

**COUNTRY CLUB HEIGHTS  
EROSION CONTROL PROJECT  
Preferred Alternative Memorandum  
JN 95191**

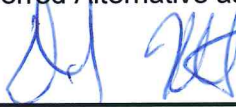


**December 2016**

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 Country Club Heights Erosion Control Project based on this Preferred Alternative Memorandum dated December 2016. 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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Daniel Kikkert  
*County of El Dorado County,  
Transportation Division*

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Shannon Friedman  
*Tahoe Regional Planning Agency*

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Barbara Shanley  
*U.S. Forest Service*

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Elizabeth vanDiepen  
*California Regional Water Quality Control Board  
Lahontan Region*

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Mark Sedlock  
*California Tahoe Conservancy*

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Jeff Matthews  
*Liberty Utilities*

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Chris Peters  
*Southwest Gas*

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Stephen Caswell  
*South Tahoe Public Utility District*

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Astrid Willard  
*AT&T*

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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 Country Club Heights 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 October 2016, Transportation held a Project Development Team (PDT) meeting and in November 2016, 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.<sup>1</sup>

The Project is located south of South Lake Tahoe within portions of Sections 20, 21, 28, and 29, Township 12 North, Range 18 East, Mount Diablo Meridian. The Project is bounded by Highway 50 to the west, Southern Pines Drive, Crystal Air Drive, and Skyline Drive to the south, Crystal Air Drive and Elks Club Drive to the east, and the subdivision boundaries to the north (Figure 1). The total Project area is approximately 270 acres and encompasses County of El Dorado ROW as well as County, CTC, USFS, and privately owned residential lots. Subdivisions within the Project area include Country Club Heights Unit Nos. 1, 2, 3, 4 and portions of Country Club Heights Unit No. 5 and Tahoe Paradise Unit No. 48.

## **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 Country Club Heights Control Project Feasibility Report.<sup>2</sup>

## **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 2 was chosen as the preferred alternative and is presented in Figure 2.

The locations requiring source control improvements include isolated areas of bare eroding slopes and shoulders on Meadowvale Drive, Thunderbird Drive (& Court), Crystal Air Drive, Skyline Drive, Glen Eagles Road, Elks Club, and Cherry Hills Circle. The primary BMPs proposed for stabilization in these areas is rock slope protection with revegetation. For areas with failing rock slope protection, replacement of the existing rock with heavier, angular rock is proposed. All locations to receive this treatment are within County ROW. On Meadowvale Drive there is a section of the existing gunite wall that has begun to break showing signs of slippage. Though in-kind replacement is proposed, Transportation is evaluating additional alternatives including the use of a Redi-Rock wall product or construction of a modified rock

slope protection. In each case, the work area will be in the County ROW and existing slope easements within areas that have been previously disturbed.

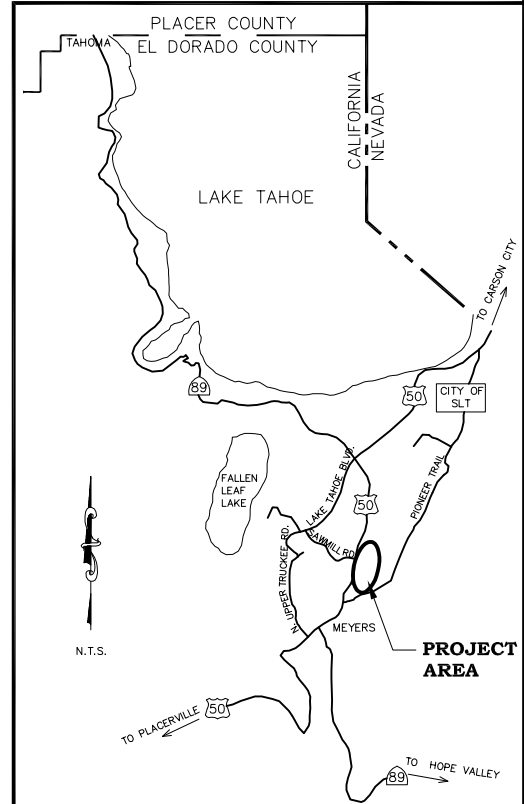
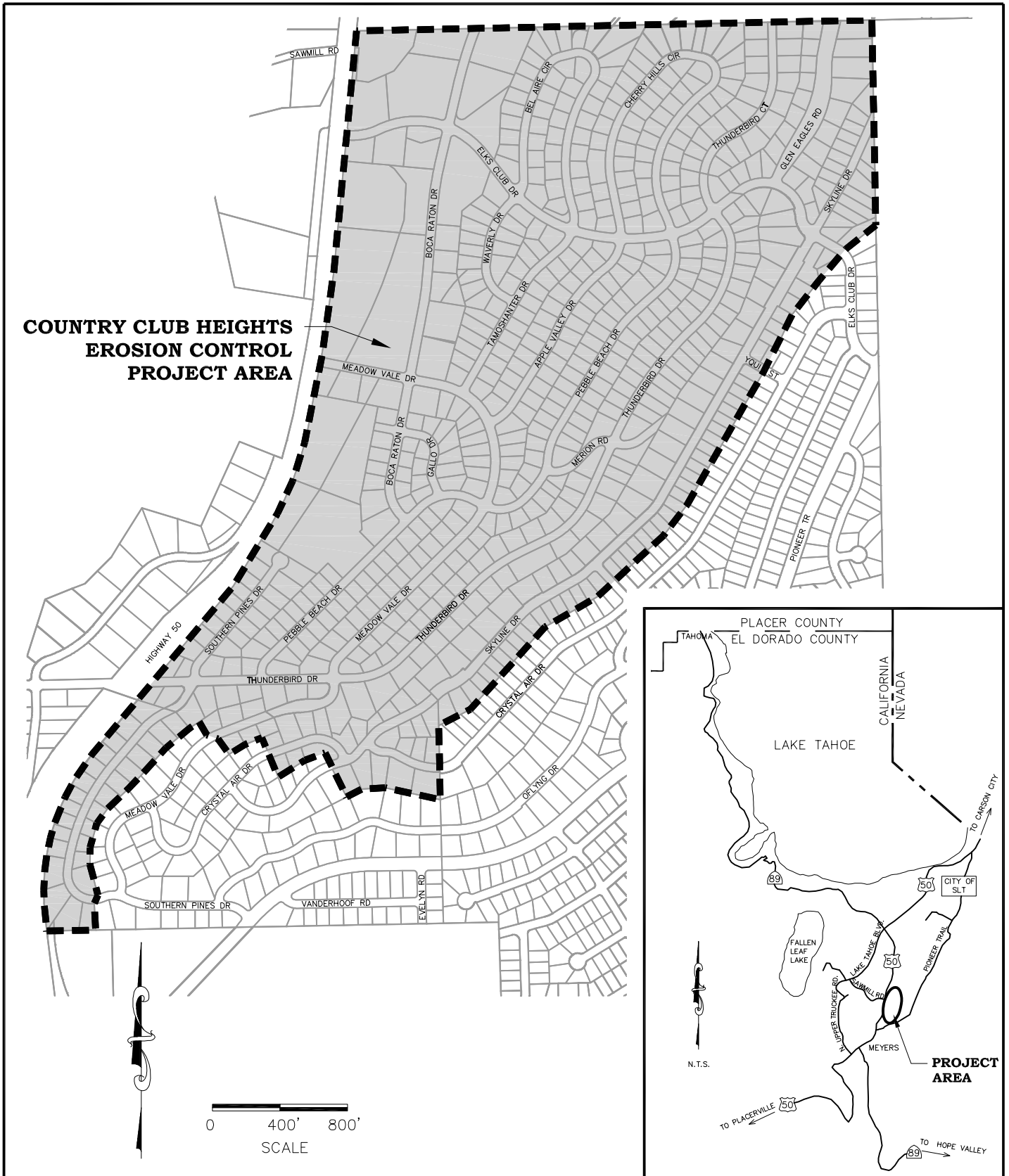
In addition to the eroding slopes, the two other identified source control issues are with eroding shoulders and eroding or incised channels. Stabilization of the eroding shoulders will consist of compacted aggregate base while stabilization of the incised channels will be addressed with the addition of rock or seed with blanket, and rock bowls or dissipators at the pipe inlets/outlets. Depending on availability, salvaged sod could be used to replace the seed and blanket material.

Multiple hydrologic conveyance issues will be addressed by the preferred alternative, including problematic road side conveyance systems on Elks Club and Boca Raton as well as undersized / inefficient culverts throughout the project area. Elks Club Drive, identified as a major collector, provides a connection between Highway 50 and Pioneer Trail. The road is relatively flat at highway 50, steepening from Bel Air Drive to the ridge between Skyline and Crystal Air, before heading down to Pioneer Trail. The roadside conveyance systems consist of asphalt concrete swales with no facilities to capture sediment. With the steepness of the road, current County maintenance practices include the application of abrasives to the road during the winter. Due to the depth of the existing AC swales it is difficult and expensive for maintenance crews to clean out the swales. Alternative 2 will include the construction of curb and gutter near the high point ending at the intersection of Elks Club Drive. Structures installed at the corners will enable increased capture of sediment and material. Additional structures installed down Elks Club will allow for the capture of sediment as well as for easier maintenance practices. In the flatter reach of Elks Club Drive, between Bel Aire Circle and the Boca Raton Drive, impaired AC swales will be replaced with shallower AC swales that direct runoff onto the adjacent CTC parcels (APN 033-201-32 and APN 033-201-04). A new culvert will be installed at the corner of Bel Air and Elks Club which will direct stormwater flows to a CTC owned parcel (APN 033-211-09) with a 1B Land Capability. Flows will cross this meadow area to the existing Boca Raton channel where excess flows would be conveyed through the existing outlet pipe crossing Elks Club into the channel at the corner of Boca Raton and Elks Club. Both the replacement of the impaired AC swales and the new pipe will enable the treatment of stormwater runoff as well as the rewatering of the meadow areas. Alternative 1 looked at replacement of the existing AC swales between Bel Air and Glen Eagles on Elks Club using either the construction of shallower swales or curb and gutter. However, due to funding restrictions, the work on the swales at these locations was not included in the preferred. The work will be included in the preferred if additional funds are secured.

The conveyance issues at the intersection of Boca Raton and Meadowvale include existing shallow roadside swales that fill with material causing stormwater flows onto both roads. Alternative 2 will include replacement of the pipes crossing Meadowvale and Boca Raton for increased conveyance efficiency, as well as the construction of roadside swales and an infiltration basin on the CTC parcel at the corner of Boca Raton and Meadowvale (APN 033-221-03) for both the treatment of stormwater and capture of sediment. The inlets and outlets of the new culverts will be stabilized with either CSP inlets or flared end sections with rock energy dissipators. The outlet channel from the culvert crossing Boca Raton will be re-configured to direct storm water runoff to the meadow area adjacent to Boca Raton on a CTC owned parcel (APN 033-223-05). The reconfiguration will allow for additional treatment of runoff as well as re-watering the existing meadow area, classified as a 1B Land Capability.

A total of 13 public parcels are proposed for use with Alternate 2.

**COUNTRY CLUB HEIGHTS  
EROSION CONTROL  
PROJECT AREA**



COUNTY OF EL DORADO  
COMMUNITY DEVELOPMENT AGENCY  
TRANSPORTATION DIVISION

**COUNTRY CLUB HEIGHTS  
EROSION CONTROL PROJECT**

LOCATION MAP

FIGURE













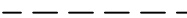






**1**

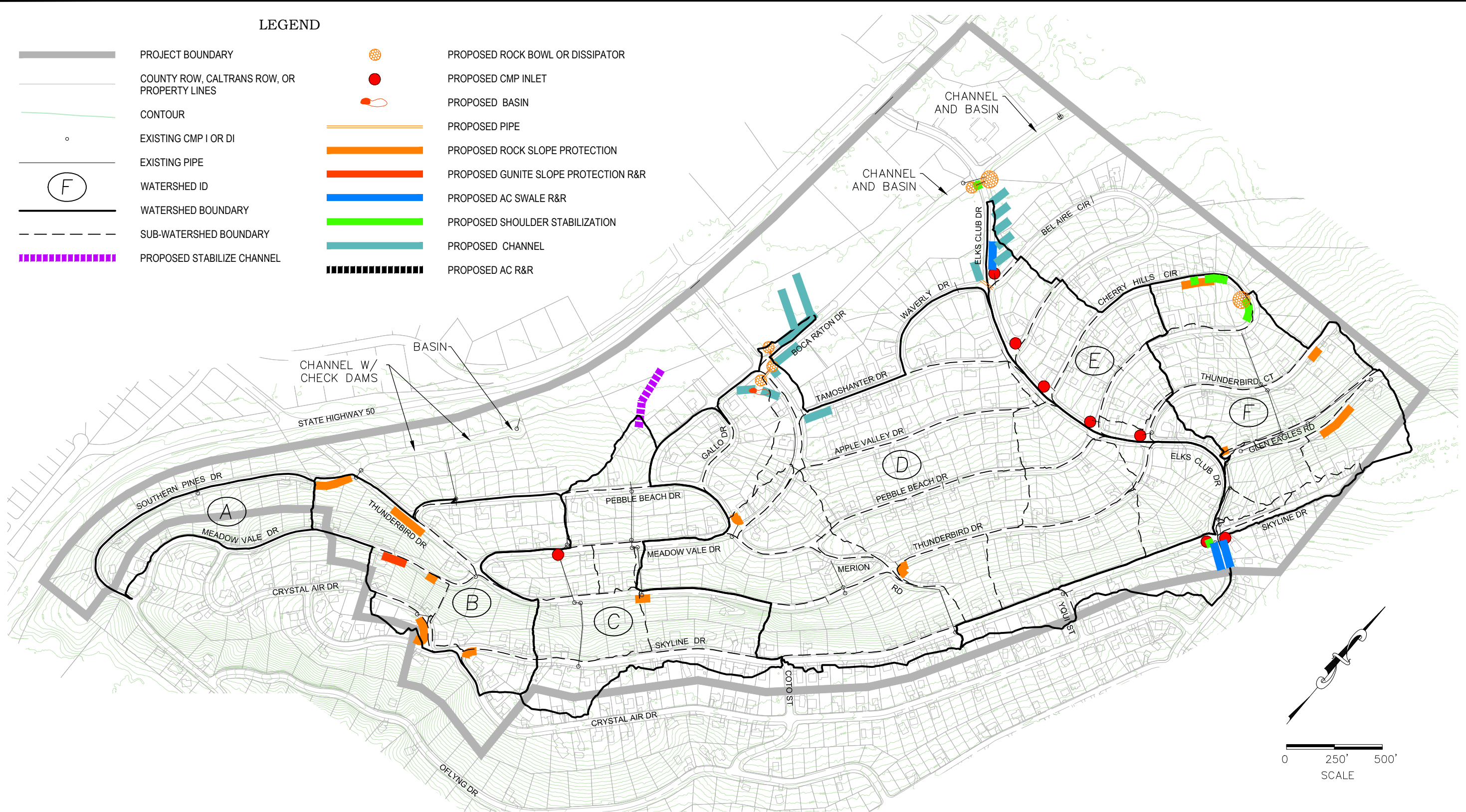
DATE: 10/2016


PROJECT NO.: 95191

BY: ALD

**LEGEND**

- |   |   |   |                                      |
|---|---|---|--------------------------------------|
|  | PROJECT BOUNDARY                            |  | PROPOSED ROCK BOWL OR DISSIPATOR     |
|  | COUNTY ROW, CALTRANS ROW, OR PROPERTY LINES |  | PROPOSED CMP INLET                   |
|  | CONTOUR                                     |  | PROPOSED BASIN                       |
|  | EXISTING CMP I OR DI                        |  | PROPOSED PIPE                        |
|  | EXISTING PIPE                               |  | PROPOSED ROCK SLOPE PROTECTION       |
|  | WATERSHED ID                                |  | PROPOSED GUNITE SLOPE PROTECTION R&R |
|  | WATERSHED BOUNDARY                          |  | PROPOSED AC SWALE R&R                |
|  | SUB-WATERSHED BOUNDARY                      |  | PROPOSED SHOULDER STABILIZATION      |
|  | PROPOSED STABILIZE CHANNEL                  |  | PROPOSED CHANNEL                     |
|   |   |  | PROPOSED AC R&R                      |



|   |  |                    |   |  |                    |
|---|--|--------------------|---|--|--------------------|
|  | COUNTY OF EL DORADO<br>COMMUNITY DEVELOPMENT AGENCY<br>TRANSPORTATION DIVISION |                    | <b>COUNTRY CLUB HEIGHTS<br/>                 EROSION CONTROL PROJECT</b><br>Proposed Improvements |  | FIGURE<br><b>2</b> |
|   | DATE: 12/2016  | PROJECT NO.: 95191 | BY: DWK   |  |                    |

## 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.

**Table 1 - Construction Cost Estimate**

| Item No. | Description                  | Quantity | Unit | Unit Price  | Cost         |
|----------|------------------------------|----------|------|-------------|--------------|
| 1        | Mobilization                 | 1        | LS   | \$59,000.00 | \$59,000.00  |
| 2        | Traffic Control              | 1        | LS   | \$20,000.00 | \$20,000.00  |
| 3        | Sweeping                     | 1        | LS   | \$17,500.00 | \$17,500.00  |
| 4        | Trench Excavation & Safety   | 1        | LS   | \$7,000.00  | \$7,000.00   |
| 5        | Install & Maintain Temp BMPs | 1        | LS   | \$20,000.00 | \$20,000.00  |
| 6        | Remove CMP                   | 245      | LF   | \$45.00     | \$11,025.00  |
| 7        | CMP Inlet                    | 6        | EA   | \$4,500.00  | \$27,000.00  |
| 8        | 18" HDPE Pipe                | 245      | LF   | \$110.00    | \$26,950.00  |
| 9        | Sediment Basin               | 1        | LS   | \$17,000.00 | \$17,000.00  |
| 10       | AC Swale R&R                 | 145      | LF   | \$87.00     | \$12,615.00  |
| 11       | Rolled Curb and Gutter       | 300      | LF   | \$90.00     | \$27,000.00  |
| 12       | Seed & Blanket Channel       | 1350     | LF   | \$51.00     | \$68,850.00  |
| 13       | Gunite Slope Protection R&R  | 1        | LS   | \$95,000.00 | \$95,000.00  |
| 14       | Rock Slope Protection        | 12400    | SF   | \$17.00     | \$210,800.00 |
| 15       | Rock Bowl/Rock Dissipator    | 350      | SF   | \$13.00     | \$4,550.00   |
| 16       | AB Shoulder Stabilization    | 710      | SF   | \$5.00      | \$3,550.00   |
| 17       | Misc Grading                 | 5        | CY   | \$88.00     | \$440.00     |
| 18       | Revegetation (Basin)         | 1        | LS   | \$3,000.00  | \$3,000.00   |
| 19       | CCCs                         | 1        | LS   | \$10,000.00 | \$10,000.00  |
| 20       | Project Sign                 | 1        | EA   | \$2,000.00  | \$2,000.00   |

Sub Total \$ 661,180.00

10% Contingency \$ 66,118.00

**Total \$727,298.00**



## 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**

| <b>Project Stage<br/>Milestone/Task</b>   | <b>Anticipated<br/>Completion Date</b> |
|---|--|
| <b>Alternatives Report Stage</b>  |  |
| Draft Feasibility Report (Existing Conditions, Project Alternatives Selection and Evaluation)               | October 2016                           |
| PDT Feasibility Report Meeting  | October 2016                           |
| Public Feasibility Report Meeting   | November 2016                          |
| Final Feasibility Report  | December 2016                          |
| Complete Preferred Alternative Memorandum (PAM)   | December 2016                          |
| <b>Environmental Assessment Stage</b>   |  |
| Environmental Field Surveys   | Spring/Summer 2016                     |
| Draft California Environmental Quality Act (CEQA) and TRPA Initial Environmental Checklist (IEC) Submittals | January 2017                           |
| California Environmental Quality Act/ Mitigated Negative Declaration (CEQA/MND) Approval                    | April 2017                             |
| <b>Pre-Final Plans, Specifications &amp; Reports Stage</b>  |  |
| Complete Pre-Final Project Design Plans and Contract Specifications   | April 2017                             |
| PDT Permit Applications Submittal   | April 2017                             |
| PDT Pre-Final Project Design Plans, Contract Specifications, and Design Report Meeting                      | April 2017                             |
| <b>Construction</b>   |  |
| Notice to Proceed   | August 2017                            |

## 7.0 References

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<sup>1</sup> County of El Dorado, Country Club Heights Erosion Control Project, Feasibility Report with December Errata, December 2016.

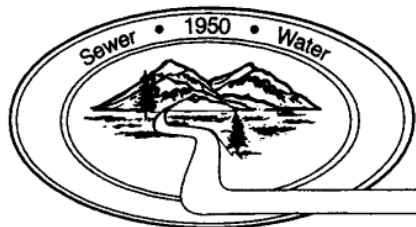
<sup>2</sup> County of El Dorado (December 2016).

**Appendix A**

**PDT and PUBLIC COMMENT**

**Country Club Heights Erosion Control Project - Public Comments During Development of Feasibility Report**

| #  | Date       | Communication  | Comment   |
|----|------------|----------------|---|
| 1  | 10/31/2016 | Letter         | Sent letter regarding ponding problem on Meadow Vale. Plugging of roadside ditch creates a ponding problem every winter. Also noted that the road conditions on Meadow Vale are "horrible". Person would rather see the roads repaired first.   |
| 2  | 11/2/2016  | Letter         | Sent letter regarding hillside runoff (from above house) affecting their house and garage. Also commented on the "rebar-reinforced" cement walls throughout neighborhood. Would like to see cement walls removed and replaced with something stronger and more attractive.  |
| 3  | 11/3/2016  | Letter / Phone | Sent letter (and followed up with phone call) regarding the failing section of gunite on Meadow Vale Drive. Noted that "in paragraph 7.1 problem areas, the reference to figure 17 is noted. However in looking at the acturla figure the buckled gutine slope ... is not highlighted" (**Figure was checked and is noted to show problem area in questions ... near 1700 Meadow Vale). Noted "in pargraph 8.1 the alternatices propoes in-kind replacemt of gunite slope protection." Requests that County look into a more effectuve abd envuribnebtakkt fruedkt wat ti oritect slopes. Suggested (as a last resort) that this section of Meadow Vale be closed and the slope returned to it's original grade ... cul-de-sacs be created at either end of closed section. |
| 4  | 11/4/2016  | Letter         | Sent letter concerned about the overall cost of the project. Requested information on the current unfunded amount for the project and how that cost will be covered. Unable to make the meeting and wanted to know how the results of this meeting would be communicated to impacted homeowners not able to attend the meeting.   |
| 5  | 10/31/2016 | Phone          | Called regarding problem in front of their home on Skyline Drive. Area in question is near 1668 Crystal Air Drive. Noticed that ponding occurs during storm events and the street is starting to crack. Also noticed settlement of their home ... when water ponds in the roadway has seen air bubbles coming to the surface.   |
| 6  | 10/28/2016 | Phone          | Called in regards to the project. Had no issues to report, but wanted to know the background of the project. Also discussed County snow removal practices with respect to the use of salt and brine.  |
| 7  | 10/17/2016 | Phone          | Called in regards to issue at the intersection of Elks Club and Skyline. The roadside ditch on the southeast side ponds, creating an icing hazzard in the winter as ponding comes out into the roadway.   |
| 8  | 3/16/2016  | Phone          | Called our office regarding a potential problem of a plugged pipe near the intersection Apple Valley and Meadow Vale. Callk was forwarded on to Maintenance.  |
| 9  |            |                |   |
| 10 |            |                |   |
| 11 |            |                |   |
| 12 |            |                |   |
| 13 |            |                |   |
| 14 |            |                |   |
| 15 |            |                |   |
| 16 |            |                |   |



# South Tahoe Public Utility District

1275 Meadow Crest Drive • South Lake Tahoe • CA 96150-7401  
Phone 530 544-6474 • Fax 530 541-0614 • www.stpud.us

October 27, 2016

County of El Dorado Community Development Agency, Transportation Division – Tahoe Engineering Unit  
924 B Emerald Bay Road  
South Lake Tahoe, CA 96150  
Attn: Daniel Kikkert, P.E.

Re: Country Club Heights Erosion Control Project Feasibility Report comments

Dear Mr. Kikkert,

Thank you for providing the District with the Draft Feasibility Report for the Country Club Heights Erosion Control Project. The District has reviewed the information in the report and offers the following comments with respect to potential water and sewer crossings.

1. Figure 9 of the draft report contains the utility map of the project area. Based on a preliminary review, this map appears to adequately characterize the water and sewer lines of the area. There are a couple of minor discrepancies (i.e. utilities shown that do not exist), but none that appear to affect any of the proposed work.
2. The District has a 15-foot wide sewer easement containing a 6" sewer line that straddles the property line between 1555 and 1559 Cherry Hills Circle. The District's easement is 10 feet on the 1555 Cherry Hills Circle property and 5 feet on the 1559 Cherry Hills Circle. This location appears to be exactly where the County is proposing to place a rock bowl and channel. The County will need to obtain approval from the District for any improvements located within this easement.
3. Some of the project work appears to be in close proximity to the District's 30-inch ductile iron pipe export force main. This force main runs through the project area on Glen Eagles Rd., Elks Club Dr., Tamoshanter Dr., and Meadow Vale Dr. This force main is a critical component of the District's treated wastewater disposal. This force main runs from the District's Wastewater Treatment Plant on Meadow Crest Drive to the Luther Pass Pump Station at the base of Luther Pass. If the pipe was damaged in any way, it is conceivable that the entire contents of the pipes could be spilled. Any project that will cross these force mains must contain a contingency plan to handle a potential breach of the force mains. District records indicate the 24 inch force main is steel pipe, while the 30 inch force main is ductile iron pipe.
4. Please let the District know at your earliest convenience of any potholing needed of our utilities. For sewer service locations, dipping the manholes in lieu of potholing may be sufficient to determine the location and elevation of sewer piping.

If you have any questions or concerns, please don't hesitate to call me at (530) 543-6202 (office) or (530) 902-1344 (mobile).

Sincerely,

A handwritten signature in cursive script that reads "Stephen M. Caswell".

Stephen Caswell, P.E.  
Senior Engineer



# COMMUNITY DEVELOPMENT AGENCY

## TRANSPORTATION DIVISION

<http://www.edcgov.us/DOT/>

### PLACERVILLE OFFICES:

#### MAIN OFFICE:

2850 Fairlane Court, Placerville, CA 95667  
(530) 621-5900 / (530) 626-0387 Fax

#### MAINTENANCE:

2441 Headington Road, Placerville, CA 95667  
(530) 642-4909 / (530) 642-0508 Fax

### LAKE TAHOE OFFICES:

#### ENGINEERING:

924 B Emerald Bay Road, South Lake Tahoe, CA 96150  
(530) 573-7900 / (530) 541-7049 Fax

#### MAINTENANCE:

1121 Shakori Drive, South Lake Tahoe, CA 96150  
(530) 573-3180 / (530) 577-8402 Fax

November 8, 2016

Stephen Caswell, P.E.  
South Tahoe Public Utility District  
1275 Meadow Crest Drive  
South Lake Tahoe, CA 96150-7401

**Subject: Country Club Heights Erosion Control Project – Project Feasibility Report, Response to Comments**

Dear Mr. Caswell,

Thank you for your response letter dated October 27, 2016, regarding the County of El Dorado (County), Community Development Agency - Transportation Division (CDA-TD) Country Club Heights Erosion Control Project (Project) – Project Feasibility Report (Report). We appreciate the South Tahoe Public Utility District (District) taking the time to review and provide comments on the document. Our responses to the comments submitted are as follows:

*1. Figure 9 of the draft report contains the utility map of the project area. Based on a preliminary review, this map appears to adequately characterize the water and sewer lines of the area. There are a couple of minor discrepancies (i.e. utilities shown that do not exist), but none that appear to affect any of the proposed work.*

**Thank you for verification of the existing utility map. The County will provide a 65% plan set for review to ensure all identified sewer and water lines in areas of work are mapped correctly.**

*2. The District has a 15-foot wide sewer easement containing a 6" sewer line that straddles the property line between 1555 and 1559 Cherry Hills Circle. The District's easement is 10 feet on the 1555 Cherry Hills Circle property and 5 feet on the 1559 Cherry Hills Circle. This location appears to be exactly where the County is proposing to place a rock bowl and channel. The County will need to obtain approval from the District for any improvements located within this easement.*

**The County is re-evaluating this alternative based on the utility infrastructure and recently collected topographic data. If the County moves forward with this option, we will coordinate with the District on a preferred alignment.**

3. Some of the project work appears to be in close proximity to the District's 30-inch ductile iron pipe export force main. This force main runs through the project area on Glen Eagles Rd., Elks Club Dr., Tamoshanter Dr., and Meadow Vale Dr. This force main is a critical component of the District's treated wastewater disposal. This force main runs from the District's Wastewater Treatment Plant on Meadow Crest Drive to the Luther Pass Pump Station at the base of Luther Pass. If the pipe was damaged in any way, it is conceivable that the entire contents of the pipes could be spilled. Any project that will cross these force mains must contain a contingency plan to handle a potential breach of the force mains. District records indicate the 24 inch force main is steel pipe, while the 30 inch force main is ductile iron pipe.

**Based on the existing utility map, it appears the only work that will cross the 30 inch force main will be the removal and replacement of an existing culvert at Meadow Vale Drive, south of Boca Raton Drive. The County requests the District supply electronic drawings showing the vertical and horizontal location of the force main. The County will work with the District on an appropriate spill contingency plan for any potential construction impacts to the existing force line.**

*4. Please let the District know at your earliest convenience of any potholing needed of our utilities. For sewer service locations, dipping the manholes in lieu of potholing may be sufficient to determine the location and elevation of sewer piping.*

**The County appreciates the District providing this information. The County will submit the potholing request with the 65% plan set.**

We thank you for your comments regarding the Country Club Heights Erosion Control Project. We will keep you informed of the progress of this Project as it moves forward through the Project Delivery Process.

Sincerely,



Daniel Kikkert, PE  
Senior Civil Engineer

Cc: Amy Dillon, CDA-TD  
John Kahling, CDA-TD