, most likely a raccoon kill
	
8/17/16: Dotted blazing star on O Kalua Rd.	8/17/16: Location of former Western Meadowlark nest. Young have fledged, site remains unmowed





<p>8/17/16: Small depression containing common garter snake</p>	<p>8/17/16: Fenceline on 0 Kalua Rd. Facing southeast</p>
<p>7/22/16: Southern wetland, looking east</p>	<p>7/22/16: Softstem bulrush in southern wetland</p>
<p>7/22/16: Boulder and Whiterock Ditch, northern bank</p>	<p>7/22/16: Project site, looking east. Site is dry enough to support prickly pear cactus</p>





7/22/16: Boulder and Whiterock Ditch. Reed canarygrass and sandbar willow are present



7/22/16: Boulder and Whiterock Ditch, looking east



6/22/16: Boulder and Whiterock Ditch



6/22/16: Scarlet Gaura



6/22/16: Western Meadowlark active nest in 6500 Twin Lakes Rd



6/03/16: Poison Hemlock on the west side of 6655 Twin Lakes Rd





6/03/16: Juvenile sandbar willows on 6655 Twin Lakes Rd



6/03/16: Squirrel nest in a tree near Boulder and Whiterock Ditch



6/03/16: Former great horned owl nest on Boulder and Whiterock Ditch. This nest is currently in-active.



6/03/16: Alfalfa plants on 6655 Twin Lakes Rd



6/03/16: Informal trail heading northeast towards Twin Lakes on 6655 Twin Lakes Rd





6/03/16: Prickly Lettuce on 6655 Twin Lakes Rd



6/03/16: Informal trail heading southwest away from Twin Lakes on 6655 Twin Lakes Rd



6/03/16: Chokecherry in 6655 Twin Lakes Rd



6/03/16: Depressed rush dominated area on 6655 Twin Lakes Rd



6/03/16: 6655 Twin Lakes Rd looking east.



6/03/16: Wild Asparagus on 6655 Twin Lakes Rd





6/03/16: Meadow vole sign in the rush dominated areas on 6655 Twin Lakes Rd



6/03/16: 6500 Twin Lakes Rd, looking southeast



6/03/16: Field Pennycress on 6655 Twin Lakes Rd



6/03/16: Southern edge of 0 Kalua Rd



6/03/16: Potentially man-made ditch on 0 Kalua Rd



6/03/16: Raccoon sign on 0 Kalua Rd existing wildlife corridor





6/03/16: Deer sign on 0 Kalua Rd existing wildlife corridor



6/03/16: Red fox carcass on 0 Kalua Rd



6/03/16: Coyote scat on informal trail on 6500 Twin Lakes Rd



6/03/16: 6655 Twin Lakes Rd, looking west



6/03/16: Siberian elm in 6500 Twin Lakes Rd, location of red fox carcass



6/03/16: Informal biking trail complex in 0 Kalua Rd





6/03/16: Southern edge of 0 Kalua Rd



6/03/16: Coyote sign on 0 Kalua Rd



3/03/16: Facing west from 6655 Twin Lakes Rd



3/03/16: Signage about the Great-horned Owl nest



3/03/16: Signage about the Great-horned Owl nest



3/03/16: The southern wetland looking southeast from 0 Kalua Rd.





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## **Appendix C**

### Historic Aerial Photos

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## Appendix D

### Threatened Plants Surveyor Qualifications

#### Qualifications of Keith Hidalgo for Ute Ladies'-tresses Orchid and Colorado Butterfly Plant Surveyor

Keith Hidalgo received his Bachelor's Degree in Wildlife Biology and his Master's Degree in Environmental Policy and Management. For this, he took classes in plant identification, forest ecology, natural resources management, and wetland ecology with a focus on plants species of Colorado.

##### Ute ladies'-tresses Orchid

Keith has viewed populations of *Spiranthes diluvialis* along Clear Creek near the intersection of SH 93/US 6 and SH 58 in Golden, Colorado, in August 2009, August 2012, August 2014, and July 2016. During this visit he studied the location of the plants in relation to its partial shade requirements, proximity to the perennial water, flowering patterns, and distinguishing vegetation characteristics of *Spiranthes diluvialis*, such as leaf characteristics. Keith conducted earlier surveys with senior FHU staff and with U.S. Fish and Wildlife Service staff (Alison Michael) to learn about the plant's ecology and habitat that it is found in. Keith conducted the 2016 survey with Brian Fauver and had discussions regarding the life cycle of the plant, known locations, habitat characteristics of the plant, and the general ecology of the plant. Many examples were observed along Clear Creek in July 2016.

##### Colorado Butterfly Plant

Keith has viewed populations of *Gaura neomexicana* ssp. *coloradensis* (now identified as *Oenothera coloradensis* subspecies *coloradensis*) near 103<sup>rd</sup> Avenue and Wadsworth Boulevard in Westminster, Colorado in August 2014 and July 2016. Keith conducted earlier surveys with senior FHU staff and with U.S. Fish and Wildlife Service staff (Alison Michael) to learn about the plant's ecology and habitat that it is found in.

During these visits he studied the location of the plants in relation to a neighboring creek, and compared morphological characteristics of Colorado butterfly plant to similar species, including: small-flowered gaura/velvetweed (*Gaura cordifolia*, now identified as *Oenothera curtifolia*) and scarlet gaura/scarlet beeblossom (*Gaura coccinea*, now identified as *Oenothera suffrutescens*). Both of which are common species in the region.

#### Qualifications of Brian Fauver for Ute Ladies'-tresses Orchid and Colorado Butterfly Plant Surveyor

Brian Fauver received his Bachelor's Degree in Resource Conservation, and is pursuing his Master's Degree in Human Dimensions of Natural Resources. For this, he took classes in plant identification, forest ecology, natural resources management, watershed hydrology, and botany.

##### Ute ladies'-tresses Orchid

Brian has viewed populations of *Spiranthes diluvialis* along Clear Creek near the intersection of SH 93/US 6 and SH 58 in Golden, Colorado, in July 2016. During this visit he studied the



1 location of the plants in relation to its partial shade requirements, proximity to the perennial  
2 water, flowering patterns, and distinguishing vegetation characteristics of *Spiranthes diluvialis*,  
3 such as leaf characteristics. Brian conducted this survey with Keith Hidalgo and had discussions  
4 regarding the life cycle of the plant, known locations, habitat characteristics of the plant, and the  
5 general ecology of the plant. In July 2016 Brian and Keith found limited examples along Clear  
6 Creek. This is due to the drier conditions that existed for 2016.

7  
8 Colorado Butterfly Plant

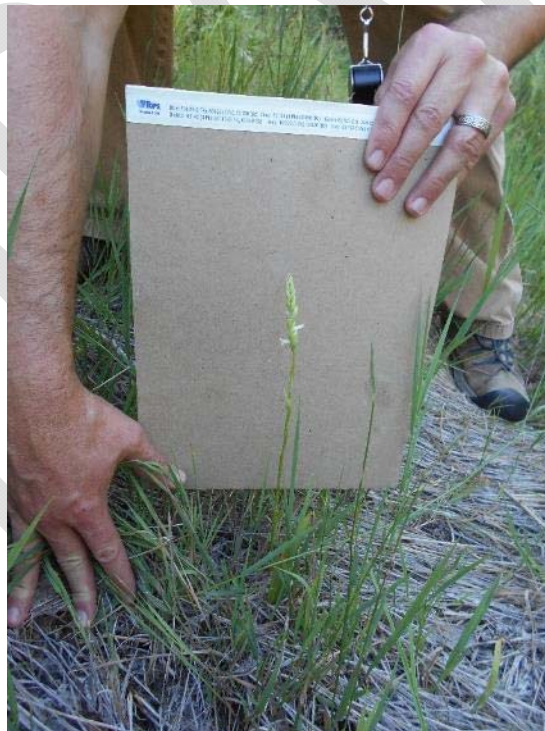
9 Brian has viewed populations of *Gaura neomexicana* ssp. *coloradensis* (now identified as  
10 *Oenothera coloradensis* subspecies *coloradensis*) near 103<sup>rd</sup> Avenue and Wadsworth Boulevard  
11 in Westminster, Colorado in July 2016. During this visit he studied the location of the plants in  
12 relation to a neighboring creek, and compared morphological characteristics of Colorado  
13 butterfly plant to similar species, including: small-flowered gaura/velvetweed (*Gaura cordifolia*,  
14 now identified as *Oenothera curtifolia*) and scarlet gaura/scarlet beeblossom (*Gaura coccinea*,  
15 now identified as *Oenothera suffrutescens*). Both of which are common species in the region.  
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- 1 The following photographs were taken in July 2016 when observing a reference population of *Spiranthes diluvialis* along Clear Creek near the intersection of SH 93/US 6 and SH 58 in Golden, Colorado.
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1. Two Ute Ladies' Tresses Orchids (ULTOs). Shows the lower leaves of ULTO.



2. Individual ULTO.





3. ULTO without the visual aid of a backing board.

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- 1 The following photographs were taken in July 2016 when observing a reference population of *Gaura*
- 2 *neomexicana* ssp. *coloradensis* along a channel near 103<sup>rd</sup> Avenue and Wadsworth Boulevard in
- 3 Westminster, Colorado.



4. Colorado Butterfly Plant (CBP) blooming along the banks of a channel.



5. Close up of CBP flowers and buds.





6. Lower leaves of CBP.

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## Appendix E

### Boulder County Species of Special Concern Provided by Twin Lakes Action Group

Common Name	Scientific Name	Habitat	Nesting Suitability	Detected During Site Surveys
Common Garter Snake	<i>Thamnophis sirtalis</i>	This species occurs in a wide variety of habitats, from lowlands to high mountains: grassland, shrubland, woodland, and open areas in forest. Often it inhabits wetlands and areas near streams, ponds, and lakes.	Suitable habitat across all three parcels.	Detected on the project site.
Meadow Vole	<i>Microtus pennsylvanicus</i>	Found in a wide variety of habitats from dry pastures and wooded swamps to marshes and orchards. Needs loose organic soils for tunneling.	Suitable habitat across all three parcels.	Detected on the project site.
Tiger Salamander	<i>Ambystoma tigrinum</i>	Tiger salamanders can be found in virtually any habitat, providing there is a terrestrial substrate suitable for burrowing and a body of water nearby suitable for breeding. Terrestrial adults usually are underground, in self-made burrows or in those made by rodents, shrews, or other animals.	Potential habitat along Left Hand and Boulder Ditch.	Not detected on the project site.
American Mink	<i>Neovision vision</i>	Favors forested, permanent or semipermanent wetlands with abundant cover, marshes, and riparian zones. Dens in muskrat burrow, abandoned beaver den, hollow log, hole under tree roots, or in burrow dug by mink in streambank.	Potential habitat along Left Hand and Boulder Ditch.	Not detected on the project site.
American Avocet <sup>†</sup>	<i>Recurvirostra americana</i>	Lowland marshes, mudflats, ponds, alkaline lakes, and estuaries. Usually nests on open flats or areas with scattered tufts of grass on islands or along lakes (especially alkaline) and marshes.	There is no suitable nesting habitat within the site.	Not detected on the project site.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Breeding habitat most commonly includes areas close to (within 4 km) coastal areas, bays, rivers, lakes, reservoirs, or other bodies of water that reflect the general availability of primary food sources including fish, waterfowl, or seabirds. Nests usually are in tall trees or on pinnacles or cliffs near water. Tree species used for nesting vary regionally and may include pine, spruce, fir, cottonwood, poplar, willow, sycamore, oak, beech, or others.	There were no existing nests found in or near the site.	Not detected on the project site.





Belted Kingfisher†	<i>Megaceryle alcyon</i>	Primarily along water, both freshwater and marine, including lakes, streams, wooded creeks and rivers. Typically nests in a burrow dug by both sexes in the bank of a creek, river, lake, pond, gravel or sand pit, or embankment of a road or railroad; usually but not always near water.	Potential nesting habitat along Left Hand and Boulder Ditch.	Not detected on the project site.
Brewer's Sparrow†	<i>Spizella breweri</i>	Nesting strongly associated with sagebrush over most of range, in areas with scattered shrubs and short grass. Can also be found to lesser extent in mountain mahogany, rabbit brush, bunchgrass grasslands with shrubs, bitterbrush, ceonothus, manzanita and large openings in pinyon-juniper.	There is no suitable nesting habitat within the site. Project site is outside of this species known range.	Not detected on the project site.
Bushtit†	<i>Psaltriparus minimus</i>	Woodlands and scrub habitat with scattered trees and shrubs. Brushy stream sides, pinyon-juniper, chaparral and pine-oak associations.	Potential nesting habitat along Left Hand and Boulder Ditch.	Not detected on the project site.
Cedar Waxwing†	<i>Bombycilla cedrorum</i>	A wide variety of open woodland types, either deciduous or coniferous, forest edge, second growth, parks, orchards and gardens; in migration and winter occurring wherever there are trees.	Project site is outside of this species breeding range.	Not detected on the project site.
Double-crested Cormorant†	<i>Phalacrocorax auritus</i>	Lakes, ponds, rivers, lagoons, swamps, coastal bays, marine islands, and seacoasts; usually within sight of land. Nests on the ground or in trees in freshwater situations, and on coastal cliffs (usually high sloping areas with good visibility).	There is no suitable nesting habitat within the site.	Not detected on the project site.
Flycatcher species†	<i>Empidonax spp.</i>	Strongly tied to brushy areas of willow ( <i>Salix spp.</i> ) and similar shrubs. Found in thickets, open second growth with brush, swamps, wetlands, stream sides, and open woodland.	Potential nesting habitat along Left Hand and Boulder Ditch.	Not detected on the project site.
Ferruginous Hawk†	<i>Buteo regalis</i>	Open country, primarily prairies, plains and badlands; sagebrush, saltbush-greasewood shrubland, periphery of pinyon-juniper and other woodland, desert. In the southern Great Plains, common at black-tailed prairie dog colonies in winter.	There is no suitable nesting habitat within the site.	Not detected on the project site.
Great Blue Heron†	<i>Ardea herodias</i>	Freshwater and brackish marshes, along lakes, rivers, bays, lagoons, ocean beaches, mangroves, fields, and meadows. Nests commonly high in trees in swamps and forested areas, less commonly in bushes, or on ground, rock ledges, and coastal cliffs.	There is no suitable nesting habitat within the site.	Not detected on the project site.



Great Egret†	<i>Ardea alba</i>	Marshes, swampy woods, tidal estuaries, lagoons, mangroves, streams, lakes, and ponds; also fields and meadows. Project site is outside of this species known range.	There is no suitable nesting habitat within the site. Project site is outside of this species known range.	Not detected on the project site.
Lazuli Bunting†	<i>Passerina amoena</i>	Arid brushy areas in canyons, riparian thickets, chaparral and open woodland; in migration and winter also in open grassy and weedy areas: Nests in small trees, shrubs, or vines, 0.3-3 m above ground.	Potential nesting habitat along Left Hand and Boulder Ditch.	Not detected on the project site.
Long-eared Owl†	<i>Asio octus</i>	Deciduous and evergreen forests, orchards, wooded parks, farm woodlots, river woods, desert oases. Wooded areas with dense vegetation needed for roosting and nesting, open areas for hunting. Often associated with conifers in eastern North America, also with deciduous woods near water in the west.	Potential nesting habitat along Left Hand and Boulder Ditch.	Not detected on the project site.
Northern Flicker†	<i>Colaptes auratus</i>	Open forest, both deciduous and coniferous, open woodland, open situations with scattered trees and snags, riparian woodland, pine-oak association, parks.	Potential nesting habitat along Left Hand and Boulder Ditch.	Not detected on the project site.
Northern Harrier†	<i>Circus cyaneus</i>	Marshes, meadows, grasslands, and cultivated fields. Perches on ground or on stumps or posts. Nests on the ground, commonly near low shrubs, in tall weeds or reeds, sometimes in bog; or on top of low bush above water, or on knoll of dry ground, or on higher shrubby ground near water, or on dry marsh vegetation.	There is unlikely suitable nesting habitat due to nearby developments	Not detected on the project site.
Olive-sided Flycatcher†	<i>Contopus cooperi</i>	Olive-sided flycatchers breed in various forest and woodland habitats: taiga, subalpine coniferous forest, mixed coniferous-deciduous forest, burned-over forest, spruce or tamarack bogs and other forested wetlands, and along the forested edges of lakes, ponds, and streams.	Potential nesting habitat along Left Hand and Boulder Ditch.	Not detected on the project site.
Pine Siskin†	<i>Spinus pinus</i>	Habitats include various forests and woodlands, parks, and gardens and yards in suburban areas. In migration and winter, this species occurs in a variety of woodland and forest habitats, partly open situations with scattered trees, open fields, pastures, and savanna. Nests often are placed about half way up a conifer or deciduous tree and are hidden among outer branches.	Project site is outside of known breeding range. There is no suitable nesting habitat within the project site.	Not detected on the project site.





Plumbeous Vireo†	<i>Vireo plumbeous</i>	Ponderosa pine forests, pinyon-juniper woodlands (especially denser woodlands at the upper elevational range of pinyon-juniper), aspen forests, foothill riparian forests, and Gambel oak shrublands with scattered tall trees; occasionally breeds in lowland riparian forests adjacent to foothills.	There is no suitable nesting habitat within the project site.	Not detected on the project site.
Prairie Falcon†	<i>Falco mexicanus</i>	During winter, falcons use a number of other habitats that are not typical of those used during the breeding season. Dryland wheat fields, irrigated winter wheat and other irrigated croplands also are used for foraging in winter. In all cases, large patches with low vegetation stature characterize the habitats used.	There is no suitable nesting habitat within the site.	Not detected on the project site.
Ring-necked Duck†	<i>Aythya collaris</i>	Marshes, lakes, rivers, swamps, especially in wooded areas. Winters primarily on freshwater and brackish situations of larger lakes, rivers, and estuaries.	There is no suitable nesting habitat within the site.	Not detected on the project site.
Rock Wren†	<i>Salpinctes obsoletus</i>	In arid or semi-arid habitat. In shrubby areas in rocky canyons and cliffs, rock slides, boulder-strewn slopes, arroyos with sparse vegetation. Nests in gopher burrows, rock crevices, cavities under rocks, adobe buildings, etc.	There is no suitable nesting habitat within the site.	Not detected on the project site.
Rough-legged Hawk†	<i>Buteo lagopus</i>	Grasslands, field, marshes, sagebrush flats, and open cultivated areas; sometimes rat-infested garbage dumps.	Project site is outside of this species breeding range.	Not detected on the project site.
Wilson's Warbler†	<i>Cardellina pusilla</i>	Habitat includes semi-open areas in moist woodlands, bogs with scattered trees, willow and alder thickets, and areas with similar vegetation structure. Winter habitats include semi-open or lightly wooded areas, such as the canopy, openings, and edges of forests, second growth, coffee plantations, brushy fields, and yards.	Potential nesting habitat along Left Hand and Boulder Ditch.	Not detected on the project site.
Wood Duck†	<i>Aix sponsa</i>	Quiet inland waters near woodland, such as wooded swamps, flooded forest, green tree reservoirs, ponds, marshes, and along streams. Winters on both freshwater and brackish marshes, ponds, streams, and estuaries. Nests in holes in large trees in forested wetlands, and in bird boxes, usually within 0.5 km of water and near forest canopy openings, sometimes 1 km or more from water.	There is no suitable nesting habitat within the site.	Not detected on the project site.

Source: NatureServe.org, August, 2016

Note: Detections are for animals present and active on-site, some of these species were observed flying overhead toward Twin Lakes or the riparian area south of Twin Lakes and did not stop at the project site.

†These species are protected by the MBTA, as are their **active** nests, young, feathers and eggs. However, the habitat they live in is not protected by the MBTA. Nests can be removed outside of the nesting season when they are no longer active.