



**US Army Corps
of Engineers**
Omaha District

PUBLIC NOTICE

Application No: NWO-2016-01513-DEN
Project: Piney Creek Upstream of East Caley Drive
Applicant: Urban Drainage and Flood Control District
Waterway: Piney Creek
Issue Date: July 20, 2016
Expiration Date: August 19, 2016

REPLY TO:

Denver Regulatory Office
9307 South Wadsworth Blvd
Littleton, CO 80128-6901
FAX (303) 979-0602

30 DAY NOTICE

PUBLIC NOTICE FOR SECTION 404 PERMIT APPLICATION SUBMITTED TO U.S. ARMY CORPS OF ENGINEERS

Notice

The District Engineer, U.S. Army Engineer District, Omaha, Nebraska is evaluating a Department of the Army Section 404 Permit application from **Urban Drainage and Flood Control District, 2480 West 26th Avenue, Suite 156-B, Denver, CO 80211**. Permits are issued under Section 404 of the Clean Water Act (Section 404) which regulates the placement of dredged or fill material in the nation's waters.

Summary

Urban Drainage and Flood Control District (UDFCD), in partnership with Southeast Metro Stormwater Authority (SEMSWA) and the Cherry Creek Basin Water Quality Authority, is proposing channel improvement activities along approximately 1,300 linear feet of Piney Creek and 400 linear feet of Antelope Creek upstream of East Caley Drive in Arapahoe County. The proposed project would address the immediate need to protect public safety and infrastructure by reducing the risk of flooding by improving channel geometry and the natural functions that were formerly provided by the stream system by creating a single meandering low-flow channel, filling in the area where the spill is located, installing grade-control structures, and stabilizing the channel and banks. The channel improvements would benefit the overall stream geomorphology and habitat of Piney Creek in the project area, eliminate 100-year floodwater flows from spilling into the residential properties north of the project area, and provide a more stable channel system. In addition, the proposed project would reestablish the Antelope Creek channel, which would address increased flows through the project area and improve

water conveyance.

Location

The project is located in Sections 22 and 23 of Township 5 South, Range 66 West in Arapahoe County, Colorado. The latitude/longitude of the project is 39.596703/-104.755546.

Existing Conditions

The project area is along Piney Creek upstream of East Caley Drive. Piney Creek in the project area consists of two 3- to 16-foot-wide sandy channel beds. Piney Creek splits into two branches in the downstream portion of the project area, with the main channel to the north and the secondary channel to the south. Portions of the channel banks throughout the project area are eroded from 1 to 4 feet. Riparian habitat occurs along Piney Creek in the southeast portion of the project area and is dominated by plains cottonwood (*Populus deltoides*), Russian olive (*Elaeagnus angustifolia*), and sandbar willow (*Salix exigua*). The upland understory vegetation is dominated by smooth brome (*Bromus inermis*) and tall fescue (*Festuca arundinacea*).

Wetlands occur on low terraces and in narrow fringes at the elevation of the ordinary high water mark (OHWM). The dominant vegetation in the wetlands includes redtop (*Agrostis gigantea*) and tall fescue, with some Kentucky bluegrass (*Poa pratensis*), watercress (*Nasturtium officinale*), softstem bulrush (*Schoenoplectus tabernaemontani*), and broadleaf cattail (*Typha latifolia*). A wetland vegetated swale, dominated by broadleaf cattail and sandbar willow occurs in the northeastern portion of the project area and has a surface connection to Piney Creek. Antelope Creek is in the southeast portion of the project area, but lacks a defined channel bed and bank and is dominated by herbaceous upland species. A small isolated wetland dominated by broadleaf cattail and surrounded by sandbar willow occurs east of Antelope Creek near East Arapahoe Road.

Residential properties surround the project area. Upland grasslands occur above the channel banks and consist of a mixture of native and nonnative species including smooth brome, western wheatgrass (*Pascopyrum smithii*), tall fescue, blue grama (*Bouteloua gracilis*), and Canada thistle (*Cirsium arvense*).

Description of Work

The goal of the channel improvement project is to eliminate the split flows that are occurring during the 100-year flood event and threatening the residential properties north of the Piney Creek channel. As part of improving the channel in the project area, the proposed activities would also restore and enhance the aquatic functions of Piney Creek by reestablishing a stable meandering low-flow channel, which would prevent down-cutting and sediment transport downstream, and would reconnect hydrology to upper banks. The improvements would be accomplished by restoring the Piney Creek channel to its historical conditions by constructing a deeper and wider single channel through the project area and filling in the low area where the floodwaters are spilling into the uplands and adjacent residential properties. This would be accomplished through installing two grouted boulder drop structures and placing soil riprap channel and bank protection at the drop structures. In addition, the Antelope Creek channel would be improved by grading a new channel to improve water conveyance and public safety because of increased flow risk that would likely result from a larger culvert being installed under Arapahoe Road at the upstream end of the project area. The

improvements along Antelope Creek would include installing one check structure and a grouted boulder drop structure at the confluence of Piney Creek and Antelope Creek. The proposed activities would also benefit the Piney Creek channel geometry and would reduce the stream pressure along the banks, which would improve channel stability and sustainability and reduce sediment transportation.

Piney Creek Channel Realignment and Reshaping

The Piney Creek channel currently branches into a primary and secondary channel in the project area and the geomorphology of the creek forces split flows within the floodplain, which results in floodwaters spilling to the north into residential properties. The stream channel improvements include channel grading and reshaping activities within the floodplain to lower the existing ground surface, thereby improving the flood conveyance capacity and reducing the risk of flooding the adjacent residential properties. In combination with the grading activities, the low area where the floodwater spill is located would be filled to raise the ground elevation and direct flows into the Piney Creek channel.

Reshaping and realignment activities would lower the existing ground surface elevation to recreate a single low-flow channel similar to historic conditions that would safely convey the 100-year storm flows through the project area. The Piney Creek channel invert elevation would be lowered 2 to 5 feet to achieve the 100-year flood conveyance and a consistent stable slope of 0.2 percent throughout the project area. The channel bottom width would be widened and vary between 17 and 37 feet, the side slopes would be laid back to a 3:1 slope to the top of the bankfull channel, and the side slopes would then be graded to a 4:1 slope to the top of the overbanks. The channel overbanks would be blanketed with erosion-control mat and vegetated with native seed. Riffle-pool complexes also would be incorporated into the new channel slope design. The new channel would reduce sediment transport, convey the normal base flows, and allow storm flows to spread into the overbanks.

The Piney Creek channel reshaping and realignment would permanently impact about 0.170 acre (1,108 linear feet) of streambed and 0.011 acre of wetlands. No temporary impacts would be associated with the Piney Creek channel reshaping and realignment. Although the channel reshaping and realignment activities would result in a loss of 357 linear feet of channel, the total acreage of streambed would increase from 0.308 acre to 0.453 acre.

Antelope Creek Channel Construction

The Antelope Creek channel currently consists of a broad upland vegetated swale that lacks a defined channel bed and bank. Upstream of the project area, the existing culvert that extends under Arapahoe Road is being replaced with a larger culvert and a drop structure is being installed immediately downstream of the new culvert as part of a current road widening project. Increased development upstream of the project area and the larger culvert would likely direct more surface and stormwater flows through the project area. Beginning immediately downstream of the existing drop structure at Arapahoe Road, Antelope Creek would be graded to construct a new channel for a distance of 324 linear feet. The channel bottom width would be approximately 5 feet and the side slopes would be laid back to a 4:1 slope. As discussed in the Drop Structures section below, a sheet pile check structure with soil riprap would be installed in the new channel and a grouted sloping boulder drop structure would be installed at confluence of Antelope Creek and Piney Creek. An at-grade low-flow crossing would be installed upstream of the check structure to allow the property

owner access across the graded channel. The redefined channel would improve water conveyance and allow for higher volumes of water to flow smoothly through the area. Constructing the Antelope Creek channel would not result in any streambed or wetland impacts.

Drop Structures

Two grouted boulder drop structures are proposed within the realigned Piney Creek channel (Drop #1 and #2), one grouted boulder drop structure is proposed at the Piney Creek and Antelope Creek confluence (Drop #3), and one check structure is proposed within the new Antelope Creek channel. The drop structures would consist of a combination of sheetpile, grouted boulders, and soil riprap. In addition, slight modification would be made to the existing drop structure at the downstream end of the project area.

Drop #1 would be located near the upstream end of the project area and would be approximately 2 feet tall, about 110 feet wide, and 64 feet long (including the surrounding riprap). Drop #2 would be approximately 3 feet tall and would be installed approximately 170 linear feet downstream of Drop #1 in the Piney Creek channel. Drop #2 would be about 124 feet wide and 70 feet long (including the surrounding riprap). Both drop structures would consist of 36-inch-diameter grouted boulders and the boulders would be placed to create a crest, sill, and a 1.5-foot-deep stilling basin. Drops #1 and #2 would have a 4:1 slope down the face of the structure. To prevent scouring around the structures, a 24-inch-thick layer of Type M soil riprap would be placed for a distance of 7 feet upstream and 10 feet downstream of Drops #1 and #2. The side slopes of the boulder structures would have a slope of 3:1 or flatter and the soil riprap would be buried with 6 inches of topsoil, blanketed with coir mat, and vegetated with native seed. A 289-foot-wide sheetpile cutoff wall would be installed at the upstream portion of Drop #1 extending across the creek into the adjacent uplands. Drop #2 would consist of a 114-foot-wide sheetpile cutoff wall. The sheetpile is proposed to stabilize the Piney Creek channel and reduce local scour from larger flood events.

Drop #3 would be located at the confluence of Piney Creek and Antelope Creek. Drop #3 would be approximately 3.75 feet tall, about 42 feet wide, and 61 feet long (including the anchoring riprap located upstream of the structure), and consist of a combination of 36-inch-diameter grouted boulders, which would extend below the channel invert, Type M soil riprap, and a sheet pile cutoff wall. The soil riprap would be installed in a 24-inch-thick layer for a distance of 10 feet upstream of Drop #3. The western side slope of Drop #3 would consist of double-staked 36-inch grouted boulder wall. The boulder wall would extend from the upstream end of the drop structure downstream 110 linear feet. Above the boulder edging, the banks would be anchored with a 24-inch-thick layer of Type M soil riprap and would be buried with 6 inches of topsoil, blanketed with coir mat, and vegetated with native seed and riparian shrubs. A 66-foot-wide sheetpile cutoff wall would be installed at the upstream portion of the drop structure extending up the northeast bank of Antelope Creek.

A check structure consisting of a combination of sheetpile and soil riprap is proposed near the middle of the new Antelope Creek channel. The check structure consists of a sheet pile cutoff wall with a 24-inch-thick layer of Type M soil riprap. The structure would be 70 feet wide and 20 feet long. The sheetpile is proposed to span 164 feet across the drainage to stabilize the Antelope Creek channel.

The existing drop structure at the downstream end of the project area would be modified as part of the proposed project. The top two rows of existing 48-inch grouted boulders would be removed to meet the new elevation of the Piney Creek channel. Additionally, the Type H riprap at the upstream end of the existing drop structure would be removed and reset as needed.

Installing the grouted boulder drop structures and check structure would permanently impact about 0.044 acre of streambed and approximately 0.001 acre of wetlands. No temporary impacts would be associated with the construction and modification activities of the drop structures.

Bank and Channel Stabilization Controls

To protect the Piney Creek and Antelope Creek channels and banks, two types of bioengineered bank protection are proposed within the project area. The first type of bank protection (BP #1) would consist of installing a 24-inch layer of Type M riprap across the width of the channel bottom. BP #1 would extend for approximately 100 linear feet downstream of Drop #3 at the Antelope Creek and Piney Creek confluence.

The second type of bank protection (BP #2) consists of laying the banks back to a 3:1 slope to the top of the bankfull channel, constructing nearly flat benches of varying widths along the channel, and then grading to a 4:1 slope to the top of the overbanks. A 24-inch layer of Type M soil riprap would be installed to the top of the overbanks. The second type of bank protection is proposed along the outer bend of both banks immediately downstream of Drop #2 and upstream of Drop #3. BP #2 would also be installed on the north bank of Antelope Creek immediately upstream of the check structure. A 6-inch layer of topsoil would be placed over the soil riprap and then blanketed with coir mat. Installing the proposed bank stabilization controls would permanently impact 0.046 acre of streambed and 0.003 acre of wetlands. No temporary impacts would be associated with the bank protection activities.

Other Project Elements

Other project-related activities may result in temporary impacts on Piney Creek and Antelope Creek. These activities include erosion- and sediment-control measures, diverting water around work sites, and construction access. In addition, a temporary rock check dam would be installed at the downstream project area limits to reduce impacts on areas outside the project area. Temporary impacts associated with these activities would affect approximately 0.035 acre of streambed and 0.035 acre of wetlands.

Jurisdiction

Piney Creek flows into Cherry Creek which then flows to the South Platte River which is an interstate water of the US.

Project Purpose and Need

The basic project purpose is flood risk mitigation. The overall project purpose is flood risk mitigation within Piney Creek, upstream of East Caley Drive in Arapahoe County, Colorado.

Impacts and Mitigation

The proposed channel improvements would require the unavoidable discharge of fill material into waters of the U.S. and abutting wetlands associated with Piney Creek within the project area.

Following are the approximate amounts of fill that would be permanently placed within waters of the U.S., including wetlands:

- 130 cubic yards of clean fill
- 191 cubic yards of soil riprap
- 186 cubic yards of grouted boulders
- 6 cubic yards of sheetpile

The project would result in the excavation of 822 cubic yards of soil and filling of 130 cubic yards of soil, for a net loss of 692 cubic yards of soil within the streambed and wetlands. Unavoidable permanent impacts include 0.260 acre of streambed and 0.015 acre of wetlands associated with improvements to Piney Creek (Table 1). The total permanent project impacts on waters of the U.S., including wetlands, would be 0.275 acre. Temporary impacts include 0.035 acre of streambed and 0.035 acre of wetlands. Permanent impacts on waters of the U.S. would primarily consist of reshaping and realigning the Piney Creek channel. Unavoidable temporary and permanent impacts would occur to additional portions of the project area as construction vehicles access the project area to conduct the channel improvements. Construction equipment operators would make every effort to minimize disturbance limits, although minor shifts in the disturbance limits may be necessary to achieve the 100-percent design. UDFCD would ensure that any shifts in the disturbance limits would not result in increased impacts on wetlands or waters of the U.S.

Table 1. Summary of impacts on wetlands and waters of the U.S.

Wetland and Streambed ID	Impacts					Total Impacts (acres)
	Channel Realignment and Reshaping (acres)	Antelope Creek Channel Construction (acres)	Drop Structures (acres)	Bank and Channel Stabilization Controls (acres)	Other: Installing BMPs and Water Control (acres)	
OHW 1	0.170	n/a	0.044	0.046	0.035	0.295
Wetland 1	n/a	n/a	n/a	n/a	0.014	0.014
Wetland 2	n/a	n/a	n/a	n/a	0.020	0.020
Wetland 3	0.008	n/a	n/a	0.002	n/a	0.011
Wetland 4	0.002	n/a	n/a	0.001	n/a	0.003
Wetland 5	0.001	n/a	0.001	n/a	n/a	0.002
Wetland 6	n/a	n/a	n/a	n/a	<0.001	
Total Streambed	0.170	n/a	0.044	0.046	0.035	0.295
Total Wetlands	0.011	n/a	0.001	0.003	0.035	0.050

Because of the lack of suitable areas along the channel banks to create a sustainable wetland, UDFCD is proposing to purchase 0.015 acre of mitigation bank credits from a local mitigation bank

approved by the Corps to mitigate for the permanent loss of wetlands that would result from the proposed project. The project area is within the service area of two Front Range mitigation banks.

The Colorado Department of Public Health and Environment, WQCD-GWPS-B2, 4300 Cherry Creek Drive South, Denver, Colorado 80222-1530, will review the proposed project for state certification in accordance with the provisions of Section 401 of the Clean Water Act. The certification, if issued, will express the State's opinion that the operations undertaken by the applicant will not result in a violation of applicable water quality standards. For further information, please contact the Colorado Water Quality Control Division at (303) 692-3500.

In compliance with the Endangered Species Act, a preliminary determination has been made that the described work will not affect species designated as threatened or endangered or adversely affect critical habitat. In order to complete our evaluation of this activity, comments are solicited from the U.S. Fish and Wildlife Service and other interested agencies and individuals.

The Corps of Engineers, Omaha District will comply with the National Historic Preservation Act of 1966, and amendments and the procedures set forth in 33 CFR 325, Appendix C. The Corps will evaluate input by the State Historic preservation Office, Tribes, and the public in response to this public notice, and we may conduct or require a survey of the permit area to check for unknown historic properties, if warranted.

The decision whether to issue a permit will be based on an evaluation of the probable impacts including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits which reasonably may be expected to accrue from the proposal must be balanced against the reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, wetlands, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people. In addition, the evaluation of the impact of the work on the public interest will include application of the guidelines promulgated by the Administrator, Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act (40 C.F.R. Part 230).

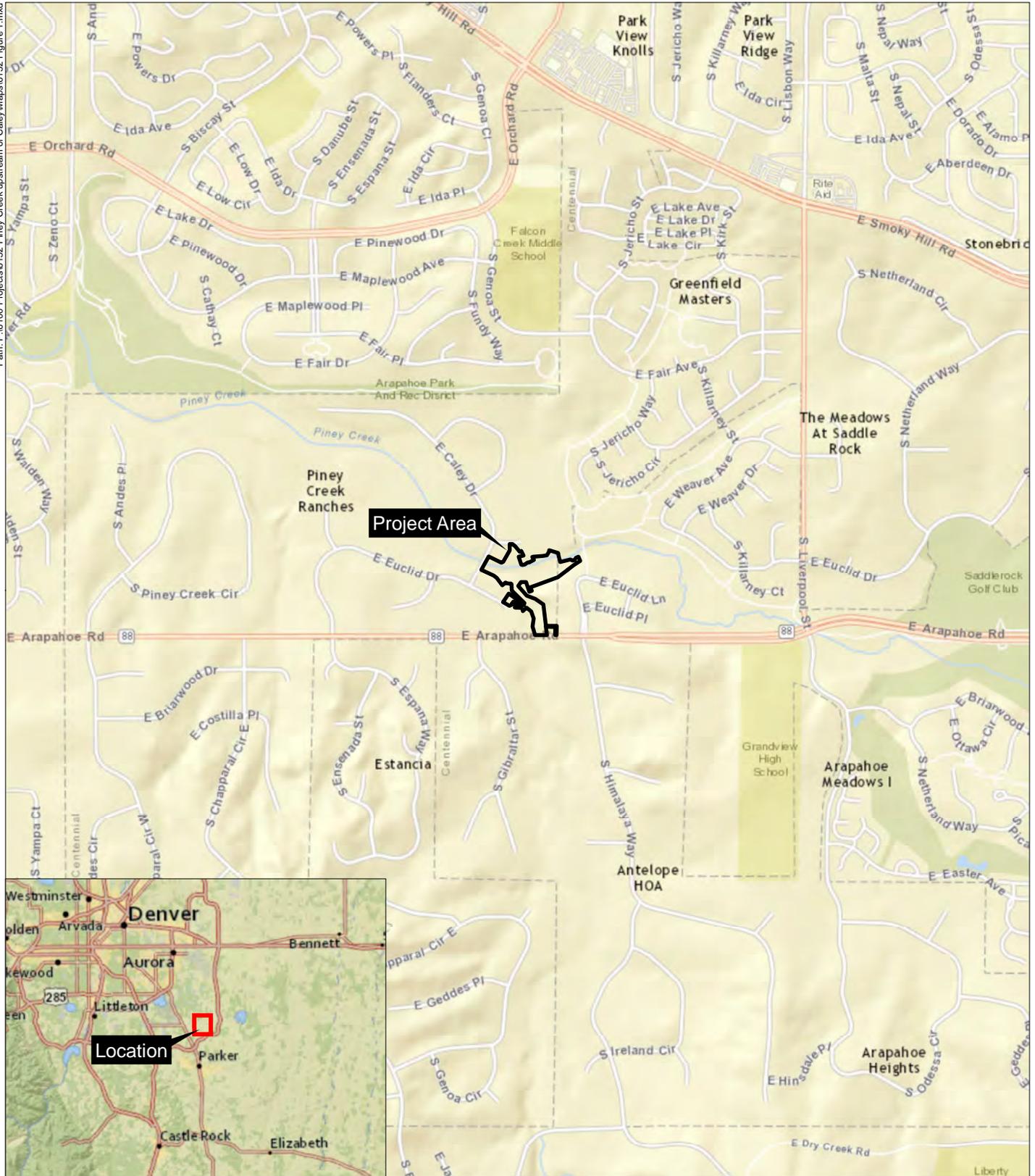
The Corps of Engineers is soliciting written comments from the public; Federal, state and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Comments, both favorable and unfavorable, will be accepted, made a part of the record and will receive full consideration in subsequent actions on this application. Any agency or individual having an objection to the work should identify it as an objection with clear and specific reasons. All replies to the public notice should be sent to the **U. S. Army Corps of Engineers, Denver Regulatory Office, 9307 South Wadsworth Blvd, Littleton, Colorado 80128-6901**. For additional information please contact **Mr. Alex Kostra at (303) 979-4120** or visit the **Denver Regulatory Office web site at:**

<http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Colorado/PublicNotices.aspx>

The District Engineer will consider requests for holding a public hearing, for the purpose of gathering additional information. Before the expiration date of this notice, anyone may request, in writing, that a public hearing be held. Requests for a public hearing should state specifically the reasons for holding a public hearing, and what additional information would be obtained. Should the District Engineer decide that additional information is required and a public hearing should be held, interested parties will be notified of the date, time and location.

Comments received after the close of business on the expiration date of this public notice will not be considered.



Piney Creek Upstream of Caley Drive

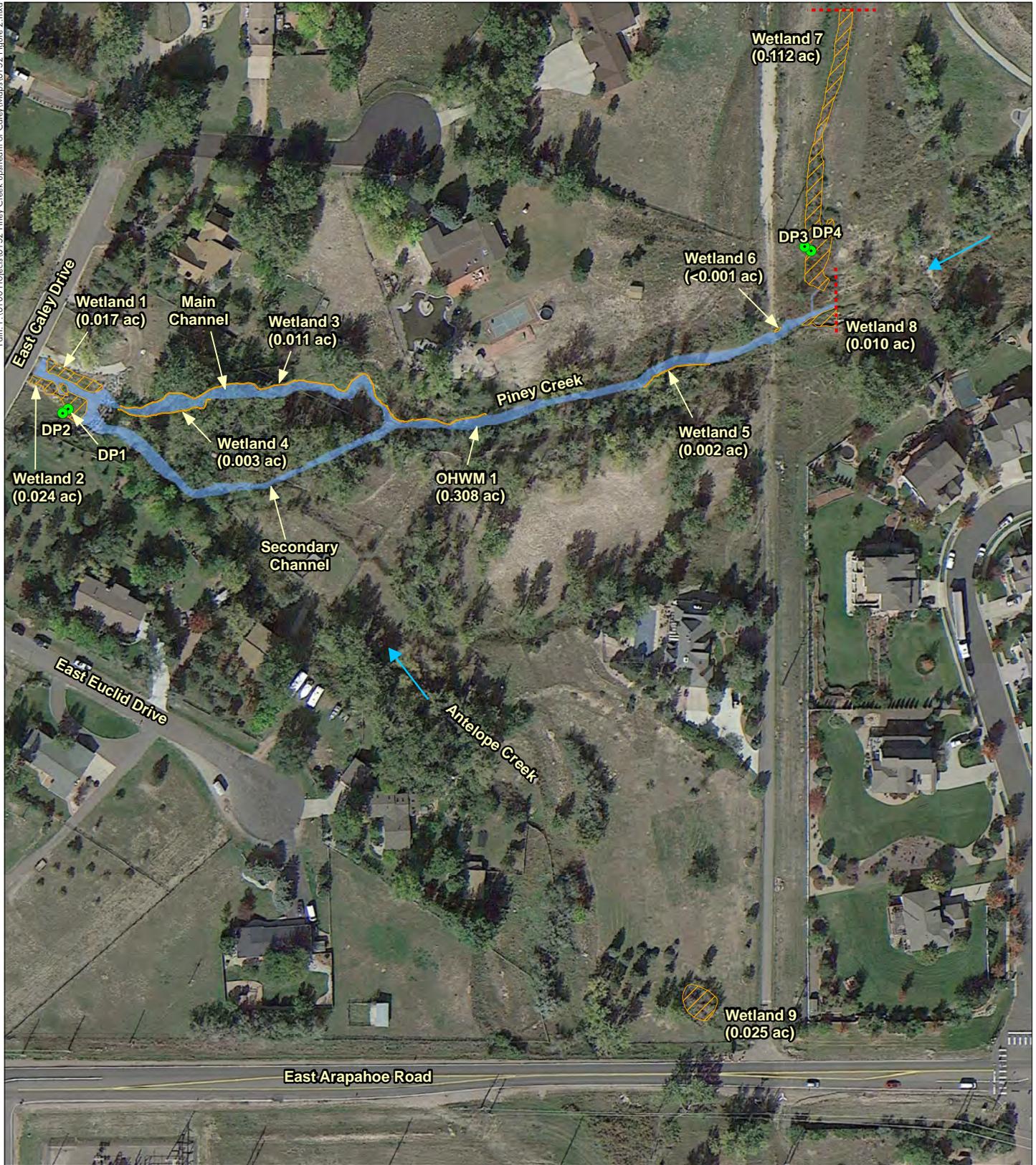
Sections 22 and 23, T5S, R66W; 6th PM
 UTM NAD 83: Zone 13N; 520989mE, 4383025mN
 Latitude, Longitude: 39.596703°N, 104.755546°W
 USGS Parker, CO Quadrangle
 Arapahoe County, Colorado

Figure 1
Vicinity Map



Prepared for: SEMSWA
 File: 6152 Figure 1.mxd (GS)
 March 24, 2016





Piney Creek Upstream of Caley Drive

- Data Point
- Flow Direction
- ⋯ Limit of Delineation
- Ordinary High Water Mark (0.308 ac)
- ▨ Wetland (0.204 ac)

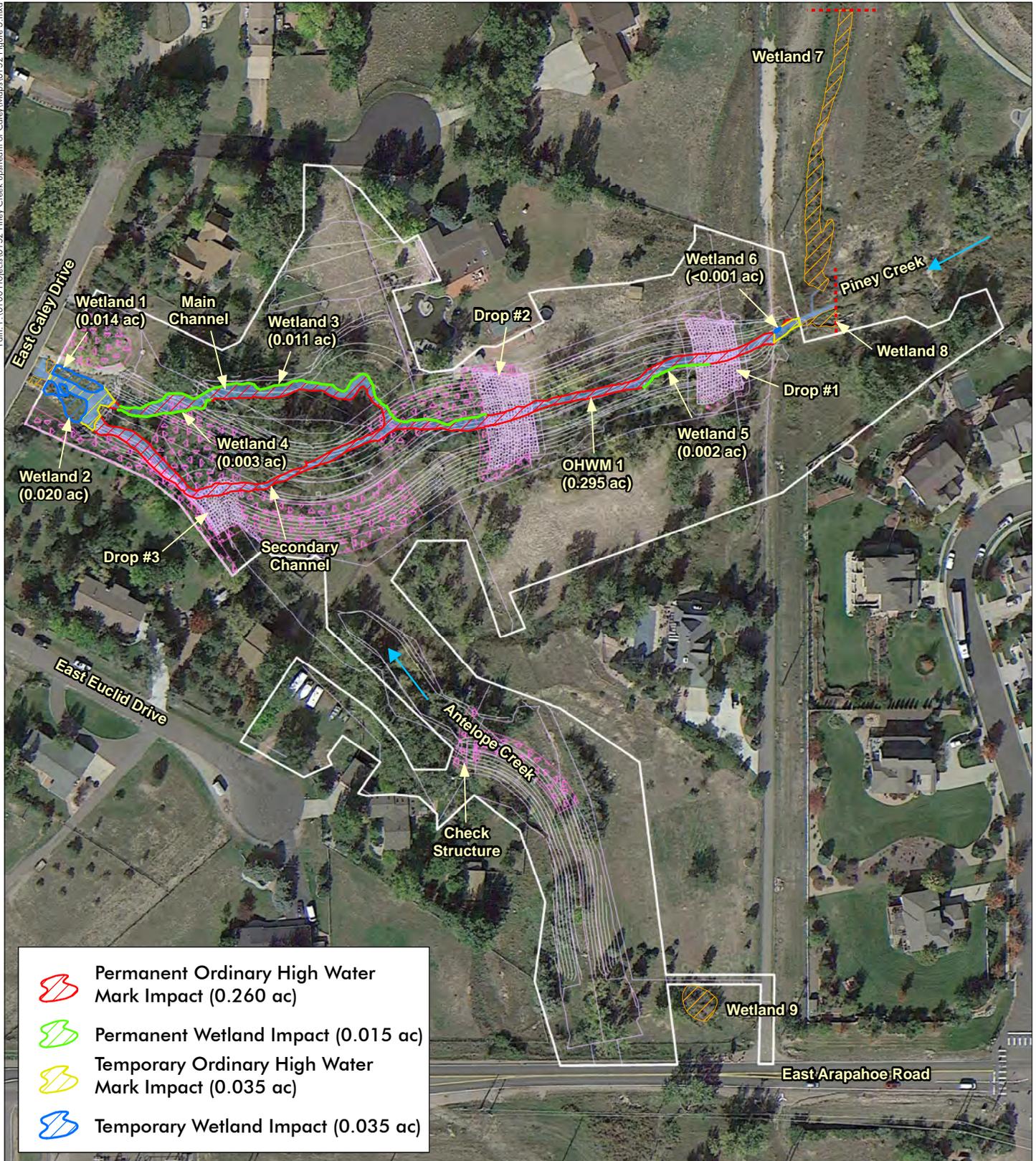
Image Source: Google Earth©, October 2014



Figure 2 Existing Conditions

Prepared for: SEMSWA
 File: 6152 Figure 2.mxd (GS)
 April 6, 2016





Piney Creek Upstream of Caley Drive

-  Flow Direction
-  Limit of Delineation
-  Ordinary High Water Mark (0.308 ac)
-  Wetland (0.204 ac)

Image Source: Google Earth©, October 2014



**Figure 3
Proposed Impacts**

Prepared for: SEMSWA
File: 6152 Figure 3.mxd (GS)
April 6, 2016

