

**UNION RESERVOIR
WELD COUNTY, COLORADO**

NATURAL RESOURCES AND HABITAT ASSESSMENT UPDATE

REVIEW OF MASTER PLAN ACTIONS AND RECOMMENDATIONS

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INTRODUCTION

Union Reservoir is a 736 acre body of water managed by the City of Longmont Natural Resources Division. The Reservoir provides many outdoor recreational activities including fishing, swimming, wakeless boating, camping, windsurfing, and picnicking. The Union Reservoir site also supports natural habitats such as open water, shoreline, wetlands, stands of cottonwood trees, and grassland areas, all of which provide wildlife habitat that is otherwise limited in the general vicinity. Originally called Calkins Lake, the reservoir basin was carved and filled during the last glacial age. It is one of a few natural lakes in eastern Colorado. In 1903, the Union Ditch Company drilled a tunnel to release water from the lake into the nearby St. Vrain River. According to Colorado water law, this action made the lake a legal reservoir (Longmont 2011b).

Walsh Scientists and Engineers, LLC (Walsh) has undertaken this study with several objectives. The first is to update previously assessed habitat conditions at Union Reservoir. This update also includes changes in adjacent land ownership, land use, jurisdiction, and potential programming (Longmont 2011b). In addition, proposed recreation improvements per the 2011 Draft Recreational Master Plan were reviewed in terms of potential impacts to natural resources and habitat at Union Reservoir. Finally, Walsh has made recommendations for the Union Reservoir 2011 Draft Recreational Master Plan, in terms of mitigating ecological concerns. Public meetings to discuss the recreational master plan are scheduled for late spring 2011 (Longmont 2011b).

HABITAT ASSESSMENT UPDATE

Site Description

Union Reservoir is located in Weld County, Colorado, approximately seven miles west of Interstate 25. The environmental study area is described with Weld County Road 1 forming the western boundary, City open space east of the reservoir as the eastern boundary, Highway 66 is one-half mile north of the northern boundary, and Highway 119 is one-half mile south of the southern boundary.

The Reservoir is located on the Longmont 7.5 minute U.S. Geological Survey quadrangle map, Sections 30 and 31 of Township 3 North, Range 68 West; and Section 6, Township 2 North, Range 68 West. Parcels surrounding and adjacent to Union Reservoir range in elevation from 4,950 to 4,980 feet.

Methods

Walsh reviewed a habitat assessment for Union Reservoir conducted by ERO in 2006 as part of the previously proposed West Union development, on behalf of Bruns Concrete and Construction, Inc. This included a natural resource site review in May (ERO 2006a), and a habitat assessment in August (ERO 2006b) of a 400-acre area immediately west and northwest of Union Reservoir (Figure 1). Walsh ecologists conducted three visits to the Union Reservoir site in the spring of 2011 including a site reconnaissance on April 19; an assessment of two black-tailed prairie dog colonies, and a burrowing owl call survey south and east of the reservoir on April 26; and a qualitative tour of Union Reservoir's perimeter via boat on May 2. During all site visits, the results of the previous assessment were compared to current conditions and ecological features of note were recorded, including use by raptors and other birds, bird nests, and potential or occupied habitat for special status species. In addition, Walsh ecologists procured a current Google Earth image of the area (Google Earth, 2010) to compare against aerial images integrated into the 2006 ERO assessment.

The following background information was provided by the City of Longmont and referenced for this report:

Table 1. Background Information

Author	Title
City of Longmont	http://www.ci.longmont.co.us/parks/comm_involve/board/agendas/documents/UnionResSPECIALEVENTPOLICY.prab1-10-11pdf.pdf . 2011.
City of Longmont	http://www.ci.longmont.co.us/parks/park_list/overview/union.htm . 2011
City of Longmont	Union Reservoir Cottonwood Inspection. 2008.
City of Longmont	Ranger Bald Eagle Sitings. 2007-2008
City of Longmont	Special Event Policy and Event Guidelines for City-Owned Regional Event Site South of Union Reservoir. 2011.
Colorado Division of Wildlife	http://wildlife.state.co.us/Fishing/MandatoryBoatInspections.htm . 2011.
Colorado Division of Wildlife	Letter from Area Wildlife Manager, Larry Rogstad: Heaven Fest Use of Public Places Special Events Application. March 5, 2010.
Colorado Division of Wildlife	Bald Eagle Winter Nighttime Roost Watch data--Union Reservoir 2007-2008. Letter from Mike Sherman (Wildlife Conservation Biologist) to Paula Fitzgerald, City of Longmont. July 1, 2008.
Colorado Division of Wildlife	West Union Longmont Planning Area Amendment. January, 2007.

Table 1. Background Information

Design Concepts	Union Reservoir Recreational Master Plan Update – Draft Revised Master Plan. March 23, 2011.
ERO Resources Corporation	Natural Resources Site Review, West Union Reservoir, Weld County, Colorado. May 17, 2006.
ERO Resources Corporation	Threatened and Endangered Species Habitat Assessment, West Union Reservoir, Weld County, Colorado. August 30, 2006.
ERO Resources Corporation	Summary Memo: Union Reservoir Environmental Issues. October 4, 2007.

Habitat and Land Use Assessment

ERO identified 16 parcels based on the last name of the property owner (Figure 2). These lands are either privately-owned, controlled by or owned by the City of Longmont (City). The parcels comprise rural residential homes, agricultural production, commercial nurseries, and recreational facilities associated with Union Reservoir (ERO, 2006a). Land use under private ownership is mainly historic or active agricultural production including livestock grazing, hay production, land cultivation, and associated ditches. ERO noted and delineated native wetland vegetation occurred between the reservoir high and low waterlines, dominated by cattails (*Typha latifolia*) and sandbar willows (*Salix exigua*).

The majority of land use in the vicinity of Union Reservoir is still agriculture but ownership and land use on some parcels has changed. City of Longmont now owns Adrian parcels #1, #2, and #3 as well as the Bogott parcel which includes Wetland 1 (Figure 2). Primary land use on portions of the Doecheff and Dick parcels remains in active agriculture with irrigated pasture dominated by introduced pasture grass species including smooth brome (*Bromopsis inermis*) and intermediate wheatgrass (*Agropyron intermedium*) used for hay production and cattle grazing. The Flores' home, corrals, and outbuilding use appears unchanged. No water was observed in the Steinke parcel irrigation ditch in May 2011. The Steinke parcel is now surrounded by a City-owned parcel to the north, east, and south (formerly the Bogott parcel).

The Kelliher parcel east of the home is still an inactive agricultural field. Although the area west of the home supported little or no vegetation in June 2010, the land appears actively cultivated. Land use on the Braesch parcel, Willis parcel #2, and Longmont parcels #1, #2, and #3 is still inactive agricultural fields. Willis parcel #1 irrigated and planted with alfalfa (*Medicago sativa*) in 2006 is still in active use.

Adrian parcel #1 and eastern portions of Adrian #2 were fallow in 2006 and the western portion of Adrian #2 and all of Adrian #3 were being cultivated. As mentioned previously, these three parcels are now owned by the City. Adrian parcel #4 was cultivated in 2006 but currently appears inactive. A large active construction zone north of 9th St. on the former Adrian parcel #1 was observed this year as part of the County Line Road widening project.

A stand of mature cottonwood trees on City land (formerly Adrian parcel #2) on the western side of the Reservoir was identified by ERO in 2006 (Figure 2). It has been verified by Colorado Division of Wildlife (CDOW) that bald eagles were not using these trees for a nighttime roost at the reservoir (CDOW 2008a). Additional surveys by Union Reservoir rangers concurrent with CDOW surveys documented foraging activities but not roosting behavior.

Potential Wetlands and Waters of the U.S.

Extent of wetland vegetation observed along Spring Gulch and drainage channel, the Oligarchy Ditch and diversion channel, and the Union Reservoir Ditch in the southern portions of the study area has not changed notably since 2006. In northern reaches of the previous assessment area, wetland vegetation along an unnamed tributary flowing through a culvert under Weld County Road 28 and into Union Reservoir looks similar in extent. Vegetation in the large cattail marsh wetland associated with Union Reservoir east of the Doecheff and Dick parcels also appears similar in extent. Flow in the two roadside

ditches along Weld County Road 28 is unchanged; the northern ditch flows into the unnamed tributary and the cattail-dominated wetland and the southern ditch flows into the cattail-dominated wetland.

Section 404 Permitting

As discussed by ERO, under Section 404 of the Clean Water Act (CWA) administered by U.S. Army Corps of Engineers (USACE), a permit is required for discharge of dredged or fill material into wetlands and other waters of the U.S. (i.e., all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to the these waters, and all impoundments of these waters). In addition, due to growth along the Colorado Front Range and associated decreases in natural drainages and floodplains, the Denver Regulatory office of USACE is now focusing on floodplain protection. The Denver USACE office emphasizes avoidance and minimization of indirect effects to aquatic ecosystems. They now require project proponents establish setbacks (50 feet minimum recommended) from wetlands and waters of the U.S. for protection from construction and long-term disturbances.

If any potential wetlands and waters of the U.S. would be impacted by proposed project activities, they should be delineated following the *1987 Corps of Engineers Wetland Delineations Manual* and a request for a Jurisdictional Determination of such be submitted to USACE for confirmation. In the previous assessment, several potential wetlands and waters of the US were identified. An additional area was identified in 2011. These areas are delineated in Figure 2 and described below. Photographs of these areas are included in the attachment to this report.

Unnamed Tributary to Union Reservoir

In 2006, emory sedge (*Carex emoryi*), saltgrass (*Distichlis spicata*), rabbitfoot grass (*Polypogon monspeliensis*), and curly dock (*Rumex crispus*) were observed along the tributary (ERO 2006a). The same wetland conditions and vegetation were observed in 2011 (Photo 1).

Because this tributary has wetland vegetation, a defined channel bed and bank, and a surface flow and connection to waters of the U.S., it is likely under jurisdiction of USACE.

Union Reservoir

Wetland vegetation between the low and high water marks along the western edge of Union Reservoir consists of cattails, three-square (*Schoenoplectus pungens*), and sandbar willows (Photo 2). In the large cattail-dominated wetland marsh in the northwestern portion of the reservoir, species observed included Baltic rush (*Juncus balticus*), spike rush (*Eleocharis* sp.), and three-square (ERO 2006a). In 2011, bulrushes (*Schenoplectus* spp.) were also observed in this area (Photo 2).

Because Union Reservoir has a surface connection to Saint Vrain Creek via the Union Reservoir Ditch, the reservoir and associated wetlands would likely be under the jurisdiction of USACE.

Wetland 1

Wetland 1, occurring in a low-lying area on what is now City property, was not assessed during 2011 surveys. In 2006, cattails, saltgrass, and three-square were observed in this area (ERO 2006a). Surface water associated with the Bogott property flood irrigation practices was thought to support this area (ERO 2006a). Now under City management, wetland vegetation extent may have shifted as a result of changes in land use practices.

Because suitable habitat for Ute ladies'-tresses orchid, a federally threatened species (USFWS 2010), was present within portions of the Dick and formerly Bogott parcels in 2006 (ERO, 2006b), a presence/absence survey for its presence should be conducted within these parcels. USACE jurisdiction should be verified before conducting surface disturbing activities.

Roadside Ditches

Wetland characteristics including an ordinary high water mark (OHWM), wetland vegetation, and a surface connection to Union Reservoir observed by ERO in 2006 were also present in 2011. As such, these areas should be confirmed for USACE jurisdiction before disturbance.

Wetland 2

Wetland 2 occurs in the northwestern portion of on the Steinke parcel and is associated with a shallow, actively-managed irrigation ditch with surface connection to Union Reservoir. The extent of wetland vegetation appears to have contracted since 2006. Sandbar willow stems in the ditch channel have been cut. The ditch was dry in 2011 with stands of saltgrass and dead sandbar willow shoots along the edges (Photo 3). This ditch may no longer be used to flood irrigate the former Bogott property now that the City owns this parcel.

Walsh concurs with ERO (ERO 2006a) in the recommendation that USACE be requested to conduct a jurisdictional determination of these geographically isolated waters and wetlands, should the area be potentially impacted by future development decisions. In addition, a presence/absence survey for Ute ladies'-tresses should be conducted.

Spring Gulch

Spring Gulch flows from northwest to southeast across the southern portion of the Union Reservoir area. (Figure 2) and appears on the U.S. Geological Survey (USGS) topographic map as an intermittent tributary to Saint Vrain Creek.

A drainage channel with a surface connection to Spring Gulch is present along the south side of Weld County Road 26. Because Spring Gulch has wetland vegetation, a surface flow, and connection to the Saint Vrain Creek, it is likely jurisdictional to USACE.

Oligarchy Ditch and Diversion Channel

The Oligarchy Ditch enters the study area from Boulder County to the west through a culvert under Weld County Road 1. The water is mainly directed southeast, but a small amount flows into a diversion channel flowing into Union Reservoir (ERO 2006a). This ditch and diversion channel support narrow fringes of herbaceous wetland plants along their banks. In 2006, ERO observed emory sedge and meadow foxtail as well as small patches of sandbar willows and cattails in overbank areas along the diversion channel.

Because the Oligarchy Ditch does not act as the sole conveyance to any streams prior to reaching the study area, it is unlikely that USACE would claim jurisdiction over the ditch and diversion channel but this should still be verified with USACE.

Twenty-five cottonwood trees north of the ditch and around the sail boat storage area and the campground were inspected in late 2007 and early 2008 by City foresters (Paula Fitzgerald, personal communication, May 2011; Longmont 2008a). Of these, 17 had an estimated life expectancy of less than 20 years. Eight trees had a life expectancy of more than 20 years. Three trees were recommended for removal due to hazard potential.

Wetland 3

In 2006, vegetation in the channel included cattails, softstem bulrush (*Schoenoplectus lacustris* subsp. *acutus*), American speedwell (*Veronica americana*), and three-square. In 2011, the area was observed to have been burned. The extent of this cattail-dominated wetland has changed from an east-west linear extent to a L-shape with branches extending west as well as south. Wetland 3 no longer extends as far toward the west (Photos 4 and 5).

Because the drainage channel has wetland vegetation, a surface flow, and connections to St. Vrain Creek via Spring Gulch and Union Reservoir Ditch, it would likely be under USACE jurisdiction (ERO 2006a).

Union Reservoir Ditch

Union Reservoir Ditch flows south from Union Reservoir adjacent to the southeastern edge of the previous habitat assessment boundary. In 2011, whitetop or hoary cress (*Cardaria draba*) was observed growing on the upper slopes near the metal outlet structure at the northeast portion of Union Reservoir Ditch (Photo 6). Whitetop is listed for control on the Colorado Noxious Weed List B (CDA 2011) and the Weld County Control Weed Species- List B (Weld County 2011).

Spring Gulch flows into this ditch at the southeast corner of the previous habitat assessment boundary. Because Spring Gulch appears as a perennial tributary to the St. Vrain on the USGS topographic map, it would likely be under USACE jurisdiction (ERO 2006a).

Additional Assessment: South, East, and North Reservoir Areas

The following sections provide information and an assessment of ecological resources not addressed in the previous habitat assessment by ERO.

South Perimeter

A prairie dog colony occurs on City property near the south perimeter of the reservoir site (Photo 7). During a single burrowing owl call survey conducted on April 26, 2011 in accordance with protocol recommended by CDOW (CDOW 2008), Walsh did not detect burrowing owls in the active prairie dog colony.

East Perimeter

The eastern shoreline is mainly City-owned, with the exception of the Lindberg parcel (Figure 2). A black-tailed prairie dog colony near the east perimeter and sail club area appears to occur on both City land as well as the Lindberg parcel. The prairie dogs are concentrated in the western portion of this space but appear to be expanding eastward where the land is tilled and looks to be in active agriculture (Photo 8).

Near a constructed osprey (*Pandion haliaetus*) platform, the eastern shoreline supports a band of wetland vegetation dominated by cattails. In May 2011, a nesting pair of ospreys was utilizing the platform and nearby willow trees (Photo 9).

Mature cottonwoods occur on the former French property. These trees were also surveyed in late 2007 and early 2008 for hazard trees by City foresters (Longmont 2008). Data showed 36 mature cottonwoods, none of which were considered hazardous. Twelve additional mature cottonwoods occur around the farmhouse property.

Along much of the eastern shoreline herbaceous wetland vegetation is well established and serves as a buffer between the open water and the adjacent City-owned agricultural fields. North of the osprey platform, the shoreline consists of a sandbar willow shrub layer, deadfall, herbaceous wetland vegetation including cattails and bulrushes, and rip rap. The structure, shade, and insects associated with this vegetation provide good aquatic and marsh habitat for wildlife as well as a good area for fishing (Photo 10).

North Perimeter

The northern shoreline is a mix of privately-owned and City-owned parcels. These parcels are mostly agricultural fields, former agricultural fields, or residential backyards. Between the reservoir's high and low watermarks, the northern shoreline (between the Unnamed Tributary and the Docheff Dairy) and northeast shoreline (near the Welsch and Walter properties) supports a wide swath of wetland vegetation extending away from the open water toward residential backyards along its shoreline and agriculture parcels on adjacent land (Photo 11). These cattails and bulrushes are intermittent. In some places through here, agriculture and residential land use extends directly to the edge of the reservoir. In these areas, a wetland vegetation buffer is absent and wave action with resulting erosion is apparent along the shoreline (Photo 12).

Wetland 4 was identified along the north shoreline, south of Weld County Road 28. This small wetland scrape supports cattails and other herbaceous wetland vegetation (Photo 13) and appears to have a surface connection to Union Reservoir and may receive sustaining hydrology via a pipe under the road, as well as road surface runoff.

Because it has wetland vegetation and appears to have a surface connection to Union Reservoir, it would need to be verified by USACE to determine jurisdiction before disturbing the site.

Potential Special Status Species

Federally threatened, endangered, and candidate wildlife and plants under the Endangered Species Act (ESA) with potential habitat in the 2011 Draft Recreational Master Plan area were considered for this report. Significant adverse effects to a federally listed species or its habitat requires consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA. The USFWS deemed several species as not likely to occur at the reservoir due to lack of preferred habitat in a letter to ERO dated September 20, 2006 (USFWS 2006). These species include Mexican spotted owl (*Strix occidentalis lucida*), Canada lynx (*Lynx canadensis*), black-footed ferret (*Mustela nigripes*), greenback cutthroat trout (*Oncorhynchus clarki stomias*), and Colorado butterfly plant (*Gaura neomexicana* spp. *Coloradensis*). Additionally slender moonwort (*Botrychium lineare*), a federal candidate species for listing in 2006 (ERO, 2006b) was not observed. Slender moonwort is no longer listed in Colorado by the USFWS.

Five additional endangered or threatened species, including the interior least tern (*Sterna antillarum athalassos*), piping plover (*Charadrius melodus*), whooping crane (*Grus americana*), pallid sturgeon (*Scaphirhynchus albus*), and western prairie fringed orchid (*Platanthera praeclara*) rely on habitat provided by the Platte River system. These species are not present at the reservoir. However, changes to rivers and lakes due to irrigation, canal construction, and dams have led to decline of these species. Thus, projects that result in depletions to the Platte River system, including the South Platte River and its tributaries, could potentially result in secondary impacts to these species or habitat. Potential activities that could result in depletions include but are not limited to water diversion; storage and use activities; and land use activities such as detention facilities, dust abatement, and wetland mitigation. It is unknown whether activities associated with the 2011 Draft Recreational Master Plan would cause depletions to the Platte River system. For all activities in the Platte River basin, the USFWS has developed guidance, including the 'de minimus depletions threshold.' This guidance states that water-related activities resulting in less than 0.1 acre-foot per year of depletions in flow to the nearest surface water tributary to the Platte River system do not affect the Platte River target species, and thus do not require consultation with the USFWS for potential effects on those species (USFWS 2009).

Walsh biologists evaluated CDOW state endangered, threatened and species of special concern when potential habitat was detected. Five species fit these criteria and are listed in Table 2 and discussed further below.

Table 2. Special Status Species with Potential to Occur in Weld County, Colorado.

Common Name	Scientific Name	Listing Status*	Habitat Present
bald eagle	<i>Haliaeetus leucocephalus</i>	DL, SC	Potential
burrowing owl	<i>Athene cunicularia</i>	ST	Potential
black-tailed prairie dog	<i>Cynomys ludovicianus</i>	SC	Present
northern leopard frog	<i>Rana pipiens</i>	SC	Potential
Ute ladies'-tresses orchid	<i>Spiranthes diluvialis</i>	FT	Potential

*DL = Delisted, ST = State Threatened, SC = Special Concern (non-statutory), FT = Federally Threatened.

Source: USFWS 2010, CDOW 2010a.

Bald Eagle

Current Status

On August 9, 2007, the bald eagle was removed from the federal list of threatened and endangered species however it continues to be protected under the Migratory Bird Treaty Act (MBTA) and the Bald

and Golden Eagle Protection Act (BGEPA). It was removed from the Colorado State Endangered List in 2009 (CDOW 2011) but it continues to be a state species of special concern (a non-statutory status).

Potential Habitat

CDOW has documented Union Reservoir as within the overall winter range, winter foraging and winter concentration areas for bald eagles (CDOW 2009). Wintering eagles use large trees around the reservoir as hunting perches. CDOW conducted a winter roost assessment for Union Reservoir from December 20, 2007 to March 7, 2008 and concluded that no overnight roosting occurred by bald eagles (CDOW 2008a). Concurrent with the CDOW survey, City of Longmont maintained a list of bald eagle counts from November 27, 2007 to March 9, 2008. These counts documented foraging individuals generally ranging from zero to ten individuals. During a period of fish die off from February 24 – March 1, 2008, foraging birds ranged from eight to 28 individuals. Similar to the CDOW study, City of Longmont found no indication of any of these large groups using the Reservoir as nighttime roosts; rather they were exploiting the area's food resources (Longmont 2008b).

A communal winter roost of bald eagles is documented along the Saint Vrain Creek approximately 1.3 miles southeast of Union Reservoir in portions of Sections 8 and 9, Township 2 North, Range 68 West. The CDOW also documents Saint Vrain Creek as roosting habitat in areas of tall trees along an eight mile stretch of the riparian corridor starting at North 119th Street in Boulder County and continuing east into Weld County ending 1.5 miles east of Interstate 25 (NDIS 2009). CDOW recommends a 0.25 mile buffer around active roosts of both type and Union Reservoir lies well outside the recommended buffer (CDOW 2008b).

An active bald eagle nest is located 1.6 miles to the southwest of Union Reservoir in the southeast quarter of Section 12, Township 2 North, Range 69 West. The reservoir is well within the average territory size reported for nesting bald eagles in the west (Buehler 2000). Fish stocking programs, waterfowl concentrations, and the presence of black-tailed prairie dogs on the eastern side of the reservoir provide multiple foraging opportunities for the pair associated with this nest. CDOW recommends a 0.25 mile buffer around active nests and the reservoir lies well outside that buffer (CDOW 2008b).

Burrowing Owl

Current Status

The burrowing owl is currently a state listed threatened species due to the loss of preferred habitat, black-tailed prairie dog colonies. It receives federal protection under the MBTA.

Potential Habitat

Active prairie dog towns that occur to the south and the southeast of the reservoir could host burrowing owls in the future. No burrowing owls were detected in 2011.

Black-tailed Prairie Dog

Current Status

The black-tailed prairie dog is a state species of special concern due to habitat loss, disease, poisoning and recreational shooting.

Potential Habitat

As noted, two active colonies occur within the area contained within the 2011 Draft Recreational Master Plan. This species has adapted from preferred native grassland habitat to disturbed open habitats.

Northern Leopard Frog

Current Status

The northern leopard frog is state species of special concern due to habitat loss, introduced species, and climatic conditions (Hammerson 1999).

Potential Habitat

Potential habitat occurs along the banks of irrigation ditches and reservoir edges.

Ute ladies'-tresses orchid

Current Status

Ute ladies'-tresses is a federally threatened species (USFWS 2010). As was recommended by ERO and concurred upon by the USFWS in 2006, Walsh recommends that surveys be conducted for the orchid in suitable habitat within the Dick and the former Bogott parcels.

Potential Habitat

In Colorado, the Ute ladies'-tresses orchid occurs in sub-irrigated alluvial soils along streams and in open meadows in floodplains, and around springs and lakes ranging in elevations between 4,800 and 6,800 feet (CNHP 2011). The habitat is generally open vegetation cover. This species does not typically establish in dense or overgrown sites.

Raptors and Migratory Birds

The water, wetlands and trees provide foraging, roosting and nesting habitat for a diversity of bird species. Data submitted to the Cornell Laboratory of Ornithology (2011) documents 199 species occurring at Union Reservoir. Many of these are transitory in nature only pausing to rest at the reservoir in migration. Another 40 or so species or so regularly nest in the varied habitats of the Reservoir including marsh, field, riparian trees and human-made structures (buildings, culverts, etc.). All native birds are afforded protection under the MBTA.

During the site reconnaissance visits, Walsh biologists observed a variety of water and wetland dependant migratory birds including but not limited to American white pelican (*Pelecanus erythrorhynchos*), white-faced ibis (*Plegadis chihi*), Franklin's gull (*Leucophaeus pipixcan*), and willet (*Tringa semipalmata*). Several probable breeding birds observed in wetland habitat at the reservoir included western grebe (*Aechmophorus occidentalis*), pied-billed grebe (*Podilymbus podiceps*), marsh wren (*Cistothorus palustris*), red-winged blackbird (*Agelaius phoeniceus*), and yellow-headed blackbird (*Xanthocephalus xanthocephalus*). During the 2.5 hour survey period, a total of 36 species were observed representing 14 families of birds and highlighting the diversity of birdlife utilizing Union Reservoir.

An osprey platform with an active nest was noted by Walsh biologists at approximately N40.181630°, W105.028418°. No other raptors were observed nesting at the Union Reservoir site.

Components Associated with the Expanded Reservoir Acre Feet

This report does not address the following components as they are associated with the expansion of the reservoir acreage:

- The 13 foot rise in the reservoir water level and the associated expansion of acreage;
- The proposed reservoir dam;
- The proposed relocation of Oligarchy ditch
- The proposed re-alignments of County Roads 26 and 28.

REVIEW OF MASTER PLAN ACTIONS AND RECOMMENDATIONS

The following section present recommendation for implementation of improvements discussed in the current Union Reservoir Master Plan, organized and grouped by major geographical components to the reservoir site.

Permitting

As noted by ERO, prior to implementing surface disturbing activities the City will need to obtain any required permits for wetland impacts from USACE and would need to provide the required mitigation for wetlands and wildlife as required by the City of Longmont, USACE, CDOW, and the USFWS (ERO 2006a, 2006b, 2007).

Because suitable habitat for Ute ladies'-tresses orchid was present within portions of the Dick and formerly Bogott parcels in 2006 (ERO, 2006b), a presence/absence survey for this species presence should be conducted within these parcels before carrying out surface disturbing activities.

Special Events

Factors associated with large events have the potential to be inconsistent with open space criteria for low-impact recreational use. This is especially true when these events are planned to occur on properties such as Union Reservoir which is a major reservoir and contains lands identified as sensitive areas for wildlife (Longmont 2002). Potential impacts include surface disturbance and noise generated by the use of heavy equipment for event preparation and the potential for the introduction of noxious weeds. Noise and general commotion generated by large numbers of humans and pets and disturbing potential nesting, resting, hunting and night perches for a variety of raptors. In addition, costs associated with site reclamation, as seen in past events such as Heaven Fest in August 2010, is also an example of a potential impact to open space.

In the draft guidance entitled 'Special Event Policy and Event Guidelines for City-Owned Regional Event Site South of Union Reservoir,' the City has developed sound and comprehensive draft guidance addressing anticipated impacts to environmental resources (Longmont 2011a). Special events within the vicinity of Union Reservoir will only be held on land south of the reservoir, on land managed by City of Longmont Water Department and slated for future reservoir expansion. In the context of Union Reservoir resource management, as long as large events are conducted in compliance with the draft guidelines, events should not be inconsistent with City of Longmont environmental goals.

Applicable guidelines from the draft guidance document include:

1. Preserve and protect Union Reservoir and adjacent City-owned property from excess damage and overuse;
2. Protect the wildlife and environment at Union Reservoir by restricting access to sensitive wildlife habitat areas and limiting special events to between specific times of the year (July 1 through September);
3. Ensure that BMPs are utilized to prevent erosion on the site, ensure that drainage from the site does not impact water quality and that events do not interfere with the operation of irrigation ditches and gates utilized to control the flow of water;
4. Preserve and protect the environment by encouraging the use of recycling and composting efforts;
5. Preserve and protect the environment by encouraging the use of multiple modes of transportation;
6. In order to protect sensitive wildlife and environmental areas on the north end of Union Reservoir, hiking trails around Union Reservoir may be restricted during special events to prevent participants from accessing those areas;

7. Any request for use of the City-owned land south of Union Reservoir shall include a conceptual mitigation plan for environmental impacts (i.e. water quality, erosion, dust control, etc).

West Perimeter (Previous Habitat Assessment Area)

- In order to minimize disruption and impacts to roosting and nesting birds in the cattail wetlands in the north and northwest, consider utilizing additional fencing or signage to keep people and dogs out. Minimize access to reservoir shoreline in all wetland vegetation habitat areas. This type of mitigation has been effective at Lake McIntosh.
- Consider constructing a bird blind near the northwest cattail marsh to minimize impacts but still allow limited human access for avian wildlife viewing.
- Any hazard trees considered for removal must be inspected for nesting raptors and songbirds and nesting allowed to complete under protections afforded by the MBTA.

South Perimeter

- For the trail right-of-way (ROW) extending along the eastern edge of Union Reservoir Ditch, the City's 2011 Draft Recreational Master Plan design complies with the recommended minimum 100 foot buffer designed to protect wildlife from the construction and post-construction disturbance associated with the trail (CDOW 2007).
- If burrowing owls are found utilizing either the south or the east prairie dog colony, CDOW recommends two options to protect nesting owls (CDOW 2008c):
 1. Wait to initiate activities until after November 1 or until it can be confirmed that the owls have left the prairie dog town.
 2. Carefully monitor the activities of the owls, noting and marking which burrows are in use.

The latter option is not easy to implement and will require considerable time, as the owls may use several burrows in a prairie dog town. When all active burrowing owl burrows have been located and marked, activity can proceed in areas greater than 150 feet from the burrows with little danger to the owls. Activity closer than 150 feet may endanger the owls.

- For any new plantings in and around proposed infrastructure, consider using native trees and shrubs.
- Develop Best Management Practices (BMPs) for weed control including an annual monitoring schedule during and after construction for the proposed southern recreational development area. Include weed management BMPs in 'revised draft southwest area' infrastructure (e.g. parking lots, trails, roads, boat storage, launch areas, etc.) development schedules (Colorado Natural Areas Program 2000, CDA 2001, Weld County 2011).
 - Weed BMPs should include control or eradication of established populations of noxious weeds such as the whitetop occurring near Union Reservoir Ditch. Noxious weed control guidance is available from the Weld County Public Works Department (Weld County 2011).
- Follow City of Longmont guidelines for run-off and sediment loading into the reservoir, ditches, and tributaries associated with construction and maintenance activities.

- Grading plans for parking lots should have positive drainage away from the reservoir. This is especially important at the sailboat trailer launch area.
- Consider constructing all impervious surfaces (parking lots and roads) with porous pavement to reduce run-off and erosion.
- Consider creating a swale or vegetation buffer along the east side of the 120-car parking area to serve as a receiving area for run-off.
- Develop BMPs for traffic control and emissions abatement during hottest daytime hours.
- Any hazard trees considered for removal must be inspected for nesting raptors and songbirds and nesting allowed to complete under protections afforded by the MBTA.

East Perimeter

- An osprey platform with an active nest was noted by Walsh biologists at approximately N40.181630°, W105.028418. To remain compliant with the MBTA, CDOW recommends “no surface occupancy (beyond that which historically occurred in the area) within ¼ mile radius of active nests” and a “seasonal restriction to human encroachment within ¼ mile radius of active nests from April 1 through August 31.”

There are several options available for sections of the loop trail that fall within ¼ mile of the osprey platform. First, the trail could remain where it is but these sections should be marked for seasonal closure between April 1 and August 31 during nesting season. Second, the trail could be reconfigured here so that it falls outside the one quarter mile buffer zone. Finally, the osprey platform could be relocated. If the City opts to move the platform, this should be done outside of nesting season if occupied. It should be noted that the actual osprey nest material may not be moved without a permit from the USFWS under the regulations of the MBTA. The nest material may be dismantled outside nesting season without penalty and material left for the osprey pair to collect and rebuild the nest at a new platform location.

- The black-tailed prairie dog colony east of the sail club area is already extending east and appears to be affecting both City and private parcels. The ‘draft revised east area’ of the master plan update could further encroach on this prairie dog colony. Consider developing a colony and site specific management plan for these prairie dogs using the categories laid out on pages 40 through 43 of Longmont’s Wildlife Management Plan (Walsh 2005), e.g., preserve, actively manage/replace, actively manage/exclude, remove/relocate, remove/euthanize, exterminate.
- Consider using native trees and shrubs for any new plantings in and around proposed infrastructure.
- Develop Best Management Practices (BMPs) for weed control including an annual monitoring schedule during and after construction for the proposed east recreational development area. Include weed management BMPs in ‘revised draft east area’ infrastructure (e.g. parking lots, trails, roads, campgrounds, other proposed facilities) development schedules. References: Colorado Natural Areas Program, 2000; Colorado Department of Agriculture, 2001; Weld County Department of Public Works, 2011.
- Follow City of Longmont guidelines for run-off and sediment loading into the reservoir, ditches, and tributaries associated with construction and maintenance activities.
- Grading plans for parking lots, roads, and turn around areas should have positive drainage away from the reservoir. This is especially important at the boat trailer launch area.

- Consider constructing all impervious surfaces (parking lots, roads, and turn around areas) with porous pavement to reduce run-off and erosion.
- Consider creating a swale or vegetation buffer east of the parking lots to serve as a receiving area for run-off. Depending on topography here, the swale or vegetation buffer could be either east or west of the entrance road.
- Use BMPs provided by CDOW to develop procedures for cleaning, drying, and draining watercraft (boats and trailers) before entering the water in order to prevent introducing invasive species, e.g., zebra mussels and quagga mussels, to Union Reservoir (CDOW 2011). This includes if out of state boaters are coming to use the reservoir, ensure green inspection seal is up to date and visible.
- Create a swale either between parking lots and the road that leads north from the ranger office to the camping areas (entrance road), or east of the road so run off from parking lots does not flow east across the road
- Having a vegetation screen between RV and tent camping areas is a good idea. Plant the screen with native shrub and trees species and maintain the area over the long term so that it can also serve as a noise buffer between the two areas.
- Consider setting the RV camping area back further away from the water's edge so that it is on the east side of the entrance road.

Leaving this space undeveloped will provide an opportunity to create a “wild” space within the east recreational area between the RV camping and the shoreline. The “wild” area could consist of wetland vegetation along the shoreline (horizontal structure) and drier grasses, shrubs, and trees further upslope and away from the shoreline (vertical structure):

- This area would help reduce noise pollution (idling engines, back up signaling, voices) both in the surrounding east recreation areas and especially across the surface of the reservoir for humans and wildlife,
 - The “wild” space would be an opportunity to create one to three isolated public access foot trails leading from the RV camping area through the “wild” area to the water's edge,
 - Because the “wild” space would create more wildlife habitat (both along the shoreline as well as in upland area), it would also create more opportunities for the public to view wildlife in the east recreation area.
- Develop BMPs for traffic control and emissions abatement during hottest daytime hours.
 - Any hazard trees considered for removal must be inspected for nesting raptors and songbirds and nesting allowed to complete under protections afforded by the MBTA.

North Perimeter

- Signage extending east-west along open water at north of the reservoir is well placed.
- City of Longmont signage should indicate protection of aquatic and marsh wildlife from boat, trail, and other recreational disturbance.
- The 2011 Draft Recreational Master Plan proposes creating varied shoreline enhancement in the northeast of the reservoir – a good solution for addressing erosion issues. In these places on City-owned or City-controlled properties where there is no vegetation break to absorb wave action and

prevent erosion, shoreline structure would be enhanced by planting native marsh species and using the local seed source available from the reservoir.

Entire Union Reservoir Perimeter

- Agricultural lands surround the majority of the reservoir. Management of agricultural open spaces provides a buffer from surrounding communities and can help off-set the impacts of the proposed southwest and east recreational areas developments. Specifically, agricultural lands around the reservoir provide opportunities for education about local rural history, provide edge habitat for many generalist wildlife species, and provide wildlife travel corridors to adjacent areas. Now that the City has acquired the majority of these lands, long-term management of agricultural spaces, including working with adjacent land owners, should be the focus for the master plan (Longmont, 2002).

Other than the platform with a nesting pair of ospreys, no raptor nests were observed in the vicinity of the loop trail in May 2011. Before trail construction begins, consider that should any nesting raptors be present in the vicinity of the planned trail right of way, Walsh recommends following CDOW buffer requirements and nesting timing limitations specified for particular species (CDOW 2008b).

- Develop Best Management Practices (BMPs) for weed control including an annual monitoring schedule during and after construction for the proposed loop trail. Include weed management BMPs in the loop trail construction schedule. References: Colorado Natural Areas Program, 2000; Colorado Department of Agriculture, 2001; Weld County Department of Public Works, 2011.
- Adopt general recommendations for protection of wildlife and habitat contained within the CDOW letter of January 17, 2007 (noting that several recommendations for certain special status species no longer apply due to further evaluation post letter submission) (CDOW 2007).

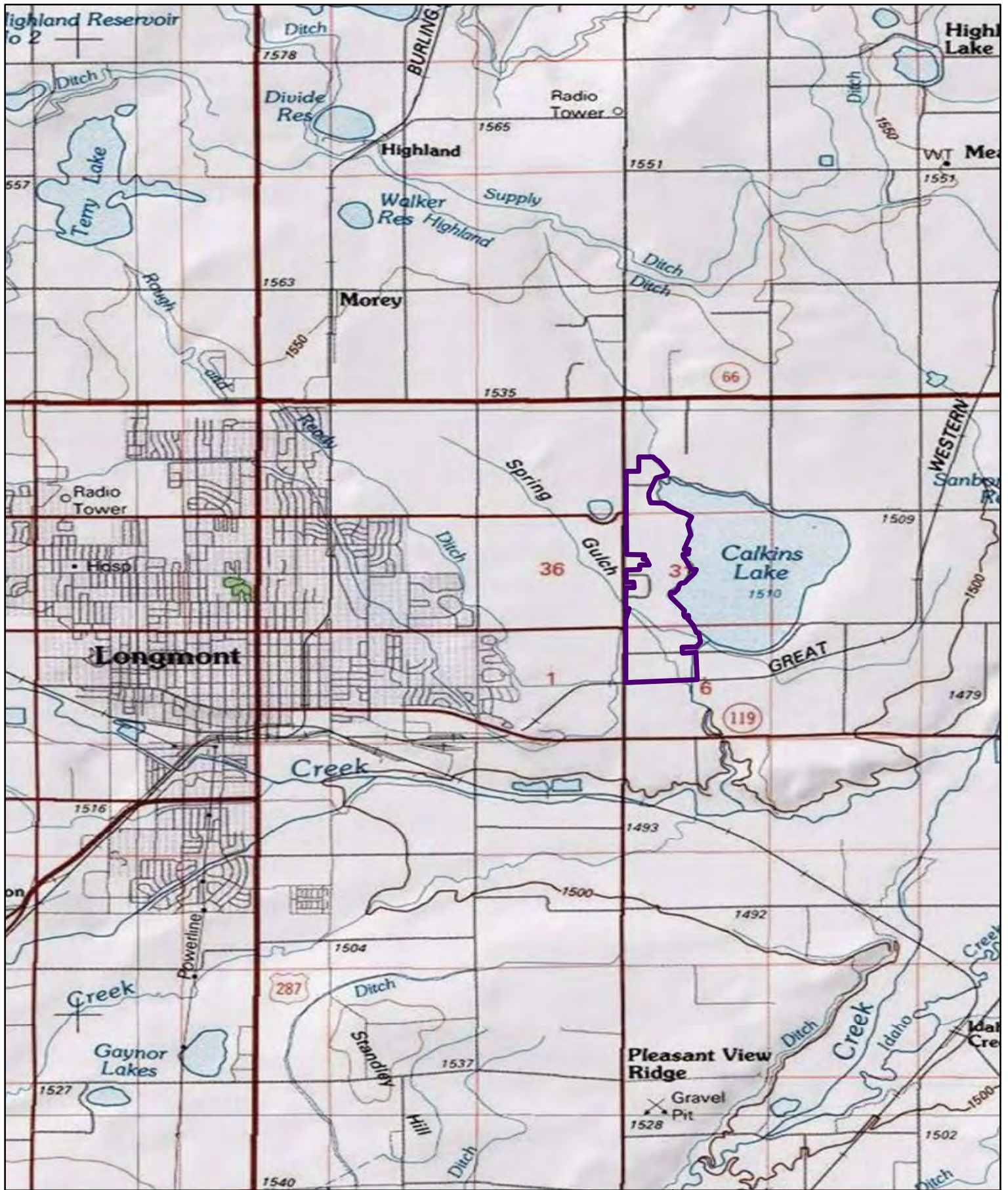


Figure 1. Union Reservoir Vicinity Map

0 800 1,600 3,200
 Feet

1 Inch = 1600 Feet

USGS Longmont, CO Quadrangle



Extent of Previous
 ERO Habitat
 Assessment and
 West Union
 Development



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Figure 2. Natural Resources and Habitat Features

Aerial Photograph: 2009 NAIP Imagery
 0 800 1,600 3,200 Feet
 1 Inch = 1600 Feet

- Wetlands 1 - 4
- Osprey Platform
- Unnamed Tributary
- Cattail Wetland
- Mature Cottonwood Trees
- Prairie Dog Colony
- City-Owned or Controlled
- Previous Assessment Boundary
- Ditches and Gulches



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ATTACHEMENT

SITE PHOTOGRAPHS 1 THROUGH 13

Union Reservoir Habitat Photographs



Photo 1. May 2, 2011. Looking south at Unnamed Tributary from Weld County Road 28.



Photo 2. May 2, 2011. Looking west, northwest at wetland marsh vegetation between the high and low water marks of Union Reservoir. Roosting white-faced ibis (*Plegadis chihi*) in foreground.



Photo 3. May 2, 2011. Looking south at Wetland 2.



Photo 4. May 2, 2011. Wetland 3, looking west.



Photo 5. May 2, 2011. Wetland 3, looking south to the area of wetland vegetation that has expanded to the south since 2006.



Photo 6. May 2, 2011. Looking at the metal outlet structure at the northeast portion of Union Reservoir Ditch where water from Union Reservoir comes into the Ditch. Whiteop (*Cardaria draba*) was observed on the upper banks of this area.



Photo 7. May 2, 2011. Looking south at an active prairie dog colony south of the Reservoir. This old agricultural field is a City parcel. No burrowing owls were detected here in April, 2011.



Photo 8. May 2, 2011. Looking west at the active prairie dog colony southeast of the Reservoir. This barren agricultural field and prairie dog colony appear to be on both City-owned land and the Lindberg parcel. No burrowing owls were detected here in April, 2011.



Photo 9. May 2, 2011. Looking southeast at a pair of ospreys utilizing the platform and what appear to be willow trees along the east Reservoir shoreline. The shoreline looks like it is dominated by cattails, bulrushes, and willows.



Photo 10. May 2, 2011. Looking east at shoreline with good vertical and horizontal vegetation structure and agricultural land in the background. The native wetland vegetation, shade, and insects provide wildlife habitat and a good area for fishing.



Photo 11. May 2, 2011. Looking north an a wide swath of wetland vegetation adjacent to a residential backyard.



Photo 12. May 2, 2011. Looking north, northeast at wave action and resulting erosion along northern shoreline. Here there is no wetland vegetation edge to buffer the shoreline.



Photo 13. May 2, 2011. Looking south at a Wetland 4. This small scrape is located south of Weld County Road 28. This scrape supports cattails and other herbaceous wetland vegetation and appears to have a surface connection to Union Reservoir. It may receive sustaining hydrology via a pipe under the road, as well as road surface runoff.