CSA 5
EROSION CONTROL PROJECT

Preferred Alternative Memorandum
JN 95157

December 2015

Prepared By:
County of El Dorado
Community Development Agency - Transportation Division
Tahoe Engineering Unit

ENDORSEMENT

The undersigned members of the Project Development Team representing their respective agencies and organizations do hereby endorse the implementation of the CSA 5 Erosion Control Project based on this Preferred Alternative Memorandum dated December 2015. If the Agency does not sign this endorsement, the County of El Dorado Transportation Division (Transportation) will assume that the Agency representative accepts the document and Preferred Alternative as is; therefore Transportation will proceed to the Design Phase.

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1.0 Executive Summary

This Preferred Project Alternative Memorandum (PAM) summarizes the work that was done in developing the Project Alternatives for the CSA 5 Erosion Control Project (Project) and presents the results of the analysis of those Alternatives. The PAM also includes the selection of the Preferred Alternative, which will be further studied and designed prior to being constructed.

2.0 Introduction

The Project is part of a series of water quality and erosion control projects to be constructed within the Lake Tahoe Basin by the County of El Dorado, Community Development Agency, Transportation Division (Transportation). In November 2015, Transportation held a Project Development Team (PDT) meeting and a public meeting to discuss the Feasibility Report for the Project. That report identified problem areas, compiled Best Management Practices (BMP) alternatives for mitigating specific problem areas, and presented the evaluation of the alternatives. This PAM presents the preferred alternative based on input from those meetings, correspondence received, and the results of the analyses contained in the Feasibility Report.[1]

The Project is located in Tahoma on the west shore of Lake Tahoe, in portions of Sections 17 and 18, Township 14 North, Range 17 East, Mount Diablo Meridian. The Project area is bounded by Lake Tahoe and First Avenue to the east, the El Dorado/Placer County line to the north, Chinkapin Road and Placer Street to the west and Cedar Street to the South (Figure 1). The total Project area is approximately 300 acres and encompasses County lots and rights-of-way (ROW), Caltrans ROW, CTC, USFS, and privately owned residential lots and includes the Tahoe Cedars Tract, Tahoe Cedars Addition, Tahoe Cedars Addition No. 2, Wilson Subdivision No. 1, Sonoma Pines, Water's Edge Unit No. 1, and Westlake Village Unit Nos. 4, 5, and 9 subdivisions.

3.0 Existing Conditions

For a description of the Project area, goals and objectives of the Project, past projects, site topography, soils, hydrologic and hydraulic conditions, land use, storm water quality, soil erosion problems, alternatives, BMPs, and an evaluation of the alternatives, refer to the CSA 5 Control Project Feasibility Report.[2]

4.0 Preferred Project Alternative

In order to meet the goals and objectives of the Project, the Feasibility Report outlined three alternatives for consideration by the public and the PDT. Based on the comments received, the professional judgment of Transportation personnel, and the analyses outlined in the Feasibility Report, Alternative 1 was chosen as the preferred alternative and is presented in Figure 2.

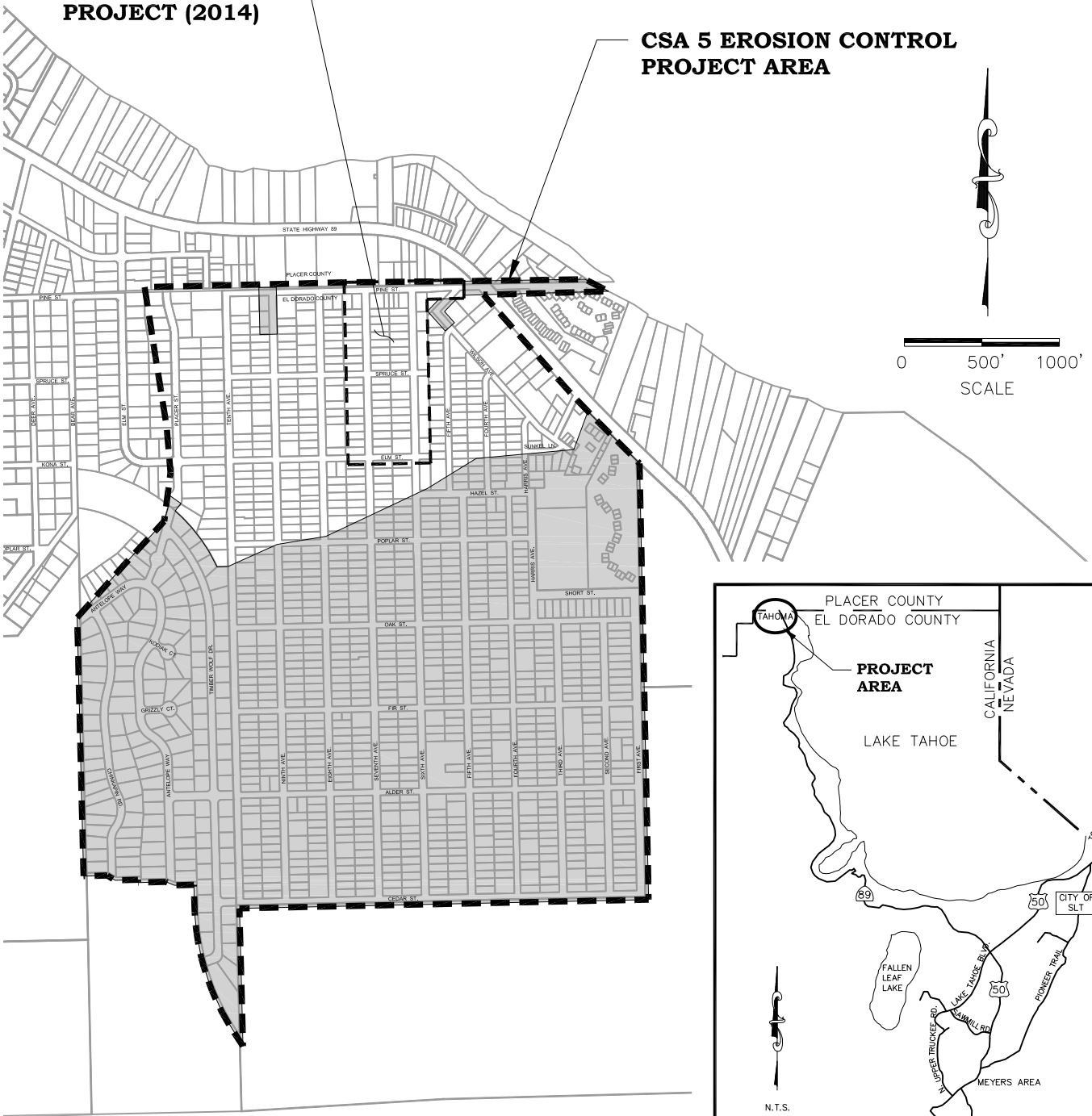
Locations requiring source control include bare eroding slopes and shoulders on Antelope Way, Placer Street, Alder Street, Tenth, Ninth, and Seventh Avenues, and at the intersections of Alder Street & Eighth Avenue and Elm Street & Sixth Avenue. Rock slope protection or revegetation measures are proposed for stabilization of the eroding slopes while armored channels, swales, AC dike, or AC pavement are proposed for the eroding shoulders. The locations to receive these treatments are within County ROW and two CTC parcels (APN 14-302-02 and APN 14-303-12). If the site will allow, the proposed AC dike on Alder Street, between Antelope Way and Tenth Avenue, will be changed to an armored channel to allow for infiltration in addition to conveyance. For the work on Antelope Way and Placer Street, the proposed armored channel may be changed to AC dike or another type of conveyance facility to

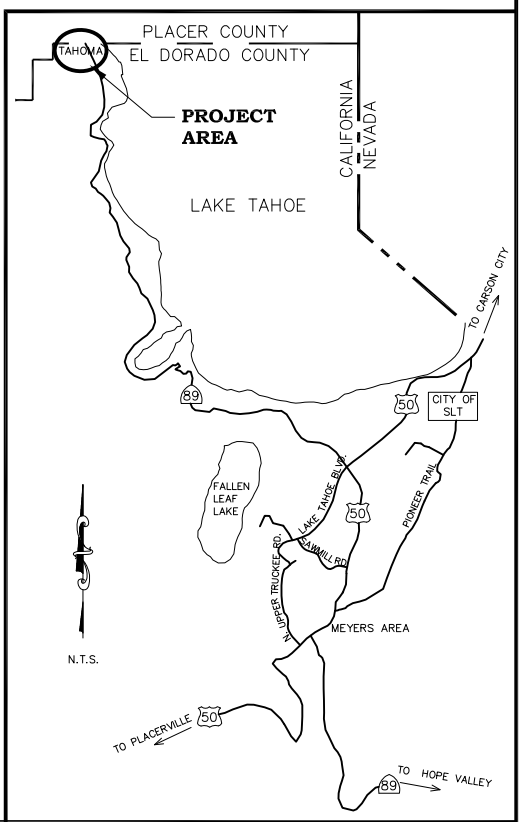
LEGEND

AREAS OF INTEREST

CSA 5 UPPER AREA EROSION CONTROL PROJECT (2014)

CSA 5 EROSION CONTROL PROJECT AREA





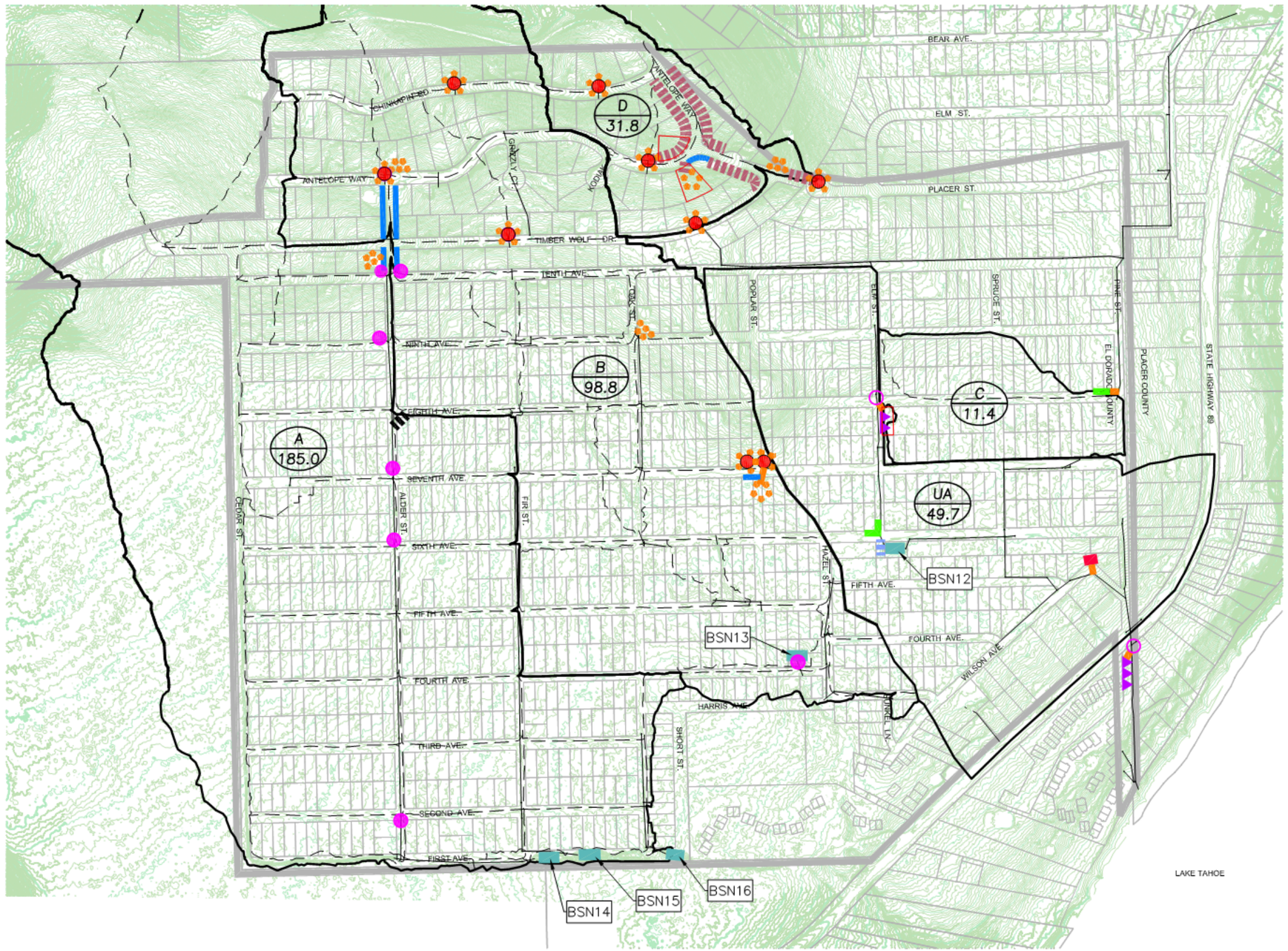
COUNTY OF EL DORADO
COMMUNITY DEVELOPMENT AGENCY
TRANSPORTATION DIVISION

CSA 5
EROSION CONTROL PROJECT

LOCATION MAP

FIGURE 1

DATE:	PROJECT NO.:	BY:
12/2015	95157	ALD



LEGEND

D 31.8	WATERSHED ID WITH AREA IN ACRES
	WATERSHED BOUNDARY
	SUB-WATERSHED BOUNDARY
	EXISTING PIPE
BSN16	EXISTING BASIN ID
	CONTOUR
	PROJECT BOUNDARY
	COUNTY ROW, CALTRANS ROW, OR PROPERTY LINES
	PROPOSED CMP I
	PROPOSED R&R CMP I OR CMP R
	PROPOSED STORM DRAIN MANHOLE
	PROPOSED DRAINAGE INLET
	PROPOSED PIPE
	PROPOSED AC DIKE OR SWALE
	PROPOSED STABILIZE/RESTORE DITCH
	PROPOSED REVEGETATION AND BLANKET
	PROPOSED ARMORED CHANNEL
	PROPOSED AC PAVEMENT
	PROPOSED ACCESS
	PROPOSED ROCK SLOPE PROTECTION
	PROPOSED ROCK DISSIPATOR OR BOWL
	PROPOSED INFILTRATION SYSTEM
CMP I OR CMP R	CORRUGATED METAL PIPE INLET OR RISER
	PUBLIC PARCEL TO RECEIVE IMPROVEMENTS

0 250' 500'
SCALE

COUNTY OF EL DORADO
COMMUNITY DEVELOPMENT AGENCY
TRANSPORTATION DIVISION

CSA 5
EROSION CONTROL PROJECT

ALTERNATIVE 1

DATE: 12/2015 | PROJECT NO.: 95157 | BY: ALD

FIGURE 2

ensure improvements remain within the County ROW and minimize soil disturbance. Further north on Placer Street, runoff from the south will be conveyed into an infiltrating corrugated metal pipe (CMP) inlet for treatment before continuing through the subdivision via existing roadside ditches, channels, and storm drain system which ultimately discharge to the Gray Basin in Placer County. For the other locations on Antelope Way, runoff will receive treatment in infiltrating CMP inlets installed on existing storm drain pipes. Infiltrating CMP inlets will also be installed on existing pipes on Chinkapin Road, Timber Wolf Drive, and Poplar Street at Seventh Avenue. Infiltrating CMP inlets will be installed to replace existing CMP inlets at various locations along the storm drain system on Alder Street. In addition to infiltration, the CMP inlets will have capacity for trapping sediment; lessening the impact of sedimentation of the existing infiltrating storm drain pipes. Two new infiltrating CMP inlets will also be installed on the corners of Poplar Street at Seventh Avenue. A pipe will be installed to convey overflow from the inlets east, onto the undeveloped portion of Poplar Street for additional treatment within the County ROW. For all other locations, overflow will be conveyed via existing channels or pipes into existing basins prior to storm runoff reaching Lake Tahoe.

Ponding and sediment deposition is evident on both Eighth Avenue, near Pine Street, and Wilson Avenue, near Pine Street. To improve hydrologic conveyance in these locations the reestablishment of the roadside conveyance system is proposed along with the installation of an infiltrating drainage inlet and/or a pipe to convey runoff into existing storm drain systems. As with the infiltrating CMPs, the infiltrating drainage inlets also have the capacity for trapping sediment. For the Eighth Avenue location, runoff will still receive treatment in the Gray Basin. For the Wilson Avenue location, runoff will receive treatment in the drainage inlet as well as a proposed infiltration gallery located within the drainage easement on the condominium access road prior to discharging into Lake Tahoe. If it is determined that the drainage easement will not accommodate an infiltration system due to utility constraints then Pine Street, within the County ROW between Wilson Avenue and Highway 89, will be considered for an alternate location.

To increase treatment of runoff along Elm Street, an offline infiltration system is proposed near the corner of Elm Street and Fifth Street. This facility will be within County ROW and, if the right-of-way width is limited, potentially a CTC parcel (APN 15-063-18). Stormwater in the existing storm drain system in Elm Street will be intercepted and treated in the offline infiltration system. Any overflow or by-pass runoff will continue in the storm drain system to the existing basin on Sixth Avenue.

Most of the runoff from the Project area is conveyed via pipe and channel to existing basins. These basins capture sediment and infiltrate runoff prior to flows reaching Lake Tahoe. To increase and/or restore infiltration for five infiltrating sediment basins within the Project area, revegetation is proposed. This work includes clearing sediment and debris from within the basins and scarifying the soil. Following seed placement, a blanket will be staked over the seeded areas. The CMP riser in the basin on Fourth Avenue will be replaced to ensure a secure connection with the outlet pipe. For the basin on Sixth Avenue, an access road that allows for vegetative growth will be established on the south side of the basin and a gate installed in the existing fence for walk-in basin access. For basins that have been observed to capture a fair amount of sediment, rock will be installed in the basin bottom in place of the seed and blanket in order to provide a surface that is compatible to more frequent maintenance activities.

5.0 Capital Cost

A Rough Order of Magnitude (ROM) construction cost estimate was prepared for the Preferred Alternative with the quantities based on the proposed improvements. This cost estimate is found in Table 1. The unit costs for each facility were based on bid summaries from Transportation's erosion control and air quality projects within the Lake Tahoe Basin constructed between 2010 and 2015. Data for AC dike was unavailable between 2010 and 2015; therefore, the unit cost for AC dike is based on project bid summaries between 2008 and 2009.

Table 1 - Construction Cost Estimate

Item No.	Description	Unit	Unit Price	Quantity	Cost
1	Mobilization	LS	$ 40,000	1	$ 40,000
2	Traffic Control	LS	$ 20,000	1	$ 20,000
3	Sweeping	DAY	$ 500	20	$ 10,000
4	Trench and Excavation Safety	LS	$ 7,000	1	$ 7,000
5	Temporary BMPs	LS	$ 15,000	1	$ 15,000
6	Remove CSP inlets	EA	$ 1,100	7	$ 7,700
7	CSP Inlet/Riser	EA	$ 4,500	16	$ 72,000
8	Drainage Inlet	EA	$ 4,500	1	$ 4,500
9	18" HDPE Pipe	LF	$ 110	220	$ 24,200
10	Infiltration System	EA	$ 20,000	2	$ 40,000
11	Storm Drain Manhole	EA	$ 5,600	2	$ 11,200
12	AC Dike	LF	$ 42	850	$ 35,700
13	AC Pavement	SF	$ 16	200	$ 3,200
14	Basin Access with Gate	EA	$ 6,000	1	$ 6,000
15	Armored Channel	LF	$ 88	1,400	$ 123,200
16	Rock Slope Protection	SF	$ 17	1,500	$ 25,500
17	Rock Bowl/Rock Dissipator	SF	$ 13	500	$ 6,500
18	Restore Road Ditch (GLS)	LF	$ 42	100	$ 4,200
19	Revegetation (Basins)	EA	$ 3,000	5	$ 15,000
20	Revegetation (General)	SF	$ 3	5,000	$ 15,000
21	CCCs	LS	$ 6,000	1	$ 6,000
22	Project Sign	EA	$ 2,000	1	$ 2,000
				Sub Total	$ 493,900
				20% Contingency	$ 98,780
				Total	**$592,680.00**

6.0 Schedule

Table 2 shows the current proposed schedule for the Project. The Anticipated Completion Dates shown are subject to change.

Table 2 – Project Schedule

Project Stage Milestone/Task	**Anticipated Completion Date**
Alternatives Report Stage	
Draft Feasibility Report (Existing Conditions, Project Alternatives Selection and Evaluation)	October 2015
PDT Feasibility Report Meeting	November 2015
Public Feasibility Report Meeting	November 2015
Final Feasibility Report	December 2015
Complete Preferred Alternative Memorandum (PAM)	December 2015
Environmental Assessment Stage	
Environmental Field Surveys	Spring/Summer 2015
Draft California Environmental Quality Act (CEQA) and TRPA Initial Environmental Checklist (IEC) Submittals	January 2016
California Environmental Quality Act/ Mitigated Negative Declaration (CEQA/MND) Approval	May 2016
Pre-Final Plans, Specifications & Reports Stage	
Complete Pre-Final Project Design Plans and Contract Specifications	April 2016
PDT Permit Applications Submittal	April 2016
PDT Pre-Final Project Design Plans, Contract Specifications, and Design Report Meeting	April 2016
Construction	
Notice to Proceed	August 2016

7.0 References

[1] County of El Dorado, CSA 5 Erosion Control Project, Feasibility Report, December 2015.

[2] County of El Dorado (December 2015).

Appendix A

PDT AND PUBLIC COMMENTS

CSA5 Erosion Control Project - Public Comments During Development of Feasibility Report

#	Date	Communication	Comment
1	11/13/2015	Email / Site Visit	Requested field meeting to discuss existing erosion problems in the Westlake Village Area of Tahoma. During site visit noted existing erosion occuring on both sides of Antelope Way from end of Antelope to below Placer Street (west side of Antelope is larger issue). Also noted eroding slopes on the north side of Placer Street, between Antelope and due east of Timberwolf where the old cul-de-sac exists.
2	11/13/2015	Email	Requested exhibit from field meeting which showed publicly owned parcels and estimated SEZ boundary within the Tahoma area. Offered to pass on my contact information to the members of the home owners association.
3	11/16/2015	Email	Concern of flooding caused by runoff from Antelope Way. Flows are causing erosion on the backside of their property at 7183 Antelope Way. In addition material is being deposited on the edge of the old cul-de-sac on Placer Street, near the start of their driveway.
4	11/16/2015	Email	Commented that existing erosion of the drain at the corner of Elm and 6th street was more due to cleaning of the vactor at this location than to stormwater runoff. Suggested rocklining the remaining exposed area as opposed to a major overhaul of the drain inlet.
5	11/17/2015	Email / Maintenance Log	Appreciative of work completed year before. Concern over the effectiveness and longevity of the County chip seal work that was completed this summer.
6	11/18/2015	Email / Site Visit	Noted that flows from the east side of 10th flow across the driveway at 7091 10th Avenue and on to Elm Street. Also requested copy of exhibit which shows publicly owned parcels and estimated SEZ boundary with the Tahoma area.
7	8/5/2014	Maintenance Log	Runoff from the road currently drains across their property at 7008 8th Avenue.
8	8/11/2014	Maintenance Log	Resident has had flooding issues in his garage for 10 years due to the way the County "did" the roads.
9	11/5/2015	Letter / Maintenance Log / Phone Call	Noted that flows from Poplar, between 7th Avenue and 7th Avenue, cross 7th Avenue and impact their property at 7133 7th Avenue. Noted that flows are causing flooding under their home and erosion of their backyard.
10	11/6/2015	Letter	Requested to be kept informed of the Project, along with what the Project includes and how it affects their property at 347 Alder Street.
11	11/12/2015	Letter	Thought the Report was well done and was in support of the recommendations.
12	11/2/2015	Phone Call	Called requesting information on Project.
13	11/3/2015	Phone Call	Called requesting information on Project. Had no comments on problem areas at time of call.
14	11/3/2015	Phone Call	Called requesting information on Project. Specifically, is it funded?; Will it cause traffic delays?; and How do I learn more about BMP's?
15	11/4/2015	Phone Call	Called requesting information on Project. Was not aware of any stormwater issues, but his property manager lives close by and may contact me with specific issues.
16	11/5/2015	Phone Call	Called regarding client that owns two parcels in the Project area. Specific questions were in regard to if the project would improve IPES scores. After checking with TRPA, IPES scores in the project area are currently at 1, unless within a previously identified Stream Environment Zone (SEZ).
17	11/12/2015	Phone Call /Email	Called regarding the Project. Is in the process of building new home and had questions regarding the BMP requirement for homeowners in the Project area.