

FINAL

STORM WATER POLLUTION PREVENTION PLAN

ANGORA CREEK FISHERIES & STREAM ENVIRONMENT ZONE ENHANCEMENT PROJECT
CONTRACT NO. PW-09-30486, CIP 95161



Prepared for:

Lahontan Regional Water Quality Control Board
2501 Lake Tahoe Boulevard
South Lake Tahoe, California 96150

Prepared by:

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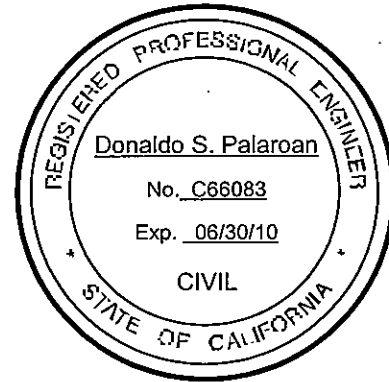
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**STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
ENDORSEMENT & CERTIFICATION**

Project Name: **ANGORA CREEK FISHERIES/SEZ ENHANCEMENT PROJECT**

Contract No.: **PW-09-30486**

CIP No.: **95161**

“I hereby endorse the Storm Water Pollution Prevention Plan (SWPPP) for the above-referenced Project which was drafted by County of El Dorado Department of Transportation. I certify that I will follow the guidelines outlined in said document and to the best of my ability shall ensure that persons under my control who are responsible for implementing and maintaining storm water and soil erosion control practices will do so in the best manner practical. I accept responsibility for all laws, permit requirements, addenda and penalties associated with practices outlined in this SWPPP.”

Contractor’s Signature

Date

Contractor’s Name & Title

Contractor’s Telephone Number

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COUNTY OF EL DORADO
DEPARTMENT OF TRANSPORTATION
STORM WATER POLLUTION PREVENTION PLAN
for the
ANGORA CREEK FISHERIES/SEZ ENHANCEMENT PROJECT

I. INTRODUCTION

A. SWPPP Objectives

This Storm Water Pollution Prevention Plan (SWPPP) has been developed for the Angora Creek Fisheries/SEZ Enhancement Project (herein referred to as the Project) in accordance with Attachment "D" of the NPDES Construction Permit No. CAG616002 (Board Order R6T-2005-0007). The plan objectives, as stated from this reference, are as follows:

- a. To identify pollutant sources that may affect the quality of storm water discharges from the construction site, and
- b. To identify, assign, and implement control measures and management practices to reduce pollutants in storm water discharges from the construction site both during construction and after construction is completed when the construction activity may result in the discharge of pollutants in excess of pre-construction levels.

In accordance with the stipulated objectives this SWPPP will:

1. Identify potential sources that may be expected to add pollutants or non-storm water discharges to storm water discharges within the Project boundary.
2. Describe temporary and permanent erosion, sediment, and storm water control measures implemented by the Project construction to reduce such discharges to the storm water system.
3. Provide descriptions of proper maintenance, inspection, and repair methods of the proposed control measures.
4. Outline the training and personnel required to perform maintenance, inspection, and repair on the proposed Best Management Practices (BMP) improvements.

B. Tahoe Basin Objectives

This project is listed as EIP project #406, #193 and #650 within Plan Area Statements 132, Map F-20 (Mountain View) in the April 2001 TRPA EIP.

The goal of EIP Projects #406 is to:

1. Improve wildlife and fisheries habitat by improving fish passage at Lake Tahoe Boulevard and habitat in Angora Creek.

The goal of EIP Projects #193 is to:

1. Improve the condition of the County Right of Way through controlled conveyance and treatment of stormwater generated from Lake Tahoe Blvd.

The goal of EIP project # 650 is to:

1. Improve the condition and function of the SEZ through restoration and promotion of overbank flow that reconnects the floodplain.

C. Project Existing Problems

The Angora Creek crossing at Lake Tahoe Boulevard consists of two 42" x 69" corrugated arch pipe culverts, with a concrete headwall at the inlet and outlet. The culverts were analyzed for fish passage and culvert condition in the report "Assessment of Geomorphic Stability and Fish Passage, Angora Creek" (ENTRIX, January 2006). This report identified fish passage problems at the culvert and problems relating to the stability and functionality of Angora Creek upstream of Lake Tahoe Boulevard.

The problem of fish passage at the culverts can be corrected through replacement of the culverts with a bridge. Depending on the size of the replacement structure, the passage of high flows through the Angora Creek floodplain can also be improved.

The 2007 Angora Fire burned through the Project area, destroying a majority of the existing vegetation and denuding soils. As a result, emergency measures were installed (debris rack, rock rip-rap and steel sheet pile) to prevent catastrophic failure of the roadway. Those measures are no longer needed and thus must be removed and the area restored.

As part of the Angora Creek SEZ Restoration Project an earthen berm was constructed to prevent water from coming into contact with a headcut that was repaired as part of the Project. The vegetation around the floodplain has now had the necessary time to establish and therefore the earthen berm can be removed. As a precautionary measure to ensure the headcut can no longer become active, the County will reuse the sheet pile being pulled from Angora Creek and install it above the old headcut.

D. Proposed Project

The Project has been designed to improve fish passage and enhance the SEZ area by replacing two existing culverts with an arch span bridge and reconstructing a portion of the stream channel. Also, water quality will be improved through the installation of curb and gutter, a sediment trap and a grass lined swale. Improvements installed during the 2007 Angora Fire will be removed to help restore the SEZ and a bike lane will be installed as part of the repaving work performed for the Project. Finally, an existing earthen berm downstream of the bridge will be removed, steel sheet pile will be installed to prevent channel migration and the area will be restored. Pollutant source reduction will be accomplished by the use of temporary erosion control measures during construction.

Lake Tahoe Blvd near Angora Creek Rd. (Sheets P-1 & P-2 of the Plans)

This portion of the project consists of erosion control improvements including a grass-lined swale, a sediment trap, curb and gutter and tie-in pavement.

Lake Tahoe Blvd near Angora Creek Rd. (Sheet P-3 of the Plans)

This portion of the project consists of replacing the existing double arch culvert with a precast concrete 3-sided bridge. Also, a portion of new stream channel will be constructed and the existing channel will be filled and restored. Improvements installed for the 2007 Angora Fire will be removed and the area will be restored.

Angora Creek near Angora Creek Rd. (Sheet P-4 of the Plans)

This portion of the project consists of removing an earthen berm that impounds water and

forces it into the Angora Creek channel. The berm was constructed temporarily to prevent water from comingling in an area where a headcut was once present. The area where the headcut was present will have sheet pile installed at grade to prevent material from being transported during large events.

II. EXISTING SITE CONDITIONS

A. Vicinity

The Project area is located in eastern El Dorado County, in the Tahoe Basin, west of U.S. Highway 50. The Project consists of work on and adjacent to Lake Tahoe Blvd., between Angora Creek Drive and Mt. Rainier Drive (Figure 1). The main Project area is west of the Angora Creek SEZ Rehabilitation Project and is approximately 2 miles upstream of the confluence with the Upper Truckee River, which is a tributary to Lake Tahoe. The elevation range of the Project area is approximately 6346 to 6330 (NGVD 29).

B. Rainfall, Watersheds, Drainage Areas and Discharge Points

Rainfall Figure

An intensity, duration and frequency precipitation figure (Figure 4) was utilized for this Project area, which depicts the precipitation amounts within the Project area. Additionally, the Project area lies in MAR isohyetal line of 37 inches. Based on the centroid coordinate location of Project, EDOT utilized a MAR of 37 inches.

Project Watersheds Map

A map delineating the two watersheds (A & B) within the Project area (Figure 2) shows the limits and extents of drainage within the immediate Project vicinity.

Angora Creek Watershed Map

A Project Watershed Map delineating the main watershed draining to Angora Creek is depicted on Figure 3.

C. Land Capability

The land capability of the entire Project area is Class 1B and is within the stream environment zones (SEZ) as verified by the Tahoe Regional Planning Agency (TRPA). The contractor must take extra precaution when entering into the SEZ areas and shall utilize low ground pressure equipment, access roads, and/or landing pads to minimize disturbance in these areas (See Appendix F for SEZ Disturbance and regulations of SEZs).

D. Project Vegetation

The vegetation in the Project area is primarily SEZ and wetland type vegetation and is sensitive in nature. The contractor must take extra precaution when entering into the SEZ areas and shall utilize approved techniques such as use of low ground pressure vehicles, landing pads, or equivalent at all access points to minimize disturbance in these areas.

E. HEC-RAS Channel Cross-Sections Figure

A HEC-RAS Channel Cross-Sections Figure (Figure 5) was developed to show modeled flow and channel cross-sections at different locations along the channel within the Project area. This was used for the analysis to optimize flows for fish passage, channel

construction and overbanking during large events.

III. SITE DESCRIPTION

A. Pollutant Source Identification

1. Stormwater structures and controls used during construction are shown on Sheet 17/EC-1 of the Plans. These temporary erosion control BMPs consist of filter fence, fiber rolls, gravel bags or gravel-filled rolls, vegetation protective fencing/construction limit fencing, tire-wash areas, visqueen and drain inlet protection as shown and described in more detail in the typical detail sheets (Sheets 18/EC-2 & 19/EC-3).
2. Staging areas used to store soils and wastes from the construction activity are shown on Sheet 17/EC-1 and Sheet 23/T-1.
3. Geotechnical survey results are shown on Sheet 25/G-1.
4. Areas of soil disturbance during construction include: All areas requiring excavation and grading, which are shown on Sheets P-1 through P-4. Examples of soil disturbance activities include but are not limited to: areas where the new channel will be constructed, the bridge installation area, sod harvesting areas, curb and gutter installation areas, sediment trap installation zone, earthen berm removal area, and sheet pile installation area.
5. Surface water location: Figure 3 depicts Angora Creek, a tributary to the Upper Truckee River which is the surface water within the Project area.
6. Areas of potential erosion where control practices will be used during construction are shown on Sheet 17/EC-1.
7. Locations of post-construction improvements, including storm water structures and control are shown on Sheet 17/EC-1.

B. Site Conditions and Construction Controls

1. No toxic materials shall be treated, stored, disposed, spilled, or leaked within the Project area pursuant to the Special Provisions. A Spill Contingency Plan has been developed for this Project (Appendix C), which the Contractor shall adhere to and which will be made part of the Construction Contract, permits and this SWPPP.
2. Construction equipment and vehicles shall be stored on paved areas when not in use. Filter fence or fiber roll sediment barriers shall be properly installed on the downstream side of construction material storage piles. The above practices serve to minimize contact of these construction materials with storm water.
3. Construction machinery shall not be permitted outside of the construction limit fencing at any time for any reason.
4. Construction materials shall be loaded and unloaded in designated areas and protected by temporary erosion controls as shown on Sheet 17/EC-1.

5. Cleaning of tires and concrete wash from construction equipment shall only be permitted at the approved tire wash area and concrete wash area within the construction site as shown on Sheet 17/EC-1. Cleaning of vehicles or construction equipment other than for tire wash and concrete wash shall not be permitted within the construction site.
6. Angora Creek Road will serve as a temporary on-site storage area for excess excavated materials and construction materials. These areas shall be protected by temporary erosion control BMPs until stabilization of the restored area is completed. All other construction material may be only temporarily stored on-site and must be protected by temporary erosion control BMPs. The Contractor will dispose of any unused materials at an approved disposal site.
7. Any fill material to be used shall be as described in the Special Provisions (Appendix B). Fill material shall conform to these requirements.
8. The Project area shall be swept with an approved sweeper at the designated intervals outlined in the Contract Specifications.
9. Temporary BMPs shall be properly monitored and maintained at the designated intervals outlined in the Contract Specifications.

C. Construction Site Area and Impervious %

The construction site area is estimated at 2.16 acres with 24% of the site having impervious areas before and 26% after construction. The majority of the SEZ areas within the Project area have been previously disturbed.

D. NOT USED

E. Order of Work

The order of work shall conform to the provisions in Section 5-1.05, "Order of Work," of the Standard Specifications and as specified in Section 10-1.01 "Order of Work," of the Special Provisions. The following sequence of work is herein provided within this SWPPP as a guide of which the Standard Specifications and Special Provisions shall supersede in the event of a conflict:

1. Mobilization
2. Fish/Amphibian Salvage and Relocation
3. Install Temporary BMPs near LTB and Temporary Access Roads
4. Pre-Grade Inspection
5. Install Diversion and Dewatering System
6. Utility Location (USA)
7. Install Traffic Control
8. Remove Sheet Pile, Trash Rack and Rock
9. Clear and Grub Floodplain
10. Grade Floodplain
11. Construct USFS GLS and Channel
12. Remove Roadway
13. Remove Existing Culvert(s)
14. Relocate Utilities
15. Install Three-Sided Bridge System and Construct Channel through Bridge
16. Backfill Around Three-Sided Bridge System
17. Flush New Channel

18. Remove Dams and Rewater New Channel
19. Remove Diversion System
20. Remove Remaining Culvert, if applicable
21. Install Double Sediment Trap and LTB GLS
22. Install Curb and Gutter and Curb Opening
23. Complete Slope Grading and Install AC Paving
24. Harvest and Place Sod in both GLS near LTB
25. Revegetate Disturbed Areas
26. Clean Drainage Structures and Site
27. Install Temporary BMPs Downstream
28. Dewater Sheet Pile Installation and Berm Removal Areas
29. Install Sheet Pile
30. Remove Berm
31. Harvest and Place Sod at Previous Berm Location
32. Revegetate Sheet Pile Area
33. Remove Temporary BMPs
34. Begin Irrigation
35. Clean Project Site
36. Repair Temporary BMPs as needed for winterization
37. Substantial Inspection - Punch list
38. Final Inspection - Contract Acceptance

IV. EROSION AND SEDIMENT CONTROL

A. Soil Stabilization Practices – Source Control

Erosion in the Project area is primarily the result of channel erosion, bare soil exposed by the 2007 Angora Fire and ensuing construction practices; and eroding roadside drainages and eroding road shoulders. Unstable slopes and off-road drainages also contribute to the sediment load to Angora Creek. Permanent soil stabilization BMPs for these eroded areas will be accomplished by the following measures:

1. Areas disturbed for bridge construction adjacent to Angora Creek will be permanently stabilized with a retaining wall, rock slope protection, native vegetation, mulch and tackifier.
2. Areas disturbed during the berm removal and sheet pile driving operations will be permanently stabilized with native sod, vegetation and mulch.
3. Vegetated swales will be stabilized with salvaged sod or an organic erosion control blanket, stakes, and propagated sod.
4. Work area limits have been established and will be delineated by protective fencing (Sheets 17/EC-1, 18/EC-2). The Contractor is directed to work within these limits. All disturbed areas within the protective fencing limits shall be permanently stabilized and revegetated. The Contractor shall be responsible to stabilize all areas disturbed by construction activity. Any disturbance outside of the work area limits will be revegetated by the CCC at the Contractor's expense.
5. The CCC's may perform non-structural slope stabilization using rock rip-rap, willow staking, erosion control blankets, wattles, vegetation and mulch beginning with areas not affected by the Contractor's operations.

6. All trees within work areas that are to remain shall be protected with vegetation protection fencing (Sheet 18/EC-2).
7. All revegetation shall be done in conformance with the Project specifications and plans.
8. The County will irrigate all newly vegetated areas for two (2) years post-construction to enhance vegetative establishment. Contractor shall irrigate harvested sod, transplanted willows, and salvaged sod until they are transplanted and then the County will assume responsibility for irrigation.

B. Control Practices – Runoff Treatments

The following control practices will be implemented either as temporary erosion and sediment control BMPs during construction or as permanent BMPs installed during construction as part of the improvements for storm water management. These control practices have been designed to prevent a net increase of sediment load in storm water discharge.

1. Temporary Erosion and Sediment Controls

a. *Filter Fence (trapping capacity 10mm to 1mm, Max Flow Rate = 10 gal/min/ft²):*

- Temporary erosion controls shall be placed where shown on the Plans (Sheet 17/EC-1) or as required by the Project Engineer, TRPA and/or Lahontan as a result of the Contractor's operations or method of operation.
- Place around construction staging areas, downslope of any disturbance, at construction site boundary, downstream of fill slopes and basins, or elsewhere as shown on the Plans.
- Temporary erosion controls shall conform to the Special Provisions, the TRPA permit and Attachment "Q".

b. *Weighted Fiber Rolls/Gravel-Filled Rolls (trapping capacity 10 mm to 1 mm, Max Flow Rate = 100 gal/min/lf):*

- Temporary erosion controls shall be placed where shown on the Plans (Sheet 17/EC-1) or as required by the Project Engineer, TRPA and/or Lahontan as a result of the Contractor's operations or method of operation.
- Place on compacted soil, concrete or paved surfaces in areas to receive curb and gutter, other asphalt work at entrances to staging areas, at the toe of spoil piles or around drainage inlets.
- Temporary erosion controls shall conform to the Special Provisions, the TRPA permit and Attachment "Q".

c. *Rice Fiber Rolls (trapping capacity 10 mm to 1 mm, Max Flow Rate = 100 gal/min/lf):*

- Temporary erosion controls shall be placed where shown on the Plans (Sheet 17/EC-1) or as required by the Project Engineer, TRPA and/or Lahontan as a result of the Contractor's operations or method of operation.
 - Place downslope of basin excavations or at toe of slope for slope protection during earthwork, along the contour on slopes, at the toe of spoil piles, or elsewhere as shown on Plans.
 - Temporary erosion controls shall conform to the Special Provisions, the TRPA permit and Attachment "Q".
- d. *Gravel Bags (trapping capacity 10 mm to 1 mm, Max Flow Rate = 500 gal/min):*
- Temporary erosion controls shall be placed where shown on the Plans (Sheet 17/EC-1) or as required by the Project Engineer, TRPA and/or Lahontan as a result of the Contractor's operations or method of operation.
 - Place within curb and gutter excavation at intervals of 50 feet for slopes > 5 percent, at 100 feet for slopes ≤ 5 percent, at Drainage Inlets when completed, on visqueen to hold it in place, around well points, in coffer dam areas, or elsewhere as shown on Plans.
 - Temporary erosion controls shall conform to the Special Provisions, the TRPA permit and Attachment "Q".
- e. *Visqueen with Gravel Bags*
- Temporary erosion controls shall be placed where shown on the Plans or as required by the Project Engineer, TRPA and/or Lahontan as a result of the Contractor's operations or method of operation.
 - Place within excavated channels prior to precipitation events, over spoil piles, or elsewhere as shown on Plans. Must be appropriately weighted to prevent movement.
 - Temporary erosion controls shall conform to the Special Provisions, the TRPA permit and Attachment "Q".
- f. *Turbidity Barrier*
- If deemed necessary, this temporary erosion control shall be placed as required by the Project Engineer in the field, TRPA and/or Lahontan as a result of the Contractor's operations or method of operation.
 - Potentially, place within Angora Creek and/or ponded area above the berm prior to excavation or floodplain grading for channel construction or bridge construction, if directed by the Project Engineer. Must be appropriately installed and weighted to prevent movement. Barrier shall remain in

place until construction is complete and surface water quality has improved to ambient standards. A back-up floating boom containment structure shall also be used onsite in the event of a breach in the main turbidity barrier.

- Temporary erosion controls shall conform to the Special Provisions, the TRPA permit and Attachment "Q".

2. Temporary Erosion Control Methods for Channel Construction, Bridge Installation and Berm Removal

Ingress/Egress

Proper equipment, with low PSI ratings, shall be selected to enter the stream environment zone for channel construction, berm removal and bridge footing preparation. Proper placement and installation of construction limit fencing shall occur to limit disturbance per Sheet 17/EC-1. If necessary, as determined by the Project Engineer, Lahontan and/or TRPA, landing pads, or an equivalent method, shall be placed for machinery to access SEZ areas to prevent soil disturbance. All work shall be appropriately timed with good weather and construction activities shall occur in a timely fashion to stabilize the site as quickly as possible. Temporary erosion control measures (construction limit fence, silt fence, rice fiber rolls, gravel bags, wood chips, visqueen, coffer dams, pumps, piping, turbidity barrier) shall be placed where shown on the Plans or as required by TRPA and/or Lahontan as a result of the Contractor's operations or method of operation. Tracking of material onto roadways shall not occur and regular sweeping shall be performed to maintain a clean construction site. Erosion control measures shall be properly installed downstream of all soil disturbing activities and shall be actively maintained to prevent soil loss into Angora Creek.

Bridge Footings

All work associated with bridge and channel excavation, dewatering and bridge footing construction shall be appropriately timed with good weather and construction activities shall occur in a timely fashion to button up the site as quickly as possible. Temporary erosion control measures (silt fence, rice fiber rolls, gravel bags, rock, dewatering materials, turbidity barrier, pump) shall be placed where shown on the Plans or as required by the Project Engineer, TRPA and/or Lahontan as a result of the Contractor's operations or method of operation. Erosion control measures shall be properly installed downstream of all soil disturbing activities and shall be actively maintained to prevent soil loss into Angora Creek.

Contractor shall furnish, install, and operate pumps, pipe, appliances, and equipment of sufficient capacity to keep all excavations that require casting concrete in place or all construction that requires compaction under optimum moisture conditions free from water until the areas are backfilled and compacted in accordance with the Project's Special Provisions. All water removed from such excavations shall be placed in a

water truck(s) or properly disposed of per the Project's Dewatering and Diversion Plan (Appendix D). Contractor shall provide water truck(s) of sufficient capacity so as not to delay the dewatering operations by frequent emptying of the water truck(s). Contractor shall provide all means or facilities to conduct water to the pumps and to the water truck(s) for disposal.

Bridge Placement

All work shall be appropriately timed with good weather and construction activities shall occur in a timely fashion to button up the site as quickly as possible. Temporary erosion control measures and traffic control measures shall be placed where shown on the Plans or as required by the Project Engineer, TRPA and/or Lahontan as a result of the Contractor's operations or method of operation. Erosion control measures per Sheet 17/EC-1 shall be properly installed downstream of all soil disturbing activities and shall be actively maintained to prevent soil loss into Angora Creek. Traffic control measures shall be properly installed to maintain public safety.

Finish Work and Tie in Pavement

All work shall be appropriately timed with good weather and construction activities shall occur in a timely fashion to button up the site as quickly as possible. Temporary erosion control measures shall be properly placed to contain asphalt or concrete during finish work and tie in paving to catch concrete material so it does not enter Angora Creek. Additional temporary erosion control measures may be directed by the Project Engineer, TRPA and/or Lahontan as a result of the Contractor's operations or method of operation.

3. Permanent BMPs that Reduce Sediment Load

Sediment traps and grass lined swales have been designed to reduce sediment load to Angora Creek. These improvements should trap sediment discharges at the roadways thus enhancing the County's maintenance ability to remove pollutants of concern. The typical soil trapping range of these BMPs during a convective type of storm with minimal outfall are as follows:

Sediment traps (10mm-0.20 mm)
Grass lined swales \leq (10mm-0.20 mm)

The range of sediment trapping for these BMPs varies and is dependent on the inflow velocities and existing sediment deposition within the facility prior to inflow. The sediment loading from the convective storm as TSS ranges from (0.02 mm – 0.060 mm).

4. Sediment Tracking BMPs

To reduce tracking of sediment onto public roads, truck tire wash areas will be constructed (Sheet 19/EC-3-Detail 3). Tracking of soil and construction materials off the construction site will be prohibited pursuant

to TRPA's construction and grading ordinance with penalty of suspension of grading operations if in violation. Regular sweeping shall occur to further reduce sediment tracking.

5. Wind Erosion and Dust Control

During construction, to reduce wind erosion, the Contractor will be required to use a water truck whenever necessary. Dust control will be in accordance with the Special Provisions.

6. Sawcutting

The Contractor shall promptly sweep the area where A/C saw cutting has occurred to capture waste as it is generated and properly dispose of it.

C. Winterization

All construction sites shall be winterized by October 15, unless directed otherwise, to reduce water quality impacts associated with winter weather as follows:

1. Temporary erosion controls shall be installed.
2. Disturbed areas shall be stabilized.
3. Onsite construction slash and debris shall be cleaned up and removed.
4. Where feasible, mechanical stabilization and drainage improvements shall be installed.
5. Spoil piles shall be removed from the site or covered with plastic sheeting anchored with gravel bags to remain stable thorough the inactive period.

V. POST-CONSTRUCTION STORM WATER MANAGEMENT

The following storm water controls and management practices will be installed and implemented as part of the Angora Creek Fisheries/SEZ Enhancement Project to minimize pollutants in the storm water discharge after construction is complete.

A. Source Control BMPs

1. Sediment Traps – Capture coarse sediment and road material
2. Slope Protection – Reduce sediments
3. Revegetation - Stabilize soil in place

B. Hydrologic Design BMPs – Infiltration

1. Vegetation-lined channels
2. Sediment traps with rock bottoms
3. Curb and gutter

VI. WASTE MANAGEMENT AND DISPOSAL

All excess excavated materials not used in constructing or restoring other aspects of the Project shall be disposed of by the Contractor at an approved disposal site pursuant to the Special Provisions. This disposal also applies to existing asphalt concrete pavement removed from the site.

VII. SPILL CONTINGENCY PLAN

A Spill Contingency Plan has been developed for this Project, which is provided in Appendix C. The Contractor shall be required to amend said Spill Contingency Plan and submit within five working days of receipt of the Notice to Proceed for review by EDOT and Lahontan. No work shall commence until EDOT and Lahontan approve the Spill Contingency Plan.

The Contractor shall excavate and dispose of any soils or other materials contaminated with potentially harmful materials (e.g., sewage, diesel fuel, gasoline, oil, other chemicals), and shall backfill the resulting excavation with clean native soil as specified in the Special Provisions.

The Contractor shall implement the Spill Contingency Plan during any time that potentially harmful materials are at the job site.

VIII. DEWATERING AND DIVERSION PLAN

A Dewatering and Diversion Plan has been developed for this Project, which is provided in Appendix D. The Contractor shall be required to amend said Dewatering and Diversion Plan and submit within five working days of receipt of the Notice to Proceed for review by EDOT and Lahontan. No work shall commence until EDOT, Lahontan, and TRPA approve the Dewatering and Diversion Plan. The Contractor is responsible to implement the measures outlined in the Dewatering and Diversion Plan and shall adhere to all temporary BMPs, soil stabilization practices, dewatering practices and diversion practices outlined in the approved plan. The Dewatering and Diversion Plan shall outline proposed areas for effluent disposal, water quality testing and monitoring and the Contractor shall follow all guidelines outlined in the project permits.

IX. SAMPLING AND ANALYSIS PLAN

A Sampling and Analysis Plan has been developed for this Project, which is provided in Appendix E. The Contractor shall review the requirements outlined in the Sampling and Analysis Plan and shall be prepared to cease work and stabilize the construction site should inclement weather arise. County staff or another approved inspector shall obtain the necessary information to comply with the Lahontan permit.

X. SEZ DISTURBANCE

Appendix F contains information regarding SEZ disturbance. The Contractor shall review the requirements outlined in the SWPPP and Project permits regarding SEZ disturbance requirements.

XI. MAINTENANCE, INSPECTION, AND REPAIR

A. EDOT

Temporary BMPs

EDOT will complete periodic inspections on the temporary BMPs placed by the Contractor in accordance with following events:

1. Before inclement weather
2. After inclement weather
3. Before non-working days (weekends and holidays)

The EDOT inspector and Contractor will coordinate with respect to each event during the progress of the construction in order to facilitate the recommended action for the temporary BMPs. Contractor will be notified in writing by EDOT when inclement weather is forecast.

An inspection log will be maintained by EDOT with respect to all major maintenance and repair requirements on the BMPs installed by the Contractor. The Contractor will maintain and repair all temporary BMPs, which have been inspected and deemed out of specifications by EDOT at no additional cost to the County.

Permanent BMPs

Sediment traps, sediment vaults, culverts, drainage channels, and drop inlets will be cleaned of sediment with a vactor truck. The Contractor shall clean all facilities while in control of the Project site and upon completion of installation of all facilities. The County of El Dorado Department of Transportation Maintenance Division will carry out these maintenance practices. Semi-annual inspections (spring and fall) are made to determine maintenance requirements.

B. EDOT/CCC

Permanent BMPs

Facilities downstream of the drop inlets, basins, and sediment traps will require minimal vegetation maintenance but are part of semi-annual inspections. The County completes the plant establishment and the CCC performs routine repairs as necessary of said locations.

XII. TRAINING

A. EDOT

The Tahoe Engineering Division personnel provide the necessary BMP maintenance training to EDOT Maintenance crews yearly. A County of El Dorado BMP Maintenance Plan and Storm Water Management Plan are currently being developed and will be utilized once adopted for this Project and as a guidance document for the maintenance crews.

B. CCC

The CCC forces are trained by experienced County personnel with respect to revegetation practices that are funded by grant funds for the Project.

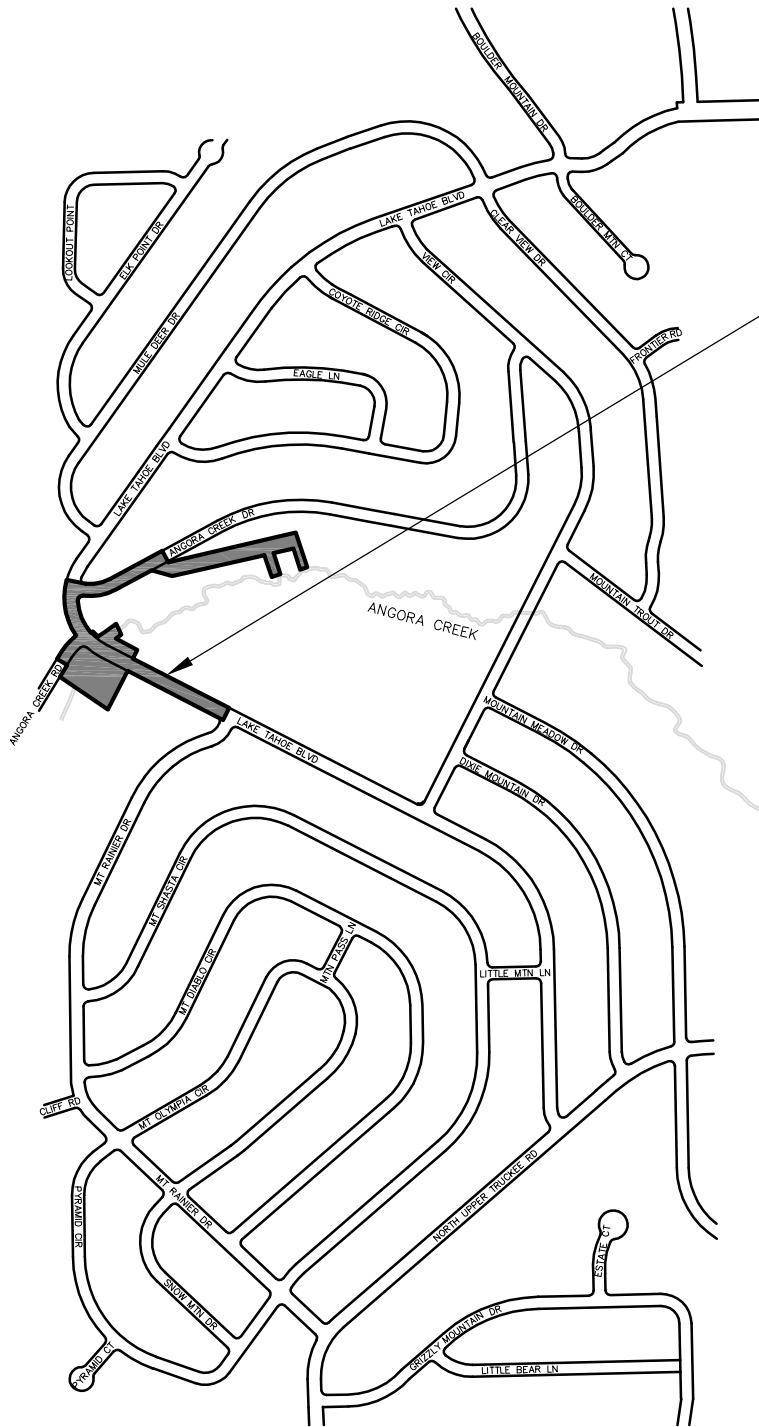
C. Contractor

The Contractor will provide the necessary training to his/her forces necessary to complete the installation, maintenance, and repair of the temporary BMPs in accordance with the SWPPP, the Special Provisions, and as directed by the County.

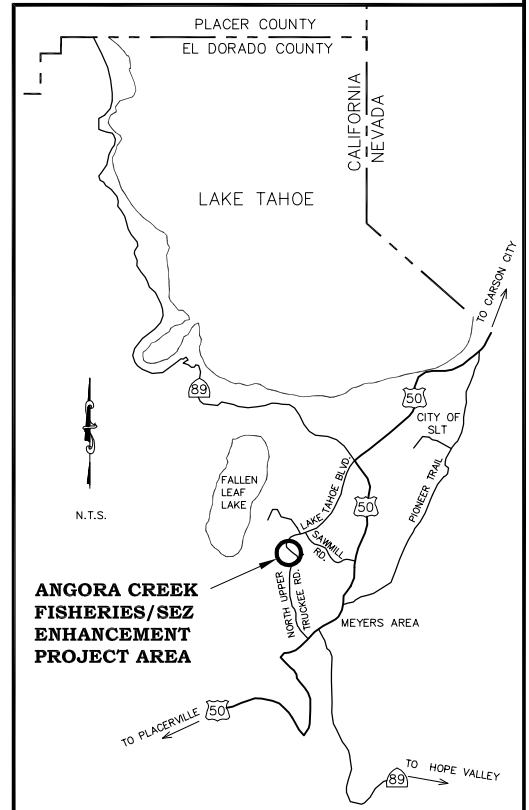
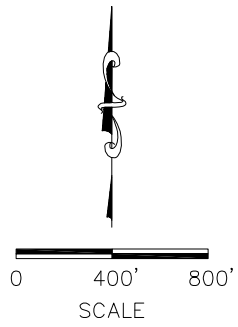
XIII. AMENDMENTS

All changes or modifications to the approved SWPPP from the State Water Quality Control Board – Lahontan Region will be logged on the Amendment Log Sheet provided after the Table of Contents within this document.

FIGURES



**ANGORA CREEK FISHERIES/SEZ
ENHANCEMENT PROJECT AREA**



EL DORADO COUNTY
SOUTH LAKE TAHOE OFFICE



**ANGORA CREEK FISHERIES/SEZ
ENHANCEMENT PROJECT**

PROJECT LOCATION MAP

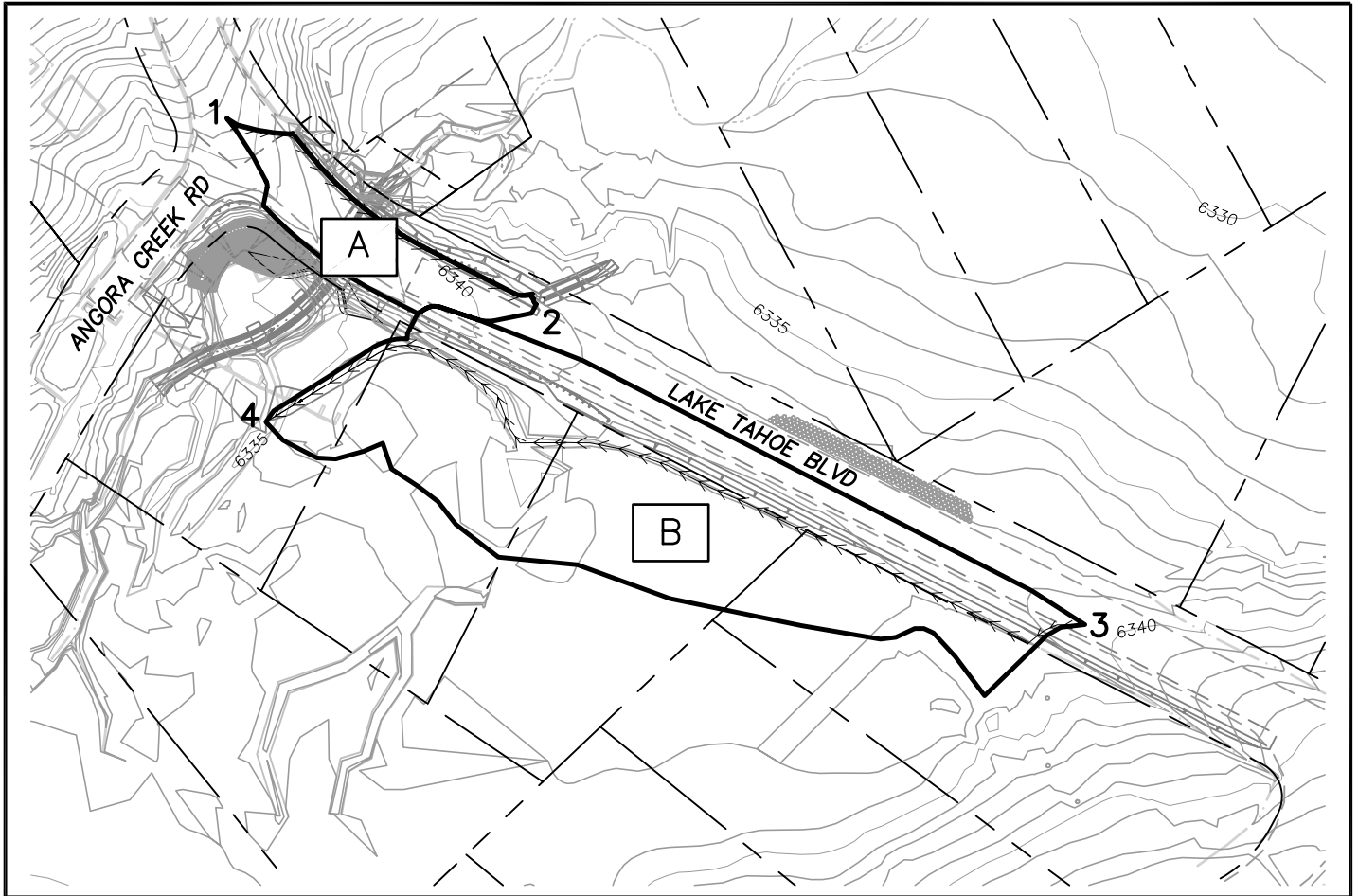
FIGURE

1

DATE: 12/09

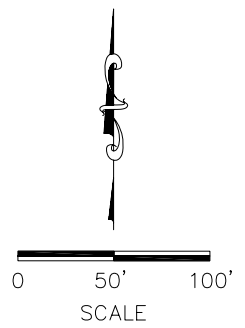
PROJECT NO.: 95161

BY: ALD

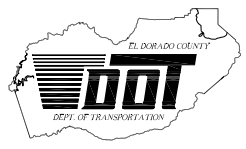


LEGEND

	WATERSHED		PROPOSED IMPROVEMENTS
	LONGEST FLOWPATH		EXISTING EDGE OF PAVEMENT
	WATERSHED BOUNDARY		ROW OR PROPERTY LINE
4	NODE OF FLOWPATH		PROPOSED EASEMENT
	CONTOUR LINE		



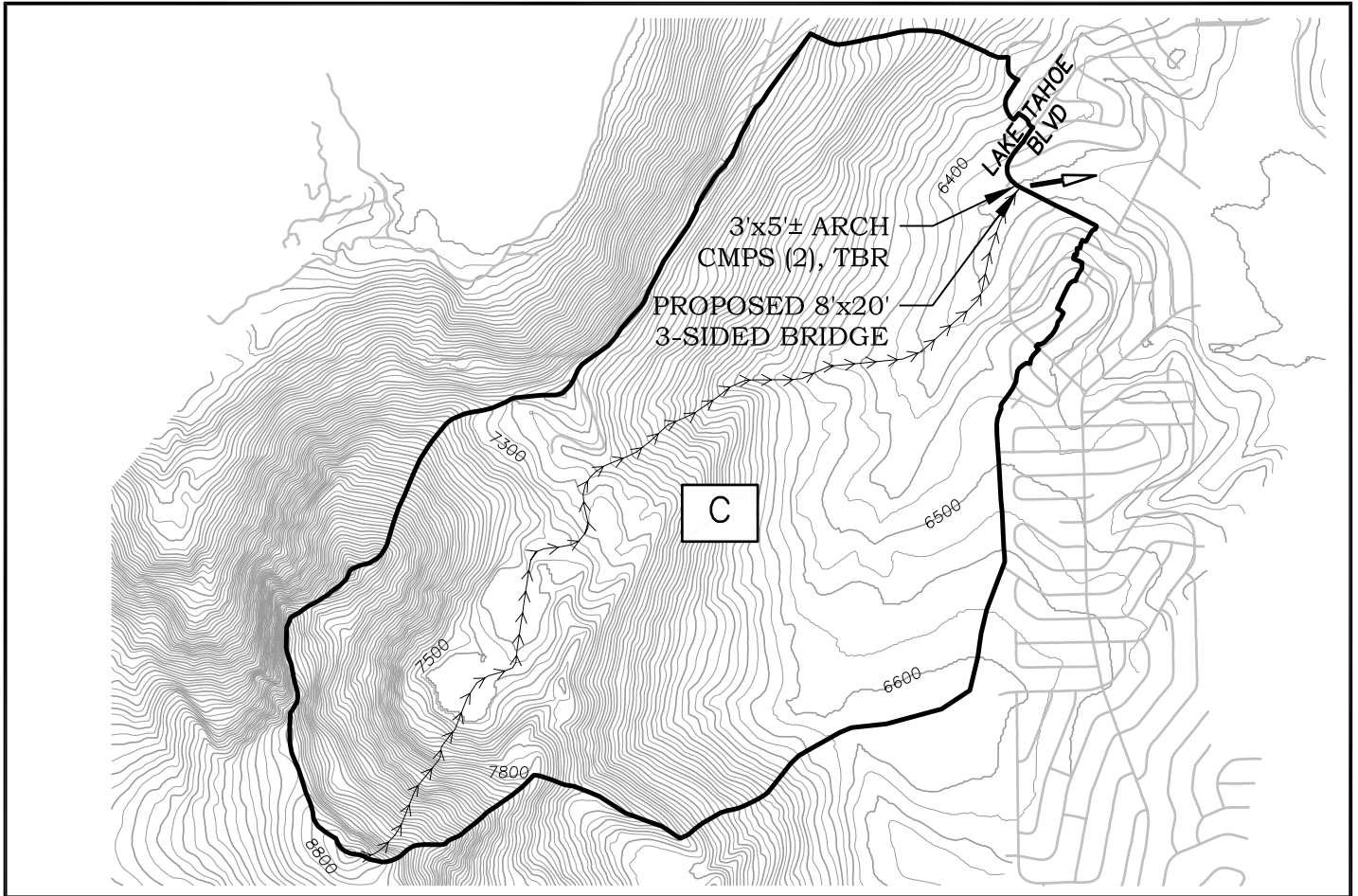
EL DORADO COUNTY
SOUTH LAKE TAHOE OFFICE



ANGORA CREEK FISHERIES/SEZ
ENHANCEMENT PROJECT
WATERSHED MAP - A & B

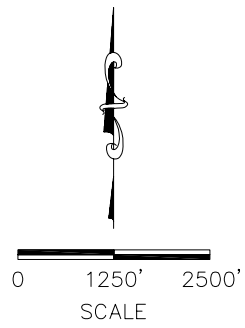
FIGURE
2

DATE: 12/09	PROJECT NO.: 95161	BY: ALD
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LEGEND

- C WATERSHED
- ←←←←← LONGEST FLOWPATH (APPROXIMATE)
- WATERSHED BOUNDARY (APPROXIMATE)
- ROADWAY
- 6335 ————— CONTOUR LINE
- ▶ WATERSHED OUTFALL



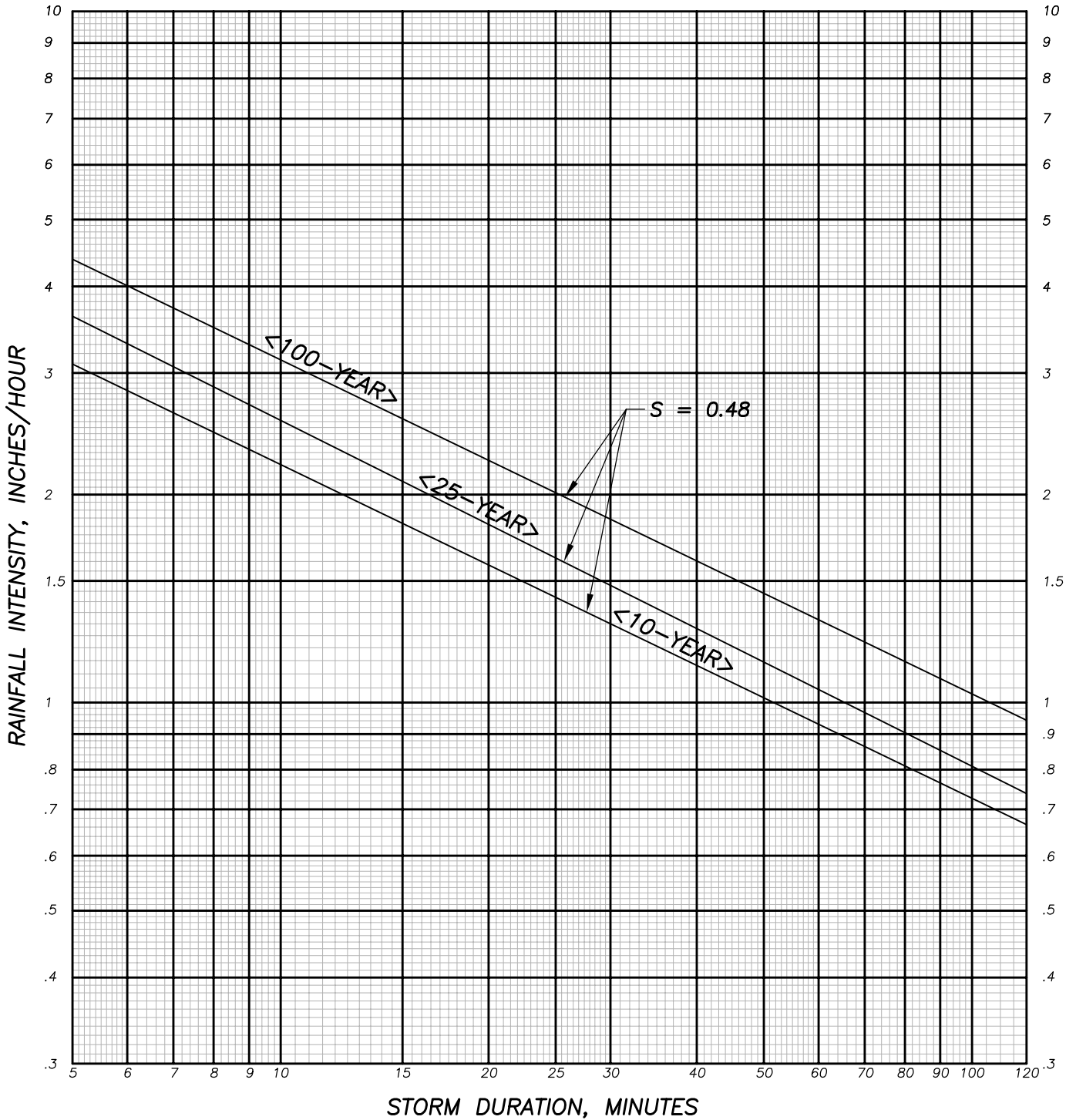
EL DORADO COUNTY
SOUTH LAKE TAHOE OFFICE

ANGORA CREEK FISHERIES/SEZ ENHANCEMENT PROJECT
WATERSHED MAP - ANGORA CREEK

DATE: 12/09 PROJECT NO.: 95161 BY: ALD

FIGURE
3

RAINFALL INTENSITY DURATION FREQUENCY CURVE



SOURCE: COUNTY OF EL DORADO DRAINAGE MANUAL, 1995
MEAN ANNUAL RAINFALL - ISOHYET 37 INCHES

EL DORADO COUNTY
SOUTH LAKE TAHOE OFFICE



ANGORA CREEK FISHERIES/SEZ
ENHANCEMENT PROJECT
RAINFALL INTENSITY-DURATION-
FREQUENCY CURVES

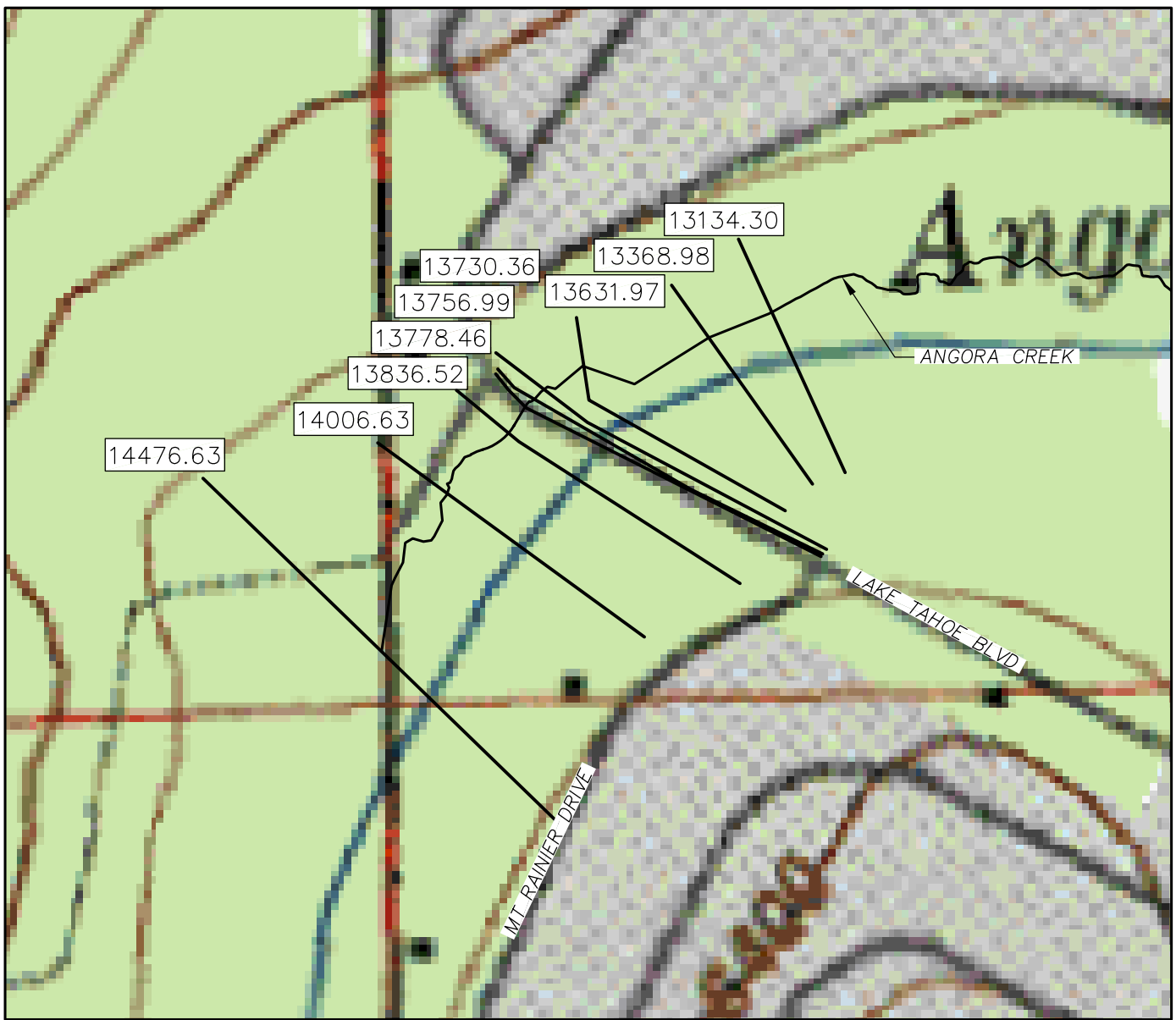
FIGURE

4

DATE: 12/09

PROJECT NO.: 95161

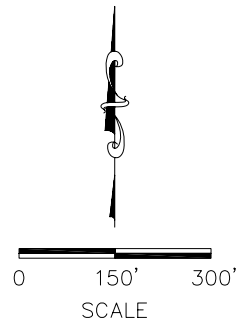
BY: ALD



RIVER STATION EQUATIONS				
PROPOSED CONDITION RIVER STATIONING (SHOWN ABOVE)	14476.63	=	14398.45	EXISTING CONDITION RIVER STATIONING
	14006.63	=	13928.45	
	13836.52	=	13745.13	
	-----	=	13722.38	
	13778.46	=	13673.98	
	13756.99	=	13643.64	
	13730.36	=	13617.84	
	13631.97	=	13526.30	
	13368.98	=	13261.30	
	13134.30	=	13134.30	

NOTE:

FOR CROSS-SECTIONS FARTHER
DOWNSTREAM OF THE PROJECT,
SEE THE ANGORA CREEK SEZ
RESTORATION PROJECT FINAL
DESIGN REPORT BY GRAHAM
MATTHEWS & ASSOCIATES,
DATED MAY 2003.



EL DORADO COUNTY
SOUTH LAKE TAHOE OFFICE



ANGORA CREEK FISHERIES/SEZ
ENHANCEMENT PROJECT
HEC-RAS PROPOSED CONDITION
CROSS-SECTIONS

FIGURE

5

DATE: 12/09

PROJECT NO.: 95161

BY: ALD

Drawing name: S:\SDSK\proj\95161\dwg\FINAL PLANS\17 ANGFISH EC 1.dwg

LEGEND

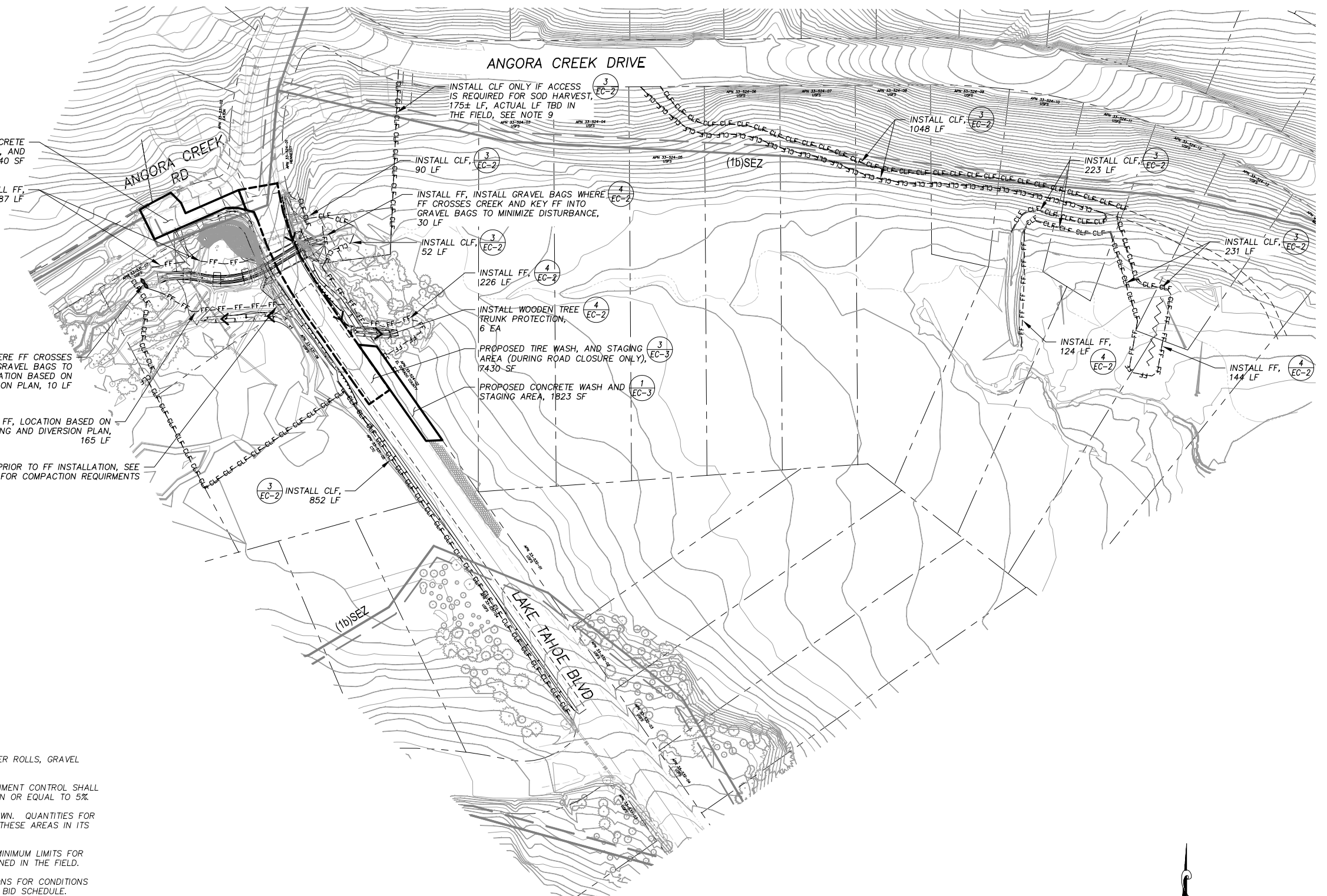
- STAGING AREA
- TEMPORARY STAGING AREA (ROAD CLOSURE)
- COUNTY RIGHT-OF-WAY OR PROPERTY LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING BUILDING (PRE-FIRE LOCATIONS)
- EXISTING STORM DRAIN
- CONSTRUCTION LIMIT OR TREE PROTECTION FENCE
- FILTER FENCE
- C&G OR PROPOSED CHANNEL SEDIMENT CONTROL
- PROPOSED SEDIMENT TRAP
- PROPOSED CURB & GUTTER
- PROPOSED CHANNEL/SWALE
- LAND CAPABILITY BOUNDARY
- 10' SEZ SETBACK LIMIT

INSTALL GRAVEL BAGS WHERE FF CROSSES CREEK, KEY FF INTO GRAVEL BAGS TO MINIMIZE DISTURBANCE. LOCATION BASED ON DEWATERING AND DIVERSION PLAN, 10 LF

INSTALL FF, LOCATION BASED ON DEWATERING AND DIVERSION PLAN, 165 LF

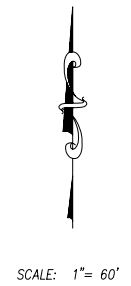
FILL EXIST CHANNEL PRIOR TO FF INSTALLATION. SEE SPECIAL PROVISIONS FOR COMPACTION REQUIREMENTS

NOTE: PORTIONS OF BASE MAP REFLECTS PRE-ANGORA FIRE CONDITIONS.



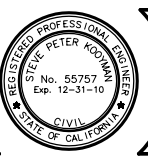
NOTES:

1. SEE SPECIAL PROVISIONS FOR SPECIFICATIONS REGARDING FILTER FABRIC, WEIGHTED FIBER ROLLS, GRAVEL BAGS, VISQUEEN, AND GRAVEL-FILLED ROLLS.
2. SPACING INTERVALS FOR RICE FIBER ROLL OVER PIPE OUT OF PAVEMENT AND C&G SEDIMENT CONTROL SHALL BE AT 50' OC FOR SLOPES GREATER THAN 5% AND AT 100' OC FOR SLOPES LESS THAN OR EQUAL TO 5%.
3. LOCATIONS AND LF OF FILTER FENCE REQUIRED FOR THE STAGING AREAS ARE NOT SHOWN. QUANTITIES FOR THESE AREAS ARE INCLUDED IN THE BID SCHEDULE. THE CONTRACTOR IS TO INCLUDE THESE AREAS IN ITS TEMPORARY EROSION CONTROL PLAN SUBMITTAL.
4. DIMENSION LIMITS OF FILTER FENCE AND CONSTRUCTION LIMIT FENCE DO NOT INCLUDE MINIMUM LIMITS FOR TREE PROTECTION. TREE PROTECTION FENCING TO BE PER DETAIL AND/OR AS DETERMINED IN THE FIELD.
5. THE LOCATIONS OF SEDIMENT TRAP PROTECTION IS NOT SHOWN. SEE SPECIAL PROVISIONS FOR CONDITIONS WHEN INSTALLATION IS REQUIRED. QUANTITIES FOR THESE ITEMS ARE INCLUDED IN THE BID SCHEDULE.
6. ALL AMOUNTS SHOWN IN BID SCHEDULE ARE ESTIMATES ONLY. CONTRACTOR SHALL MAKE ALL NECESSARY CHANGES TO THE TEMPORARY EROSION CONTROL PLAN WITH ITS SUBMITTAL IN ORDER TO COMPLY WITH TRPA AND LAHONTAN SWPPP REQUIREMENTS.
7. CONTRACTOR WILL BE PAID FOR ACTUAL QUANTITIES OF TEMPORARY EROSION CONTROL DEVICES INSTALLED AND SATISFACTORILY MAINTAINED.
8. A FINE OF \$100/DAY WILL BE LEVIED AGAINST THE CONTRACTOR FOR EACH DAY CONTRACTOR DELAYS IN RESPONDING TO ENGINEER'S REQUEST TO INSTALL NEW TEMPORARY EROSION CONTROL DEVICES AND OR MAINTAIN EXISTING TEMPORARY EROSION CONTROL DEVICES.
9. ACCESS TO APN 033-524-02 FOR SOD HARVESTING SHALL ONLY BE ALLOWED AFTER ALL OTHER SOD HARVEST LOCATIONS HAVE BEEN UTILIZED TO THE MAXIMUM EXTENT ALLOWED.



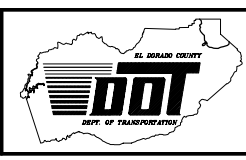
SCALE: 1" = 60'

REVISION	NUMBER	DATE	DESCRIPTION	BY



PREPARED UNDER THE SUPERVISION OF:
Shawn J. Korman
 REGISTERED CIVIL ENGINEER
 DATE: 3/5/10

DESIGNED: ALD
 DRAWN: ALD
 CHECKED: DP/JG
 DATE: 03/10
 ROAD NUMBER: ---

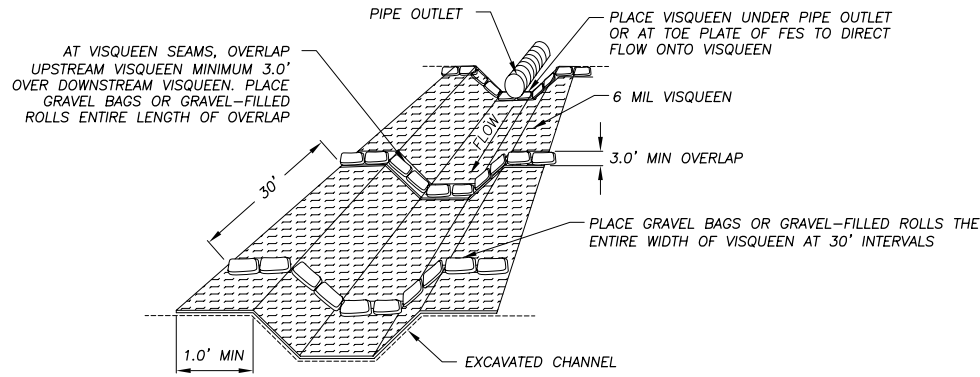


EL DORADO COUNTY
 DEPARTMENT OF TRANSPORTATION
 TAHOE ENGINEERING DIVISION

**ANGORA CREEK FISHERIES/SEZ
 ENHANCEMENT PROJECT
 TEMPORARY EROSION CONTROL**

SHEET
EC-1
 17 OF 26
 CONTRACT NO.
PW 09-30486
 CIP NO.
95161

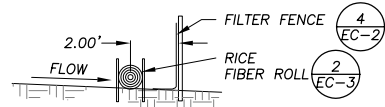
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 ORIGINAL SCALE IS IN INCHES
 FOR REDUCED PLANS
 REVISION



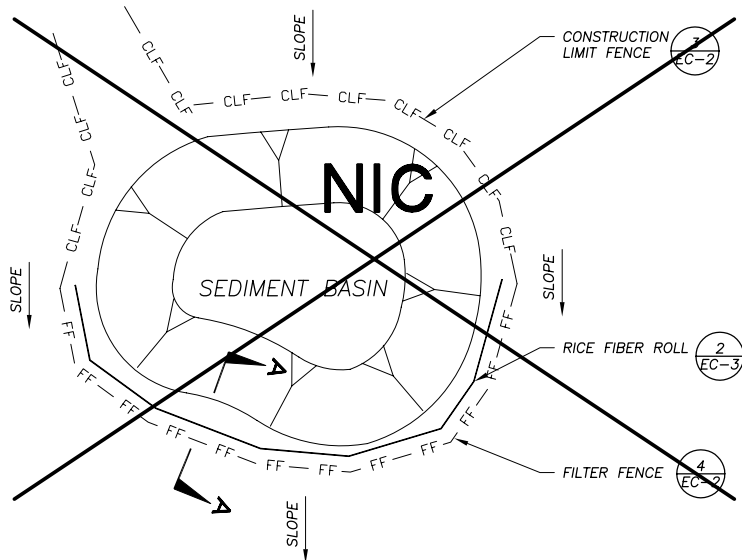
VISQUEEN WITH GRAVEL BAGS OR GRAVEL-FILLED ROLLS

NTS

1
EC-2



SECTION A-A

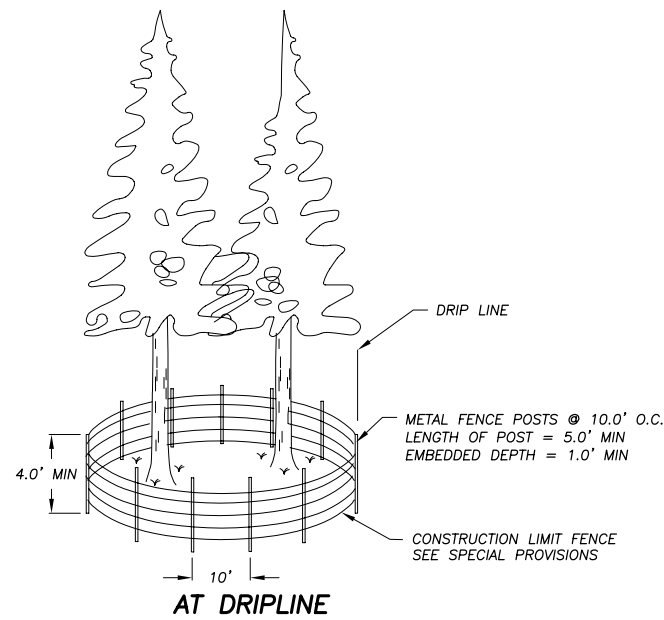


TYPICAL SEDIMENT BASIN FILTER FENCE AND CONSTRUCTION LIMIT FENCE PLACEMENT

NTS

2
EC-2

- GENERAL NOTES:
- SEE SPECIAL PROVISIONS FOR SPECIFICATIONS REGARDING FILTER FABRIC, WEIGHTED FIBER ROLLS, GRAVEL BAGS, VISQUEEN, GRAVEL-FILLED ROLLS, RICE FIBER ROLLS, AND FENCE POSTS.
 - SPACING INTERVALS FOR RICE FIBER ROLL OVER PIPE OUT OF PAVEMENT AND C&G SEDIMENT CONTROL SHALL BE AT 50' OC FOR SLOPES GREATER THAN 5% AND AT 100' OC FOR SLOPES LESS THAN OR EQUAL TO 5%.
 - LOCATIONS AND LF OF FILTER FENCE REQUIRED FOR THE STAGING AREAS ARE NOT SHOWN. THE CONTRACTOR IS TO INCLUDE THESE AREAS IN HIS TEMPORARY EROSION CONTROL PLAN SUBMITTAL.
 - DIMENSION LIMITS OF FILTER FENCE AND CONSTRUCTION LIMIT FENCE DOES NOT INCLUDE MINIMUM LIMITS FOR TREE PROTECTION. TREE PROTECTION FENCING TO BE PER DETAIL THIS SHEET AND/OR AS DETERMINED IN THE FIELD.



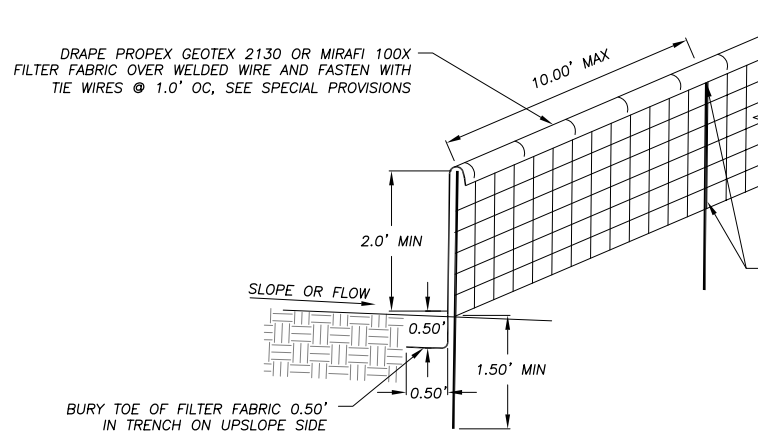
AT DRIPLINE

NOTE: DETAIL ABOVE IS TYPICAL FOR SOME DRIPLINE LOCATIONS, CONSTRUCTION LIMIT FENCE SHALL BE STAKED IN THE FIELD BY ENGINEER.

CONSTRUCTION LIMIT FENCE (CLF)

NTS

3
EC-2

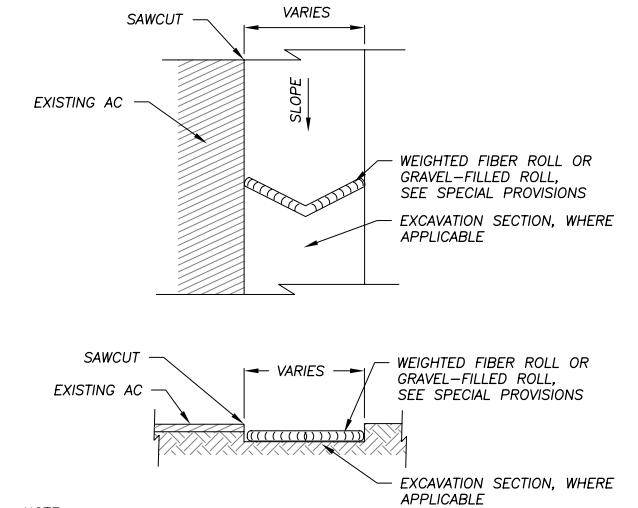


FILTER FENCE (FF)

NTS

4
EC-2

- NOTES:
- CONTRACTOR MAY USE PRE MANUFACTURED SEDIMENT CONTROL FENCE AS APPROVED BY THE ENGINEER, SEE SPECIAL PROVISIONS.
 - PLACE FENCING SUCH THAT STORM RUNOFF CANNOT PASS AROUND OR UNDER FENCE.
 - IN PLACE OF KEYING FABRIC IN ANGORA CREEK, GRAVEL BAGS ARE TO BE USED TO HOLD FABRIC IN PLACE. SEE PLAN SHEET EC-1 AND SPECIAL PROVISIONS.

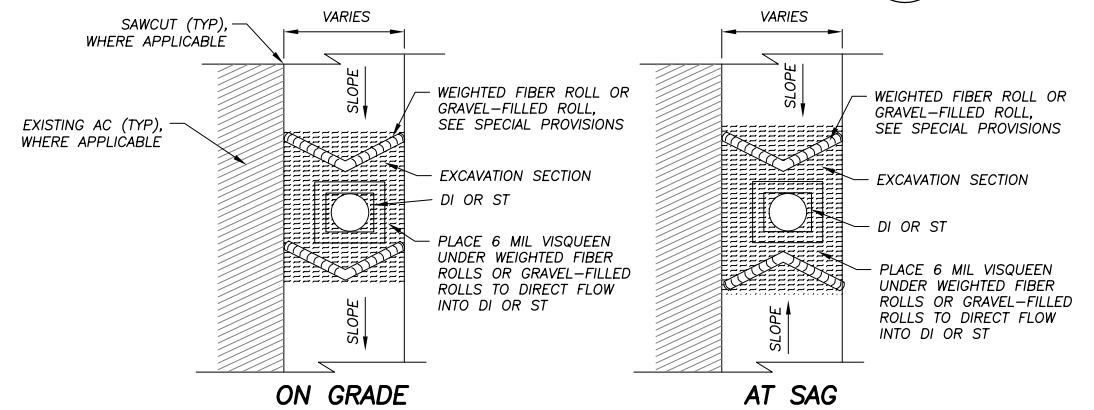


WEIGHTED FIBER ROLLS OR GRAVEL-FILLED ROLLS

NTS

5

EC-2



ON GRADE

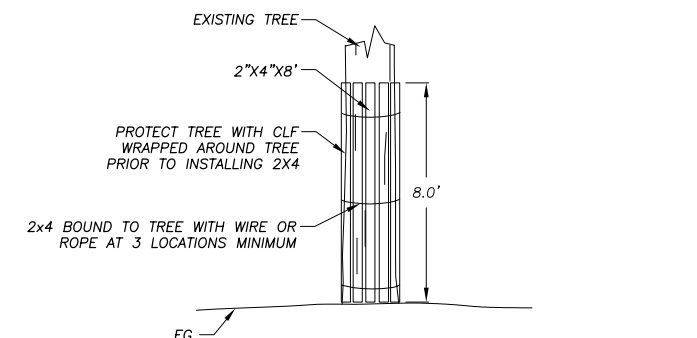
AT SAG

DRAINAGE INLET (DI) AND SEDIMENT TRAP (ST) PROTECTION

NTS

6

EC-2



WOODEN TREE TRUNK PROTECTION

NTS

7

EC-2



PREPARED UNDER THE SUPERVISION OF:
Peter Kowman
 REGISTERED CIVIL ENGINEER
 DATE: 3/5/10

DESIGNED: TED
 DRAWN: TED
 CHECKED: DP/JG
 DATE: 03/10
 ROAD NUMBER: ---

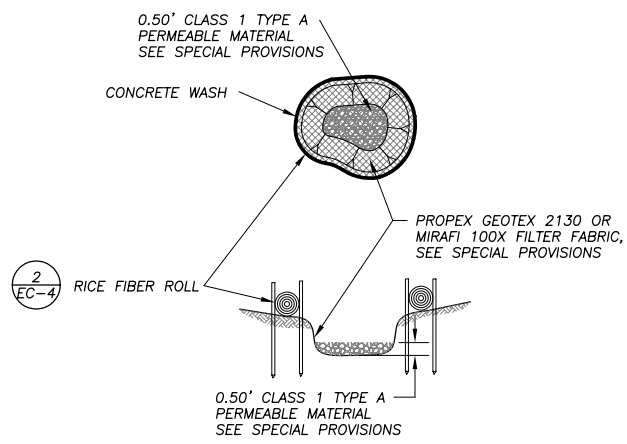


EL DORADO COUNTY
 DEPARTMENT OF TRANSPORTATION
 TAHOE ENGINEERING DIVISION

ANGORA CREEK FISHERIES/SEZ ENHANCEMENT PROJECT
 TEMPORARY EROSION CONTROL DETAILS

SHEET
EC-2
 18 OF 26
 CONTRACT NO.
PW 09-30486
 CIP NO.
95161

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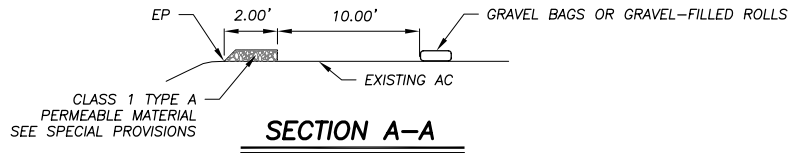
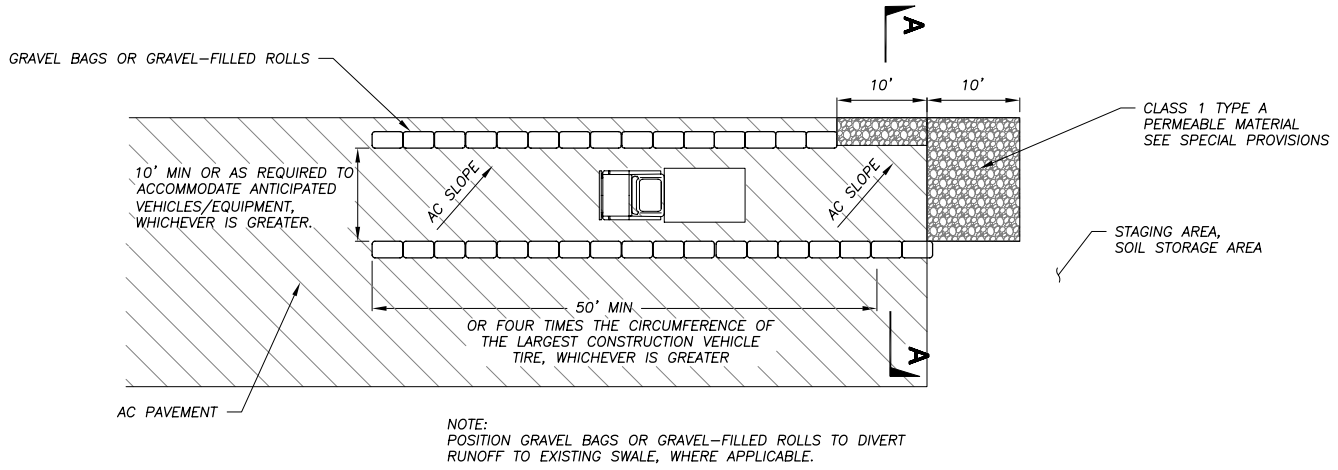


NOTE:
CONCRETE WASH SHALL BE SIZED FOR WASHING ALL CONCRETE EQUIPMENT WITHOUT OVERTOPPING BASIN.

TYPICAL CONCRETE WASH AREA

NTS

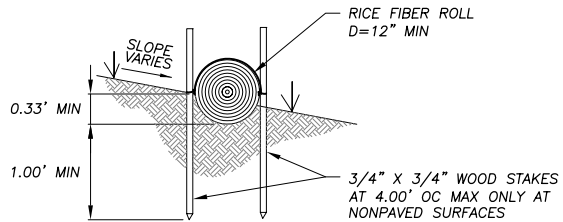
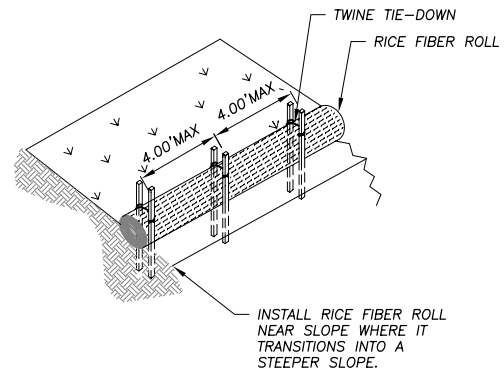
1
EC-3



**TYPICAL TIRE WASH AREA TYPE 1
(ON PAVEMENT)**

NTS

3
EC-3



NOTE:
INSTALL RICE FIBER ROLL LEVEL ALONG CONTOUR.

TYPICAL RICE FIBER ROLL INSTALLATION

NTS

2
EC-3

REVISION	NUMBER	DATE	DESCRIPTION	BY



PREPARED UNDER THE SUPERVISION OF :

Peter Korman

REGISTERED CIVIL ENGINEER

DATE: 3/5/10

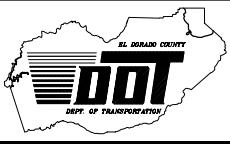
DESIGNED: TED

DRAWN: TED

CHECKED: DP/JG

DATE: 03/10

ROAD NUMBER: ---



EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION
TAHOE ENGINEERING DIVISION

ANGORA CREEK FISHERIES/SEZ
ENHANCEMENT PROJECT
TEMPORARY EROSION CONTROL DETAILS

SHEET
EC-3
19 OF 26

CONTRACT NO.
PW 09-30486

CIP NO.
95161

APPENDIX A

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

LAHONTAN REGION

NOTICE OF INTENT

**TO COMPLY WITH THE TERMS OF THE
LAKE TAHOE HYDROLOGIC UNIT GENERAL NPDES
CONSTRUCTION ACTIVITY STORMWATER PERMIT
(BOARD ORDER No. R6T-2005-007)**

ATTACHMENT I

State of California
California Regional Water Quality Control Board-Lahontan Region

NOTICE OF INTENT

TO COMPLY WITH THE LAKE TAHOE HYDROLOGIC UNIT
WASTE DISCHARGE REQUIREMENTS AND
GENERAL NPDES CONSTRUCTION ACTIVITY STORMWATER PERMIT
(BOARD ORDER R6T-2005-0007, WDID CAG616002)

I. NOI STATUS

MARK ONLY ONE ITEM	1. New Construction	2. Change of Information for WDID#
--------------------	---------------------	------------------------------------

II. PROPERTY OWNER

Name	Contact Person		
Mailing Address	Title		
City	State	Zip	Phone () --

III. DEVELOPER/CONTRACTOR INFORMATION

Developer/Contractor	Contact Person		
Mailing Address	Title		
City	State	Zip	Phone () --

IV. BILLING INFORMATION

SEND BILL TO:	Name	Contact Person	
OWNER (as in II. above)	Mailing Address	Phone/Fax	
DEVELOPER	City	State	Zip
OTHER (enter information at right)			

V. CONSTRUCTION PROJECT INFORMATION

Site/Project Name		Site Contact Person		
Physical Address/Location		Latitude 0	Longitude 0	County
City (or nearest City)		Zip	Site Phone Number ()	Emergency Phone Number ()
A. Total size of construction site area: Acres	C. Percent of site imperviousness (including rooftops):		D. Tract Number/s: ,	
B. Total area to be disturbed: Acres (% of total)	Before Construction %	After Construction %	E. Mile Post Marker:	
F. Is the construction site part of a larger common plan of development or sale? YES NO			G. Name of plan or development:	
H. Construction commencement date: / /		J. Projected construction dates: Complete grading / / Complete project / /		
I. % of site to be mass graded:				
K. Type of Construction (Check all that apply)		Utility (Please explain):		
Residential	Commercial	Industrial	Other (Please explain):	
Reconstruction	Transportation	Restoration		

VI. REGULATORY STATUS

Does your project involve dredging or fill in waters of the United States, subject to U.S. Army Corps of Engineers permitting requirements under Clean Water Act Section 404? Yes No

If yes, you are required to obtain a 401 Water Quality Certification from the Regional Board. Have you submitted a completed Water Quality Certification Application? The Clean Water Act §401 Water Quality Certification Application Form is available at <http://www.swrcb.ca.gov/cwa401/docs/applicationform.doc>.

VII. DISTURBANCE TO SEZ (STREAM ENVIRONMENT ZONE)

If your project involves new disturbance or fill in an SEZ, you are required to obtain an Exemption to a Basin Plan Prohibition that prohibits disturbance in SEZs. In order to qualify for an Exemption, you must present information with your application that allows the Regional Board or the Executive Officer to determine that the project meets the necessary findings required to grant an Exemption. (Refer to Page 5.8-7 for a list of the exemption criteria.)

Does the project involve disturbance to a stream environment zone? YES NO

If yes, provide the amount (in square feet) of new disturbance in an SEZ: square feet

If yes, provide the amount (in cubic yards) of fill in an SEZ: cubic yards

Exemption findings to allow new SEZ disturbance require that the project includes restoration of SEZ lands in an amount 1.5 times the area of SEZ developed or disturbed by the project. The 1.5:1 restoration requirement does not apply to erosion control projects, habitat or SEZ restoration projects, or wetland rehabilitation. The project description and site map submitted with your application should clearly identify the location and amount of SEZ restoration.

VIII. RECEIVING WATER INFORMATION

<p>A. Does the storm water runoff from the construction site discharge to (Check all that apply):</p> <ol style="list-style-type: none"> 1. Indirectly to waters of the U.S. 2. Storm drain system - Enter owner's name: 3. Directly to waters of U.S. (e.g. , river, lake, creek, bay, ocean)
<p>B. Name of receiving water: (river, lake, creek, stream, bay, ocean):</p>

IX. IMPLEMENTATION OF NPDES PERMIT REQUIREMENTS

<p>A. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)</p> <p>The SWPPP must be accepted by the Executive Officer before authorizing discharge under this General Permit. (If your report of waste discharge does not include a SWPPP, your application will be deemed incomplete.)</p> <p style="padding-left: 40px;">A SWPPP has been prepared and submitted to the Regional Board as part of this report of waste discharge.</p> <p style="padding-left: 40px;">This report of waste discharge does not contain a SWPPP.</p>
<p>B. MONITORING PROGRAM</p> <p>To comply with the conditions of this General Permit, you must prepare a monitoring and maintenance schedule that includes inspection of construction BMPs before anticipated storm events and after actual storm events. The monitoring and maintenance plan must be available for review. If the project is a Restoration project, additional monitoring, including a vegetative cover survey, is required.</p> <p>As part of this project, a stormwater monitoring plan for sedimentation/siltation and for pollutants not visibly detected in storm water discharges has been prepared and will be implemented when appropriate. Yes No</p> <p>The project is a Restoration-type project and requires additional monitoring requirements. A Restoration Monitoring and Reporting Program has been prepared and submitted as part of this application. Yes No</p> <p>Provide the name and contact information for the person that has been assigned responsibility for stormwater sampling and/or restoration monitoring.</p> <p style="padding-left: 40px;">Name _____ Phone: _____</p>
<p>C. PERMIT COMPLIANCE RESPONSIBILITY</p> <p>A qualified person must be assigned responsibility to ensure full compliance with the General Permit, and to implement all elements of the Storm Water Pollution Prevention Plan. Provide the name and contact information for the person that has been assigned responsibility for 1) conducting pre-storm and post-storm BMP inspections to identify effectiveness and necessary repairs or design changes, 2) preparing the Annual Report due at the end of each construction season, 3) implementing restoration and monitoring reporting if applicable, and 4) preparing the Final Monitoring Report.</p> <p style="padding-left: 40px;">Name: _____ Phone: _____</p>

X. MATERIAL HANDLING/MANAGEMENT PRACTICES

A. Types of materials that will be handled and/or stored at the site during construction:			
Solvents	Metal	Petroleum Products	Plated Products
Asphalt/Concrete	Hazardous Substances	Paint	Wood Treated Products
Other (Please list)			
B. Identify proposed management practices to reduce pollutants in storm water discharges (Check all that apply)			
Oil/Water Separator	Erosion Controls	Sedimentation Controls	Overhead Coverage
Detention Pond	Other (Please list)		

XI. VICINITY MAP AND FEE (must show site location in relation to nearest named streets, intersections, etc.)

Have you included a vicinity map with this submittal?	YES	NO
Have you included payment of the annual fee with this submittal	YES	NO

XII. CERTIFICATIONS

“I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. In addition, I certify that the provisions of the permit, including the development and implementation of a Storm Water Pollution Prevention Plan and a Monitoring Program Plan will be complied with.”

Printed Name:

Signature: _____ **Date:** _____

Title:

APPENDIX B

COUNTY SPECIAL PROVISIONS

EXCAVATING AND GRADING

10-1.10 EXCAVATING AND GRADING

A. MATERIALS

1. Permeable Material

Class 1 Type A ¾" and Class 1 Type B 1-½" permeable material shall be crushed stone and shall conform to the following requirements:

Class 1 Type A ¾"	
Sieve Sizes	Percent Passing
1"	100
¾"	90
½"	59
¾"	39
No. 4	2
No. 10	2

Class 1 Type B 1-½"	
Sieve Sizes	Percent Passing
1-½"	100
1-¼"	88
1"	24
¾"	9
½"	7
¾"	4

2. Imported Fill or Backfill

If required, imported fill or backfill shall be a silty sand material designated by SM in the Unified Soil Classification System (USCS).

Should such imported material be required, Contractor shall notify Engineer of the borrow site location 72 hours before Contractor plans to pick-up the material so Engineer can verify the suitability of the material.

3. Structure Backfill

Structure backfill shall be a silty sand material designated by SM in the Unified Soil Classification System (USCS) and shall conform to the following gradation requirements:

Sieve Sizes	Percentage Passing
No. 10	50 max
No. 40	30 max
No. 200	15 max

PI = 6 maximum

If material excavated on site under any item of work (e.g. roadway excavation, grass-lined swale excavations) conforms to the gradations noted above, it shall be used for structure backfill and payment for its excavation, placement, grading, and compaction as structure backfill shall be considered as included in the item of work from which it was excavated and no additional compensation shall be made therefore. Contractor's attention is directed to Sheet G-1 of the Plans.

4. Sand

Sand to be mixed with gravel to fill the voids in the cobble and No. 1 rock backing in Angora Creek shall be silica-based clean, washed, well-graded coarse sand in accordance with ASTM C33, and shall conform to the following gradation requirements:

Sieve Sizes	Percentage Passing
3/8"	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10

5. Humus

Humus shall consist of an amendment that shall be the result of an aerobic composting process maintaining temperatures greater than 135°F and less than 165°F, for a minimum of 10 days. Nitrogen introduction shall be derived from dairy manure. The compost feedstock must consist of a minimum of 50% by volume indigenous forest vegetation from the Lake Tahoe Basin. The humus shall be 50% Humus Fines (3/8" minus) and 50% wood "overs" (3/8" to 3"). Full Circle Compost (Humus is called "Integrated 50%") and Bently Agridynamics, both in Minden, Nevada, produce a humus that satisfies these requirements.

Contractor shall notify Engineer of the proposed location of the source of imported humus 72 hours before Contractor plans to pick-up the material so Engineer can verify the suitability of the material. Contractor shall submit written certification that the humus is weed free.

Humus shall be mixed with salvaged topsoil in a ratio of 3:1 (salvaged topsoil to humus) to create topsoil mix.

Humus on slopes to be revegetated shall be applied by means of a pneumatic conveying system capable of blowing the humus at rates between 10 and 15 cubic yards per hour and shall be capable of blowing the humus a distance of 300 feet as necessary to access slopes. The conveying equipment shall have a self- contained dust suppression system.

6. Mulch

Material shall be the result of an aerobic composting process maintaining temperatures greater than 135 degrees Fahrenheit and less than 165 degrees Fahrenheit for a minimum of 10 days. Nitrogen introduction shall be derived from dairy manure. The compost feedstock must consist of a minimum of 50% by volume indigenous forest vegetation from the Lake Tahoe Basin. The resulting finished compost shall consist of 75% wood "overs" (from 3/8" to 3" in size) and 25% humus (fines) (3/8" minus). Full Circle Compost (Mulch is called "Integrated 25%") and Bently Agridynamics, both in Minden, Nevada, produce a mulch that satisfies these requirements.

Mulch shall be applied by means of a pneumatic conveying system capable of blowing the mulch at rates between 10 and 15 cubic yards per hour and shall be capable of blowing the mulch a distance of 300 feet as necessary to access slopes. The conveying equipment shall have a self-contained dust suppression system.

Contractor shall submit written certification that the mulch is weed free.

7. Tackifier

Tackifier shall include wood-cellulose fiber mulch. The term "tackifier" used in these Special Provisions shall mean tackifier with wood-cellulose fiber mulch. The Tackifier material shall be of an organic, plant-derived substance containing psyllium, guar gum, cornstarch such as

PT-TAC, Reclamare 2400, M-Binder, Eco-tak, Fisch-Stick, or approved equal. Material shall form a transparent 3-dimensional film-like crust permeable to water and air and containing no agents toxic to seed germination. Mulch shall consist of degradable green-dyed wood-cellulose fiber or 100%-recycled long-fiber pulp (recycled newspaper), free from weeds or other foreign matter toxic to seed germination.

Mulch shall be anchored with tackifier within 48 hours of application. A hydroseeder with a paddle wheel agitator shall be used to evenly apply the tackifier mixture at the following rates under suspension unless otherwise approved. Contractor shall apply tackifier to all areas where mulch has been applied. The Tackifier shall be mixed and applied in accordance with the following:

Wood-cellulose fiber mulch:	500 lbs/acre
Tackifier:	130 lbs/acre
Water:	As needed

Tackifiers shall be applied using a commercial hydraulic mulcher with a built-in agitation system that has sufficient capacity to agitate, suspend, homogenize, and apply materials (at indicated rates) specified for hydraulic application in this section of the Special Provisions.

Information regarding mulching and humus blowing and tackifier application equipment that Contractor proposes to use for this project shall be presented for review and approval by Engineer no later than 10 days prior to the proposed use. Hydraulic/Pneumatic applications of humus, mulch, and tackifier shall not be conducted during windy conditions (greater than 8 mph) to insure uniform application and proper placement of these materials at specified rates. To facilitate proper placement of these materials, applications shall consist of a continuous operation where each treatment follows the preceding as specified above. Specified materials shall be applied to individual identified areas within a single seeding work shift. Under no circumstances shall any one application be completed independent of completion of the others.

APPENDIX C

SPILL CONTINGENCY PLAN

STORM WATER POLLUTION PREVENTION PLAN

ANGORA CREEK FISHERIES/SEZ ENHANCEMENT PROJECT (JN 95161)

SPILL CONTINGENCY PLAN

I. SEWAGE SPILLS:

A. Agency Contacts:

	<u>Agency</u>	<u>Contact Person</u>	<u>Phone</u>
1.	South Tahoe Public Utility District	Jim Hoggatt	544-6474 x206
2.	El Dorado County Environmental Management	Ginger Huber	573-3450
3.	Water Quality Control Board Lahontan Region	Robert Larsen	542-5439
4.	El Dorado County Department of Transportation	Steve Kooyman Dick Bird Donaldo Palaroan	573-7910 573-7911 573-7920

B. Contractor Representative:

Clean up operation shall be directed by _____, phone number _____ in cooperation with agencies listed in A.

C. Containment and Disposal:

Spills shall be contained with earthen berms or other approved methods. Liquid sewage shall be disinfected as necessary, and pumped to an adjacent sewer or transported to South Tahoe Public Utility District facilities by approved methods as instructed by South Tahoe Public Utility District.

II. PETROLEUM AND CHEMICAL SPILLS

A. Agency Contacts:

	<u>Agency</u>	<u>Contact Person</u>	<u>Phone</u>
1.	South Tahoe Public Utility District	Jim Hoggatt	544-6474 x206
2.	El Dorado County Environmental Management	Ginger Huber	573-3450
3.	Water Quality Control Board Lahontan Region	Robert Larsen	542-5439
4.	El Dorado County Department of Transportation	Steve Kooyman Dick Bird Donaldo Palaroan	573-7910 573-7911 573-7920

Contractor Representative:

Clean up operation shall be directed by _____, phone number _____ in cooperation with agencies listed in A.

B. Materials shall be excavated with a backhoe or other excavation equipment and placed on an impermeable membrane _____ (type) _____ and covered with such membrane, as required for containment.

C. Materials shall be disposed of as directed by El Dorado County Environmental Management.

Minor Spills – South Tahoe Refuse – Geni	542-8366
Major Spills – Forward Inc. Manteca, CA	(209) 466-4482
Or as approved by Environmental Management	

D. The contractor shall keep petroleum and chemical absorbent materials on site at all times.

APPENDIX D

DEWATERING & DIVERSION PLAN

**ANGORA FISHERIES
AND
STREAM ENVIRONMENT ZONE
ENHANCEMENT PROJECT
(CONTRACT NO. PW-09-30486, CIP 95161)**

DEWATERING AND DIVERSION PLAN



Prepared for:

**CA Department of Fish & Game
&
Lahontan Regional Water Control Board
&
Tahoe Regional Planning Agency
&
United States Forest Service - Lake Tahoe Basin Management Unit**

Prepared by:

**El Dorado County
Department of Transportation
Tahoe Engineering Division
924 B Emerald Bay Road
South Lake Tahoe, CA 96150**

March 2010

ANGORA FISHERIES & SEZ ENHANCEMENT PROJECT

DEWATERING AND DIVERSION PLAN

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AMENDMENT LOG

**ANGORA FISHERIES AND SEZ ENHANCEMENT PROJECT
DEWATERING AND DIVERSION PLAN**

Amendment No.	Date	Brief Description of Amendment	Prepared By

SECTION 1: GENERAL

1.1 GENERAL

1.1.1 Related Documents

- A. The Contract Documents including but not limited to the Project Plans, Specifications including the Special Provisions, and Caltrans Standard Plans and Specifications, dated May 2006, and Amendments to May 2006 Standard Specifications.
- B. Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Best Management Practices, TRPA, 1988.

1.1.2 Summary

- A. The Contractor shall be responsible for final design, installation, maintenance and removal of the dewatering and diversion systems as required for completion of the work. The Contractor shall also be responsible for training all personnel on the dewatering and diversion system so that effluent limits are not exceeded at any time during construction. The plan sheets provided as a part of these contract documents show possible dewatering and diversion areas as well as acceptable effluent disposal areas (Sheet DW-1/2). The contractor shall submit a detailed Dewatering and Diversion Plan to the construction manager for approval prior to commencement of any disturbance within the project area or excavation activities.
- B. The Contractor shall review the Geotechnical Report, Graphs 1 & 2 of this Report, along with ground water and soil conditions presented on Sheet G-1 of the Plans and/or Special Provisions in developing the dewatering/diversion system. It is the Contractor's responsibility to determine whether any independent testing and investigation needs to be performed and if so perform the testing and investigation to verify or supplement the information provided in this document, in the contract documents, on Sheet G-1 and/or the Special Provisions. Prior to disturbance within the project area or commencement of excavation, a detailed plan and schedule, with description for dewatering/diversion, estimated dewatering/diversion rates, volume and equipment requirements shall be submitted with the dewatering/diversion plan. The plan shall be signed and sealed by a California registered Civil Engineer, Geotechnical Engineer, Engineering Geologist or Hydrogeologist with experience of at least one dewatering/diversion operation of similar magnitude and complexity in a recently completed construction project. The qualification of the dewatering/diversion system designer shall be submitted to the Project Engineer for approval prior to the design of the dewatering/diversion plan.

1.1.3 Project Objectives

- A. The Angora Creek Fisheries & Stream Environment Zone Enhancement Project (Project) is defined in the Tahoe Regional Planning Agency's Environmental Improvement Program (EIP) as Project #s 406, 193 and 650. The intent of the Project is to modify and improve Angora Creek in the vicinity of the culverts under Lake Tahoe Boulevard to improve fish passage. These improvements are intended to adjust channel morphology where the creek has become entrenched, stabilize banks with vegetation, and improve passage at two existing culverts by installing a 3-sided bridge structure. The benefits of the 3-sided bridge relative to fish habitat include a reduction in water velocity, an increase in flow depth, elimination of fish passage obstructions at the entrance and exits of the existing culverts, and the enhancement in fish habitat by replacing the existing

culverts with a natural bed channel beneath Lake Tahoe Boulevard. Anticipated construction activities include channel reconstruction, bioengineered bank stabilization, riffle pool sequences, reestablishment or creation of fish and wildlife habitat, construction of a 3-sided concrete bridge, removal of debris, removal and restoration of temporary access roads, finish grading, salvaging of existing native vegetation, planting of shrubs and sod, willow stakes, seeding and mulching and construction site temporary BMPs.

Due to the nature of the construction activity, the sensitive land capability of the project area, the presence of perennial streams within the project area and the proximity to surface waters, it is anticipated that the project will require dewatering and diversion activities. Dewatering will be necessary during construction activities for the new channel and for the bridge construction. Diversion will be necessary during most construction activities including but not limited to: when removing the improvements installed in response to the 2007 Angora Fire (log trash rack, rock rip-rap and steel sheet pile), when constructing the new channel, when backfilling and restoring the old channel, during culvert removal, during sod harvesting, construction of the grass-lined swale, construction of temporary access roads, utility relocation and during bridge construction. Flushing the new channel prior to allowing the creek to run through it is anticipated to be required to meet acceptable effluent discharge limits (10% above background). The purpose of this plan is to specify construction dewatering and diversion activities that will facilitate construction activities and maintain water quality standards.

1.1.4 Basin Objectives and Regulatory Requirements

- A. All dewatering and diversion activities must meet the applicable requirements of El Dorado County Department of Transportation (EDOT), the California Regional Water Quality Control Board, Lahontan Region (RWQCB), California Department of Fish and Game (CFG) and the Tahoe Regional Planning Agency (TRPA). These requirements consist of construction requirements, water quality standards and provisions for the discharge of surface runoff from dewatering activities to surface and ground waters. These standards have been established to protect the water quality of surface and ground waters in the Lake Tahoe basin. The RWQCB standards are set forth in the NPDES General Permit No. R6T-2005-0026. The TRPA standards are specified in Chapter 81 – Water Quality Control of the TRPA Code of Ordinances.
- B. The Contractor is required to meet both the surface water and ground water discharge limit requirements outlined by TRPA in Chapter 81 of the Code of Ordinances and the General NPDES Permit issued by the RWQCB (Table 1). For discharges directly back into Angora Creek, the water effluent limits must not exceed 10% above background levels. Monitoring data will be used, in accordance with TRPA and the RWQCB, to determine accurate background water quality levels in the creek. For discharges to SEZs, the discharge must not exceed 20 NTU and for discharges to upland areas (Land Capability 4 and greater), the discharge must not exceed 200 NTU.

Table 1: Discharge Limits

Constituent	Units	Ground Water Maximum Concentration	Surface Water Maximum Concentration	Creek Discharge Maximum Concentration
Total Nitrogen	mg/L as N	5.0	0.5	10% above background
Total Phosphorous	mg/L as P	1.0	0.1	10% above background
Total Iron	mg/L	4.0	0.5	10% above background
Turbidity	NTU	200	20	10% above background
Suspended Solids	mg/L	---	50	10% above background
Grease and Oil	mg/L	40	2.0	10% above background

In addition, the contractor shall comply with the requirements outlined in the following project specific permits:

- TRPA EIP Permit
- 401 Water Quality Certification
- NPDES Permit
- USACOE 404 Permit
- USFS Special Use Permit
- CA Fish & Game Streambed Alteration Agreement

1.2 SUBMITTALS

1.2.1 Contractor Submittals

A. The Contractor shall submit a detailed dewatering and diversion plan to the Project Engineer for distribution to and approval by the Lahontan RWQCB and TRPA prior to the initiation of activities that would require dewatering or diversion activities, and in accordance with “Dewatering and Rewatering Plan” Section 10-1.20 of the Special Provisions. The updated plan will become an amendment to the Storm Water Pollution Prevention Plan (SWPPP) and to this Dewatering and Diversion Plan for this project. Although the dewatering and diversion activities may take place at different times in the construction sequence, the Contractor shall submit the dewatering, rewatering and

diversion plans simultaneously in accordance with the Contractor Submittal section of the Special Provisions.

- B. The dewatering plan shall include the Contractor's methodology for dewatering including but not limited to: the potential locations for dewatering, number and size of pumping units, power source for pumping units, size and material for pipes, materials for damming, well point design if required, piping point of discharge, fuel storage locations (if applicable), location of stilling basin, dirt bag or baker tanks, design flow rates, potential trucking alternatives, alternative treatment methods (advanced filtration, flocculation, electro-coagulation, etc.) and final method and location for disposal of treated ground water. The Contractor shall include in the submittal the manufacture's specifications on impermeable and filter barriers.
- C. The diversion plan shall include identification of the Contractor's materials and methodology for diverting Angora Creek or tributaries of Angora Creek during construction including but not limited to: diversion method and materials, pipe sizes and slopes, number and size of pumping units, power source for pumping units, piping point of discharge, materials for damming, access and installation methodologies, protection methods for discharge point, fuel storage (if applicable), design flow rates to meet permitted regulatory water quality standards. The Contractor shall include in the submittal the manufacture's specifications on impermeable and filter barriers.
- D. The rewatering plan shall include the identification of the Contractor's materials and methodology for rewatering Angora Creek when construction is complete including but not limited to: rewatering method and materials, pipe sizes and slopes, number and size of pumping units, power source for pumping units, power source for pumping units, piping point of discharge, materials for damming, access and installation methodologies, protection methods for discharge point, fuel storage (if applicable), design flow rates, and final method for flushing and rewatering existing channel(s) to meet permitted regulatory water quality standards for discharge.

SECTION 2: DEWATERING

2.1 DEWATERING REQUIREMENTS

2.1.1 *Summary*

- A. The Contractor is required to dewater the construction area, as necessary to enable construction activities to be completed in a timely fashion. Dewatering will most likely be necessary for construction and use of temporary access roads, installation of temporary BMP's, clearing and grubbing, removal of trees, rocks, steel sheet pile, and log trash rack, boulder removal and relocation, installation of rock slope protection, floodplain and slope grading, coir log placement, topsoil and sod salvage, excavation and construction of the Angora Creek channel and salvaged sod grass-lined swale, utility relocation, culvert removal, excavation and construction of the three-sided precast bridge system and foundation, willow salvage and placement, sod harvest and placement, backfilling, compacting, and revegetation, or to complete work in areas where diversions are placed (Sheet DW-2 of the Plans). Water pumped from excavations or channels is likely to contain suspended sediments, total dissolved solids (TDS) or other materials, and shall not be discharged directly into Angora Creek or its tributary waters. Sediment controls, utilizing all reasonably available technologies and methodologies, shall be

provided to remove sediments generated during dewatering activities. Collected effluent may be used for irrigation or dust control, provided that all allowable numeric effluent limits for discharge have been met. If permitted water quality limits are not met, effluent shall be treated prior to discharging it; or shall be removed from the project area and discharged at an approved location. Pumped water shall be discharged in conformance with all applicable laws and permit requirements.

2.1.2 Ground Water Levels

- A. A geotechnical investigation was completed to understand the soil characteristics within the Project area by MACTEC Engineering and Consulting Inc. (MACTEC) in January of 2009.

The study completed by MACTEC provided data for ground water levels at two boring locations within the Project area, which are shown on Sheet G-1 of the Plans. Native material encountered below the road associated fill was gray silty sands to a depth of approximately 20 feet. Based on the boring data, ground water was estimated to be near the elevation of the creek bottom during the time of their investigation. The investigation covered two sites near where the proposed bridge is to be installed within the project area. A summary of the information collected is shown in the table below: well boring data with the grain size distribution (Table 2). The grain size distribution of selected soil was determined in accordance with the Unified Soil Classification System (ASTM D2487-98).

Table 2 – MACTEC Analysis for Well Borings

Sample ID	Sample Depth (ft)	Percentage Passing				Material Type
		0.600 mm [30]	0.300 mm [50]	0.150 mm [100]	0.075 mm [200]	
B-1	.8-1.3	48	34	22	16	22% gravel, 62% sand, 16% silt/clay
B-2	.8-1.5	53	38	25	18	13% gravel, 69% sand, 18% silt/clay

Notes: US Standard Sieve Size in Parentheses []

2.1.3 Dewatering Volume and Rates

- A. No direct aquifer testing has been completed with which to accurately estimate the maximum rate of ground water flow which will need to be pumped in order to maintain a dewatered construction area. The contractor is responsible to appropriately dewater the construction site in order to construct the project improvements.

2.1.4 Dewatering Effluent Levels

- A. Discharge limits for allowable dewatering numeric effluent limits are presented in Table 1. All effluent discharge shall be monitored and tested by the EDOT Project Engineer or an approved representative prior to discharge. Discharge of dewatering effluent in excess of surface water limits outlined in Table 1 is not covered by this SWPPP or Permit R6T-2005-0026 and is therefore is prohibited.

2.2 TREATMENT AND DISPOSAL

2.2.1 Treatment and Disposal Power Options

- A. Dewatering and sump pumps shall be electric motor driven or shall be run from generators with approved muffling devices. The Contractor shall submit, with the dewatering plan, power requirements for the dewatering system. The Contractor will coordinate with NV Energy Power Company to perform the necessary modification to the available power distribution system to provide a suitable breaker, receptacle and meter. The Contractor shall be responsible for costs associated with obtaining the necessary power. Any use of gasoline engines on the project site must be approved by EDOT's Project Engineer and follow appropriate sections of these specifications regarding use, noise levels, refueling, and storage of fuels.

2.2.2 Dewatering Methods

2.2.2.1 Well Points

- A. If well points or wells are used, they shall be adequately spaced to provide the necessary dewatering and shall be sand-packed and/or modified by other means to prevent pumping of fine sands or silts from the subsurface. A continual check shall be maintained to ensure that the subsurface soil is not being removed by the dewatering operation. The Contractor shall be responsible for conducting slug tests and any other investigations necessary for the proper design and operation of a well point dewatering system. The Contractor shall be responsible to obtain all applicable permits relative to installation of well points prior to installation.
- B. Water and debris shall be disposed of in a suitable manner in compliance with permit stipulations, these specifications and without damage to adjacent property. No water shall be drained into constructed portions of the project or regions of the project under construction, except as shown on the plans. Water shall be filtered to remove sand and silt/clay-sized soil particles and further treated as required to meet discharge limits.
- C. The release of ground water to its original level shall be performed in such a manner as not to disturb natural foundation soils, prevent disturbance of compacted backfill and prevent flotation or movement of structures, pipelines, water mains, and sewers.

2.2.2.2 Sumps

- A. If a sump is used, it shall be protected to provide the necessary dewatering system and to prevent pumping of fine sands or silts from the subsurface. A continual check shall be maintained to ensure that the subsurface soil is not being removed by the dewatering operation.
- B. Water and debris shall be disposed of in a suitable manner in compliance with permit stipulations, these specifications and without damage to adjacent property. No water shall be drained into constructed portions of the project or regions of the project under construction except as shown on the plans. Water shall be filtered to remove sand and silt/clay-sized soil particles and further treated as required to meet discharge limits.

2.2.3 Temporary Storage and Filtration Methods

- A. The following sections describe acceptable methods for temporary storage and filtering of dewatering effluent.

2.2.3.1 Silt/Dirt Bags

- A. Silt/dirt bags may be used to provide suitable filtration of dewatering effluent. Following passage of the effluent through the silt bag, the effluent must be collected and pumped

into the disposal system. Water shall be filtered to remove sand and silt/clay-sized soil particles and further treated as required to meet discharge limits.

2.2.3.2 Stilling/Detention Basins

- A. Stilling/Detention Basins may be used to provide suitable filtration of dewatering effluent, however the effluent must be below 200 NTU. If the stilling basin is not completely lined with an impermeable membrane, some of the dewatering effluent may infiltrate from the basin, while the balance must be disposed of through spray irrigation in approved locations within the project area. The bottom of the basin must be constructed at least one foot higher than the elevation of the seasonal high water table. It is possible that infiltration rates may be high enough that the basin may require lining in order to prevent effluent reaching ground water prior to adequate treatment.

2.2.3.3 Portable Tanks

- A. Portable tanks, such as Baker Tanks or equivalent, may be utilized in lieu of constructing a stilling basin.

2.2.3.4 Water Trucks

- A. Water trucks may be used as a means to store, transport, and dispose of dewatering effluent. The Contractor must obtain written approval from EDOT's Project Engineer for location of disposal of effluent from the water trucks. Contractor shall pay all costs associated with this method of disposal.

2.2.3.5 Advanced Filtration

- A. In the event that the dewatering effluent does not meet the water quality discharge limits, is considerably turbid, or settling is not an option, advanced filtration technologies (i.e. cartridge filters, etc.) shall be pursued and implemented if approved by Lahontan and TRPA.

2.2.3.6 Flocculation

- A. In the event that the dewatering effluent does not meet the water quality discharge limits, is considerably turbid, or settling is not an option, flocculant alternatives (i.e. Chitosan, etc.) shall be pursued and implemented if approved by Lahontan and TRPA.

2.2.3.7 Electro-Coagulation

- A. In the event that the dewatering effluent does not meet the water quality discharge limits, is considerably turbid, or settling is not an option, electro-coagulation technologies shall be pursued and implemented if approved by Lahontan and TRPA.

2.2.3.8 Other

- A. In the event that the dewatering effluent does not meet the water quality discharge limits, is considerably turbid and the above-mentioned methods are not effective, other technologies shall be pursued and implemented if Lahontan and TRPA determine that it is necessary to meet effluent limits for discharge.

2.2.4 Disposal

- A. Should dewatering be warranted, dewatering effluent shall be disposed utilizing approved methodologies and shall be applied in approved areas either by spraying the effluent on

approved areas for dust control or by spraying the effluent on approved land allowing for infiltration, so as not to cause runoff, within the project area (Sheet DW-2). All effluent to be disposed of within the project area must be monitored to meet numeric effluent limits outlined in Table 1 and must be approved by EDOT's Project Engineer. Alternatively, the effluent may be removed from the project area and disposed of at an approved location. Surface runoff to site surface water bodies shall not be permitted, unless it meets numeric effluent limits outlined in Table 1.

- B. *Application Areas:* Acceptable dewatering effluent application areas are shown on Sheet DW-2. These areas are located on USFS Parcels 033-531-07, 033-531-06 033-524-05 through 033-524-14 and El Dorado County Parcel 033-524-02. Treated ground and surface water may be applied up to a rate of 1 inch per hour per area of land. At this rate the applied water is expected to percolate into the ground. The Contractor cannot spray dewatering effluent onto lots that will affect the dewatering operations in progress. The Contractor shall spray the effluent so as not to create runoff and shall install an approved impermeable run-off barrier around the perimeter of the application area. The applied ground water must remain within the confines of the impermeable run-off barrier and the Contractor is required to monitor for leakage or overspray, caused by forces such as wind or misaligned sprinkler heads. If the soils in this area become saturated or surface water runoff is created outside the barrier, the Contractor will stop applying treated ground water to this area and notify the Project Engineer. The Contractor shall propose alternate means of effluent disposal and shall seek approval from EDOT's Project Engineer (see Section 2.2.3 of this Plan). No disposal shall occur until the application area becomes unsaturated and approval for spraying is granted by EDOT's Project Engineer.
- C. *Sanitary Sewer:* If all other methods have been exhausted, and proper written permission is granted by the RWQCB, South Tahoe Public Utility District (STPUD) and EDOT's Project Engineer, the Contractor may discharge effluent into the sanitary sewer system. The Contractor shall assume responsibility for the impacts of these actions and pay all costs associated with this method of disposal.

2.3 EXECUTION

2.3.1 Construction Sequence

- A. This project will be constructed per the Project Specifications, Plans and the SWPPP.
- B. A recommended construction sequence is described in Section 10-1.01 of the Project Specifications and the SWPPP.
- C. It is the Contractors responsibility to sequence the diversion, dewatering, and construction of the Project in a manner that results in water quality conditions that conform to the permit stipulations outlined and referenced in this document.

2.3.2 Installation

- A. The Contractor shall obtain materials and commence dewatering and diversion activities outlined in the approved Dewatering and Diversion Plan prior to construction and prior to removing the sheet pile and the log trash rack structures. The dewatering and diversion system along with the treatment and disposal system must be installed by the Contractor and be approved by EDOT's Project Engineer and a representative from TRPA and Lahontan prior to commencement of any dewatering and diversion activities (48 hours prior notice required). All activities shall result in water quality conditions conforming to these permit stipulations.

2.4 OPERATION AND MONITORING

2.4.1 Operation

- A. When the dewatering system is in place, the Contractor shall commence with dewatering of the site. As the ground water reaches each portion of the treatment, distribution and application system, the Contractor shall inspect the system to ensure that it is functioning properly and that no surface water runoff is entering Angora Creek or its tributary waters. If any portion of the system is not functioning properly, the Contractor shall stop the dewatering activity and notify EDOT's Project Engineer. The problem shall be evaluated and necessary improvements shall be incorporated into the system. The process will then recommence and the Contractor shall reevaluate the system.
- B. Once the system is functioning properly and meeting the treatment and application requirements, the Contractor must inspect the system regularly to ensure that it continues to function properly. Contractor shall maintain a log for the inspection of the dewatering and diversion system and make the log available for inspection by EDOT, Lahontan and TRPA.

Treatment Basins/Ponds/Storage Tanks: Inspect daily to ensure that damaged sections of the filter barrier material are repaired promptly and to determine when accumulated sediment will require removal.

Distribution Piping and System: Inspect the distribution piping and application systems twice a day for damaged or leaking sections and promptly repair.

Application Area(s): Inspect the application areas every hour throughout the day and night to ensure that no surface water runoff, or ponding of water, which may lead to surface runoff, is occurring. If this is occurring the Contractor shall make adjustments in the distribution system to apply the treated ground water to areas in which surface water runoff is not occurring or stop the dewatering operation until such time as the application site returns to an acceptable condition to resume distribution.

- C. The Contractor is required to monitor ground water and surface water conditions at the construction site and at the application area.

2.4.2 Security of Dewatering System

- A. The Contractor shall be responsible for maintaining a secured dewatering system including treatment and disposal systems for the duration of the work. The project site is located within a residential area and may be accessed by residents and animal life.

2.4.3 Dewater Effluent Monitoring

EDOT's Project Engineer or an approved representative will take samples at the point(s) of disposal of the dewater effluent to determine whether the effluent limitations of the NPDES permit and Chapter 81 of TRPA's Code of Ordinances are being met. The Contractor shall provide EDOT's Project Engineer with suitable sampling location(s) at the point(s) of disposal of the dewatering effluent. The frequency of sampling will be dependent on treatment system, variation in results, and the ability of the treatment system to consistently conform to the permit stipulations.

2.5 DEMOBILIZATION

2.5.1 Demobilization

- A. When the dewatering system is no longer required for construction of the project in order to conform to permit stipulations, the Contractor shall remove all sediment collected by the treatment basin(s) and dispose of the material at a TRPA approved dumpsite or an approved site outside of the Tahoe Basin.
- B. The ground water pumping system shall be disassembled and removed from the project area.
- C. Energy dissipation structures, impermeable and filter barriers, sump, and sump pumps shall be removed and disposed of properly.
- D. All the distribution piping and application fixtures shall be removed from the construction site and application area(s). Below grade piping shall be removed and trenches backfilled, compacted with native materials and restored to native conditions.

SECTION 3: DIVERSION

3.1 DIVERSION REQUIREMENTS

3.1.1 Summary

The Contractor will be required to divert flows from Angora Creek within the Project area or any associated tributary flow necessary to complete project construction. The diversion activity shall be constructed and operated in such a way as to prevent on and off site pollution. Diverted creek water may contain suspended sediments, total dissolved solids (TDS) or other materials, and shall not be discharged directly into Angora Creek or its tributary waters without meeting the approved discharge limits. Sediment controls shall be provided to eliminate sediment generation or to remove sediments generated during diversion activities.

Channel flushing may be required in the newly constructed channel prior to allowing Angora Creek to flow through it in order to meet discharge effluent limits set by Lahontan RWQCB and TRPA. The Lahontan permit only authorizes “clear-water diversions” which meet numeric effluent limits. Contractor shall refer to Section 10 of the Special Provisions and pages 16/17 of this document for further details on channel flushing. The diverted flows shall be reintroduced to Angora Creek or any tributaries in conformance with all applicable laws and permit requirements.

The Contractor’s design shall demonstrate that the diversion system can handle the anticipated flows and must state the assumptions used for maximum flows. The plan shall also include a contingency plan in the event the diversion system fails.

3.1.2 Creek/Tributary Levels

- A. El Dorado County has been operating stream monitoring stations in the project area since 1991. One of the sites is located roughly 500 feet upstream of the Project area. The collected data during water years 2004 and 2005 indicates the lowest flows (0.03 cfs) have occurred in the September time frame (See Graphs 1&2 below). This historical flow record suggests that the timing of the Project implementation and associated creek diversion take place in the August/September/October time frame. However, the 2007

Angora Fire may have changed flow conditions in the Angora Creek Watershed and the Contractor shall determine construction sequencing. For a frame of reference for water years 2004 and 2005, the table below shows the total annual precipitation recorded at the Echo Peak and Fallen Leaf SNOTEL sites for the time period corresponding with when flow was recorded at the monitoring site.

Table 3 – SNOTEL Sites - Total Precipitation (inches)

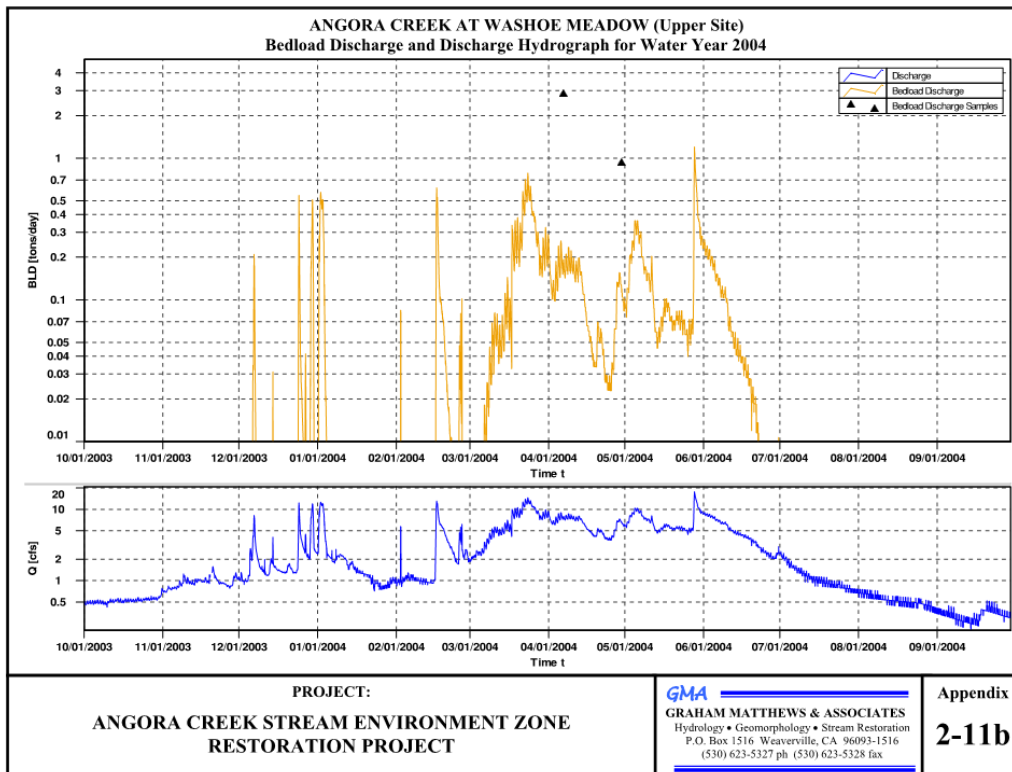
Year ¹	2002	2003	2004	2005	2006	2007
Echo Peak	52.7	60.3	45.4	71.5	86.2	21.5
Fallen Leaf	27.4	30.1	26.5	35.7	49.3	8.8

1. Water Years are from October 1st to September 30 (i.e. 2002 = October 1st, 2001 to September 30th, 2002)

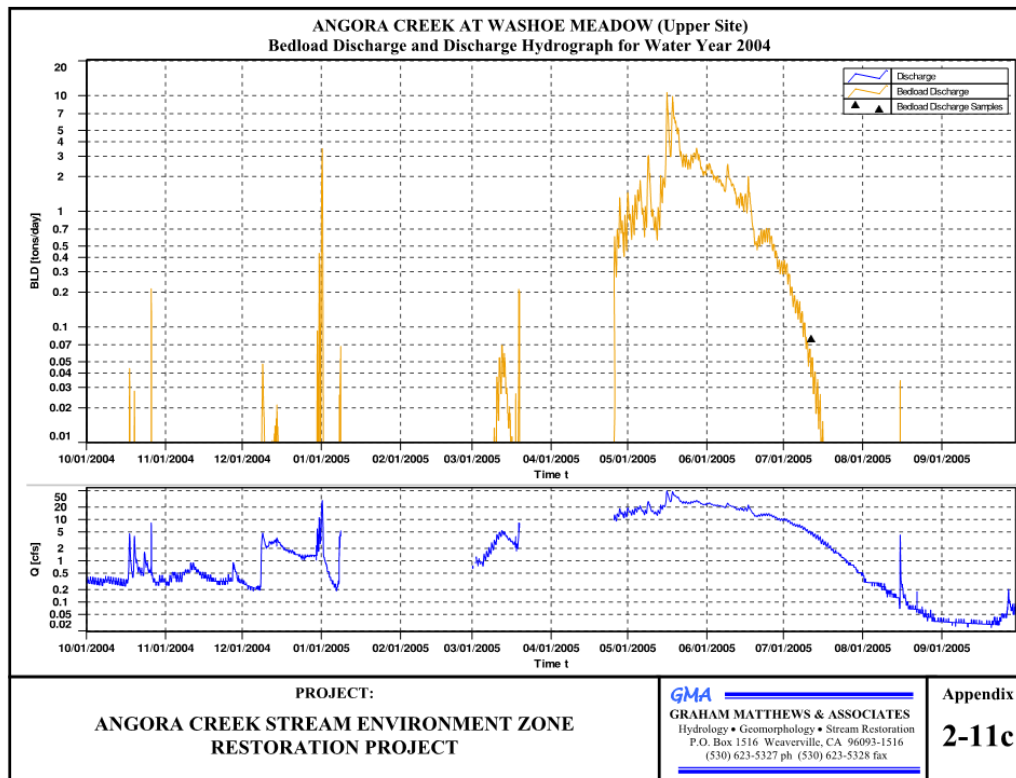
3.1.3 Diversion Volume and Rates

A. Based on the graphs of water years 2004 and 2005, Angora Creek flow conditions fluctuated between 0.03 cfs and 50 cfs. However, flows in the diversion areas during the construction period are likely to be between 0.03 cfs and 2 cfs and as high as 10 cfs based on the 2004 and 2005 water year measurements. It shall be the responsibility of the Contractor to appropriately size the diversion system to accommodate flow in Angora Creek during construction activities and verify the flow rates at the time of construction. The Contractor’s design shall demonstrate that the diversion system can handle the anticipated flows and must state the assumptions used for maximum flows. The plan shall also include a contingency plan in the event the diversion system fails.

Graph 1 - Angora Creek Bedload and Discharge Hydrograph for Water Year 2004



Graph 2 - Angora Creek Bedload and Discharge Hydrograph for Water Year 2005



3.1.4 Channel Effluent Levels

- A. The newly constructed channel section may require rewatering and/or channel flushing and shall meet all applicable permit criteria established by Lahontan and TRPA. In order to meet these requirements, channel flushing and the treatment of channel flush water may be required by the Contractor prior to rewatering the channel in order to meet these discharge standards.

3.2 DIVERSION METHODS

3.2.1 Diversion Options

- A. One diversion location has been designated in order to complete project construction and is shown on Sheet DW-1. This location is slightly upstream from the construction location and involves diverting Angora Creek around the Project site, through the existing culverts beneath Lake Tahoe Blvd., and back into the creek just below the construction area. The diversion will be located both within County ROW, a USFS parcel (033-531-07) and a private easement (Hennessy, 033-524-01). Below, diversion options are outlined, however, the Contractor shall be responsible for final design, installation, maintenance and removal of the diversion systems as required for completion of the work.

Angora Creek Diversion – In order to divert Angora Creek around the construction area, the Contractor may either install a gravity system or a pumped system. If a gravity system is to be installed, a coffer dam must be installed in the existing creek channel using gravel bags or another approved equivalent to be able to create enough head and have enough fall to allow the creek to gravity flow through a piped system around the

construction area. The diversion dam shall effectively seal the channel from flows and allow the creek water to pond where it can flow through the temporary bypass pipe. Or, if the contractor chooses to utilize pumps, a coffer dam must be installed in the existing creek channel using gravel bags or another approved equivalent so that the creek can pond where it can be pumped into the piping system and then flow around the construction area. The Contractor shall furnish pumps of adequate power, to be determined by the Contractor and approved by EDOT's Project Engineer, to pump Angora Creek into the diversion pipe for anticipated flows outlined above. The pump shall be properly noise attenuated. In either case, the temporary pipe shall be installed and anchored with hand crews to minimally disturb the area.

Regardless if a pump or gravity system is used, the pipe shall be installed so as not to interfere with construction activities. The outlet of the temporary pipe shall be appropriately protected as determined by the Contractor and approved by the Project Engineer to eliminate scour and prevent erosion as the creek enters back into the main channel of Angora Creek. When the diversion system is no longer needed, the pipe, dam and all associated materials shall be removed by hand and the area shall be restored to natural conditions. Coordination shall occur with EDOT's Project Engineer for determining proper timing of removing the dam and allowing the creek to flow through the newly constructed channel. Channel flushing and the treatment of flush water, per the directions outlined below, shall occur prior to allowing Angora Creek to enter the newly constructed channel.

3.2.2 Channel Flushing Options

- A. The Contractor shall be responsible for final design, installation and maintenance of the channel flushing system(s) as required for completion of the work on the newly constructed channel. Containment structures or turbidity barriers are the primary acceptable methods for containment/filtration of flushing effluent in a designated portion of the channel to be rewatered. Containment structures may be constructed of a variety of materials, such as plastic sheeting, impermeable geotextile fabric or gravel bags. The containment structure shall effectively seal the channel being flushed from allowing surface flow past the structure. Or, turbidity barriers shall be installed to temporarily dam and filter flushing water as long as acceptable effluent discharge levels are met. Pumps operated just upstream of the containment structure shall divert the flushing effluent into a disposal system, treatment system, or water truck until the effluent quality reaches the regulatory water quality criteria. Pumps shall be electric or noise attenuated, unless otherwise approved by the Engineer.

3.2.3 Treatment and Disposal Options

- A. Channel Flushing effluent can either be directly spray applied, per EDOT's Project Engineer, in designated disposal areas for irrigation or routed through the dewatering system described in Section 2 of this plan and specification.

3.3 EXECUTION

3.3.1 Construction Sequence

- A. Diversion sequencing shall be determined by the Contractor in consultation with the Project Engineer. Diversion activities shall commence in low flow conditions (1 cfs or less), however the Contractor shall be responsible for the diversion of higher flows throughout all phases of construction sequencing.

- B. The diversion and channel flushing operations shall be designed, installed and maintained by the Contractor and upon construction completion, all temporary materials associated with diversion and channel flushing shall be removed immediately and the disturbed areas shall be restored to native conditions.

3.3.2 Installation

- A. The water diversion and channel flushing system(s) for construction activities as outlined on Sheet DW-1 and the Special Provisions must be installed by the Contractor and approved by EDOT's Project Engineer and representatives from TRPA and Lahontan RWQCB prior to commencement of any water diversion (48 hours prior notice required). Appropriate temporary BMPs shall be in place in order to eliminate sediment transport.

3.4 OPERATION AND MONITORING OF DIVERSION AND FLUSHING SYSTEMS

3.4.1 Operation

- A. When the diversion system is in place and has been approved per Section 3.3 above, the Contractor shall commence diverting creek flows appropriately. As the surface water reaches the diversion discharge location, the Contractor shall inspect the system to ensure that it is functioning properly and that no diversion effluent surface water runoff is entering Angora Creek or its tributary waters unless and until it meets water quality standards outlined in Table 1. If any portion of the system is not functioning properly, the Contractor shall stop the diversion system and notify EDOT's Project Engineer. The problem(s) shall be evaluated and necessary improvements incorporated into the system. The process will then recommence and the Contractor shall continually reevaluate the system.
- B. Channel flushing operations in the construction area shall be designed and installed by the Contractor with the approval of EDOT's Project Engineer. The Contractor shall inspect the system to ensure that it is functioning properly and that no flushing effluent water runoff is entering Angora Creek or its tributary waters unless and until it meets water quality standards. If any portion of the system is not functioning properly, the Contractor shall stop the channel flushing system and notify EDOT's Project Engineer. The problem(s) shall be evaluated and necessary improvements incorporated into the system. The process will then recommence and the Contractor shall continually reevaluate the system.
- C. Once the system is functioning properly and meeting the diversion requirements, the Contractor must inspect the system accordingly to ensure that it continues to function properly. A properly functioning channel flushing process will include the mobilization and transport of a limited volume of sediment from the channel with a decline in the mobilization and transport of sediment as flushing activities progress. Contractor shall maintain a log for the inspection of the diversion and rewatering system and make the log available for inspection by EDOT, Lahontan and TRPA for review.

Diversion Barrier(s) or Equivalent: Inspect daily to ensure that damaged sections of the barrier material are repaired promptly and to determine when accumulated sediment will require removal.

Distribution Piping and System: Inspect the distribution piping and application systems twice a day for damaged or leaking sections and promptly repair.

Application Area(s): Inspect the application areas hourly throughout the day to ensure that diverted water is appropriately discharging to approved areas and that no scour or signs of erosion are present. If failures are evident, the Contractor shall make adjustments in the distribution system or stop the diversion operation until such time as the application site returns to conditions within the limits of the permit stipulations to resume distribution.

Channel Flushing System: Continually inspect channel flushing system and operation to ensure that turbid water is captured and pumped to water trucks, a water treatment system, or equivalent prior to discharging to surface waters or SEZ areas. Water quality sampling and analysis shall occur as necessary to determine when tributary flows may re-enter the channel with acceptable water quality for discharge.

3.4.2 *Diversion Effluent/Channel Flushing Monitoring*

- A. The Project Engineer or an approved designee will monitor surface water quality conditions at the construction site during diversion operations and channel flushing operations in accordance with the frequency outlined in the permits to confirm compliance with Lahontan RWQCB, NPDES and TRPA permit effluent limitations.

3.5 DEMOBILIZATION

3.5.1 *Demobilization*

- A. When diversion and channel flushing activities are complete and the system is no longer required to allow construction of the project, the Contractor shall remove all sediment collected by the diversion and flushing structures and dispose of the material at a TRPA approved dumpsite or an approved site outside of the Tahoe Basin.
- B. Impermeable barriers, gravel bag dams, pumps and piping shall be removed and disposed of properly and in conformance with the Contract Documents.
- C. All distribution piping and application fixtures shall be removed from the construction site and application area(s). All disturbed areas shall be restored to native conditions per the direction of the Project Engineer and in conformance with the Contract Documents.

3.6 References

Angora Creek Stream Environmental Zone Restoration Project, Graham Matthews & Associates, September 2007.

Geotechnical Investigation Report, Angora Creek Fisheries/SEZ Enhancement Project, MACTEC Engineering and Consulting Inc. (MACTEC), January of 2009.

Standard Plans, California Department of Transportation, May 2006.

Standard Specifications, California Department of Transportation, May 2006.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Best Management Practices, TRPA, 1988.

APPENDIX E

SAMPLING AND ANALYSIS PLAN

**CONSTRUCTION SITE STORM WATER COMPLIANCE
SAMPLING AND ANALYSIS PLAN FOR
ANGORA CREEK FISHERIES/SEZ ENHANCEMENT PROJECT
EL DORADO COUNTY DEPARTMENT OF TRANSPORTATION**

PROJECT OVERVIEW/DESCRIPTION

On April 1, 2005, the State Water Resources Control Board (SWRCB) modified the Monitoring Program and Reporting Requirements of the *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity* (General Permit) to determine if Best Management Practices (BMPs) implemented on the construction site are effective for preventing sediment/silt/turbidity or other non-visible construction-related pollutants from impacting water quality objectives. This Sampling and Analysis Plan (SAP) describes the strategy that will be implemented for identifying, sampling, and analyzing siltation /turbidity during construction of the project.

Scope of Monitoring Activities

This project discharges into Angora Creek, which is a tributary of the Upper Truckee River. Angora Creek and the Upper Truckee River are listed as impaired due to Erosion/Siltation pursuant to Clean Water Act, Section 303(d). This SAP describes the sampling and analysis strategy and schedule for monitoring siltation/turbidity discharges to the 303(d) listed water.

The location(s) of direct (concentrated) discharge from the construction site to the 303(d) listed water body, and locations of run-on to the construction site with the potential to combine with storm water discharging directly to the 303(d) listed water body, are identified on the Water Pollution Control Drawing (WPCD) on Sheet A. Direct discharge is defined as a point source or conveyance directly to the 303(d) listed water body that does not first flow through a tributary or combine with storm water from off-site in a municipal separate storm sewer system.

MONITORING STRATEGY

Sampling Schedule

County of El Dorado staff will evaluate the daily local weather forecast that may indicate the possibility of a rainfall event. Project inspectors and the contractor will be notified if a rainfall event is possible and will take the necessary precautions to prevent siltation/turbidity discharges from the construction site.

Upstream, downstream and run-on samples shall be collected for turbidity during the first two hours of discharge from rain events, which result in a direct discharge to the 303(d) water body. Samples shall be collected during daylight hours (sunrise to sunset) and shall be collected regardless of the time of the year, status of the construction site, or day of the week.

The General Permit requires a maximum of four rain events to be sampled within a 30-day period. The Environmental Protection Agency (EPA) defines a representative rain event as one that is preceded by at least 72 hours of dry weather. For the purposes of sampling for NPDES, this definition will be used to distinguish between separate rain events.

Sampling Locations

Sampling locations for turbidity monitoring are shown on the WPCD on Sheet A. Sampling locations were based on proximity to identified discharge or run-on location(s), accessibility for sampling, personnel safety, and other factors. Additional sampling locations will be established during construction as the contractor installs temporary BMPs and as conditions warrant.

The following sampling locations have been identified on the WPCD:

- One sampling location in the Angora Creek Channel upstream of the project area (**AF-01**) has been identified. This site will provide a control sample to be analyzed for the prevailing condition of the creek without any influence from the construction site. The control sample will be used to determine the background turbidity level and relative impacts of siltation or turbidity to the 303(d) listed water body from the project, if any.
- In addition, two sampling locations have been identified for the collection of samples from the immediate Project area (**AF-02, AF-03**) to determine if discharges from the construction site are contributing siltation or turbidity that originates from the project site to the 303(d) listed water body or surface waters.
- One sampling location has been identified for the collection of samples below the outlet of the diversion pipe in Angora Creek (**AF-04**). This location will also be used to collect samples during the channel flushing operation. This will provide a sampling location to determine if the diversion system and the channel flushing operation is contributing siltation or turbidity which could contribute the direct discharges from the construction site to the 303(d) listed water body or surface waters. Only if water meets discharge standards shall it be allowed to enter Angora Creek.
- Two additional sampling locations have been identified downstream of the main project area at the berm removal locations (**AF-05, AF-06**). One location will determine background turbidity levels in the pond area and the other location will determine turbidity levels in Angora Creek downstream of the project area to determine if the construction activities are contributing discharges to the 303(d) listed water body or surface waters.
- Finally, sampling shall be performed to determine turbidity levels of water removed through the dewatering operation prior to discharging the water to the creek, upland areas or SEZ areas to determine if it meets allowable discharge standards per the project's Dewatering and Diversion Plan.

MONITORING PREPARATION

County of El Dorado personnel: Russell Wigart, or other trained county staff, will coordinate with the contractor and inspector to collect samples on the project site and will obtain and maintain field-testing equipment for samples to be analyzed in the field.

SAMPLE COLLECTION AND HANDLING

Sample Collection Procedures

Upstream samples will be collected to represent the nature of the flow in the channel. Downstream samples will be collected to represent the direct flow from the construction site.

Run-on samples, if applicable, will be collected to identify potential sedimentation/siltation or turbidity that originates off the project site and contributes to direct discharges from the construction site to the 303(d) listed water body.

A clean collection device will be used to collect samples in or near the main current, which can then be transferred to appropriate sample bottles as needed. Sampling equipment will be decontaminated properly prior to sample collection.

Collecting samples directly from ponded, sluggish, or stagnant water will be avoided.

Run-on samples will be collected by placing sample bottles directly into a stream of water down gradient and within close proximity to the point of run-on to the El Dorado County right-of-way.

To reduce potential contamination, sample collection personnel will:

- Don a clean pair of surgical style gloves prior to the collection and handling of each sample at each location.
- Not contaminate the inside of the sample bottle by allowing it to come into contact with any material other than the water sample.
- Discard sample bottles or sample lids that have been dropped onto the ground.
- Not allow falling or dripping rainwater to enter sample containers.
- Not eat, smoke, or drink during sample collection.

Sample Handling for Laboratory Analysis

Following collection, sample bottles for turbidity testing will be sealed immediately, labeled, with project name, date, time, and location. Samples will be tested for turbidity immediately following sample collection. Turbidity will be measured with a portable Hach 2100p turbidimeter.

Forms for Documenting Sample Collection

Sampling and field analysis activity will be documented using the following forms:

- Sample Identification Labels: Sampling personnel shall attach an identification label to each sample bottle. At a minimum, the following information will be recorded on the label, as appropriate:
 - Project name
 - Project number
 - Sample identification number and location.
 - Collection date/time
 - Analysis parameter: Turbidity
- Sample Log: A log of sampling events will identify:
 - Sampling date
 - Separate times for sample collection of upstream, downstream, and run-on samples
 - Sample identification number and location

- Analysis parameter: i.e. Turbidity
- Names of sampling personnel
- Weather conditions (including precipitation amount)
- Other pertinent data

Storm Water Quality Construction Inspection Checklist: When applicable, the inspector will document on the checklist that samples for turbidity were taken during a rain event.

Field Analysis

For samples analyzed in the field by sampling personnel, collection, analysis, and equipment calibration will be in accordance with manufacturer's specifications.

- The instruments will be maintained in accordance with manufacturer's instructions.
- The instrument(s) will be calibrated before each sampling and analysis event.
- Maintenance and calibration records will be maintained with the SWPPP.

DATA MANAGEMENT AND REPORTING

Filing of Electronic and Hard Copy Data Reports

A copy of all sample results, Sample Log, and Water Pollution Control Drawing (WPCD) with all sample locations identified will be submitted to the LWQCB within five (5) days of sampling date.

A copy of all sample results, including Sample Log and (WPCD), shall be kept with the SWPPP document, which is to remain available for viewing purposes at all times until a Notice of Acceptance has been submitted and recorded.

Data Evaluation

The General Permit requires that BMPs be implemented on the construction site to prevent a net increase of sediment load in storm water discharges relative to pre-construction levels. The upstream sample, while not representative of pre-construction levels, provides a basis for comparison with the sample collected downstream of the construction site.

The downstream water quality sample analytical results will be evaluated to determine if the downstream sample(s) show significantly elevated levels of the tested parameter relative to the levels found in the upstream (control) sample. The run-on sample analytical results will be used as an aid in evaluating potential offsite influences on water quality results.

Should the downstream sample concentrations exceed the upstream sample concentrations, the water pollution control manager or other personnel should evaluate the BMPs, site conditions, surrounding influences (as at least partially documented by the run-on sample results), and other site factors to determine the probable cause for the increase.

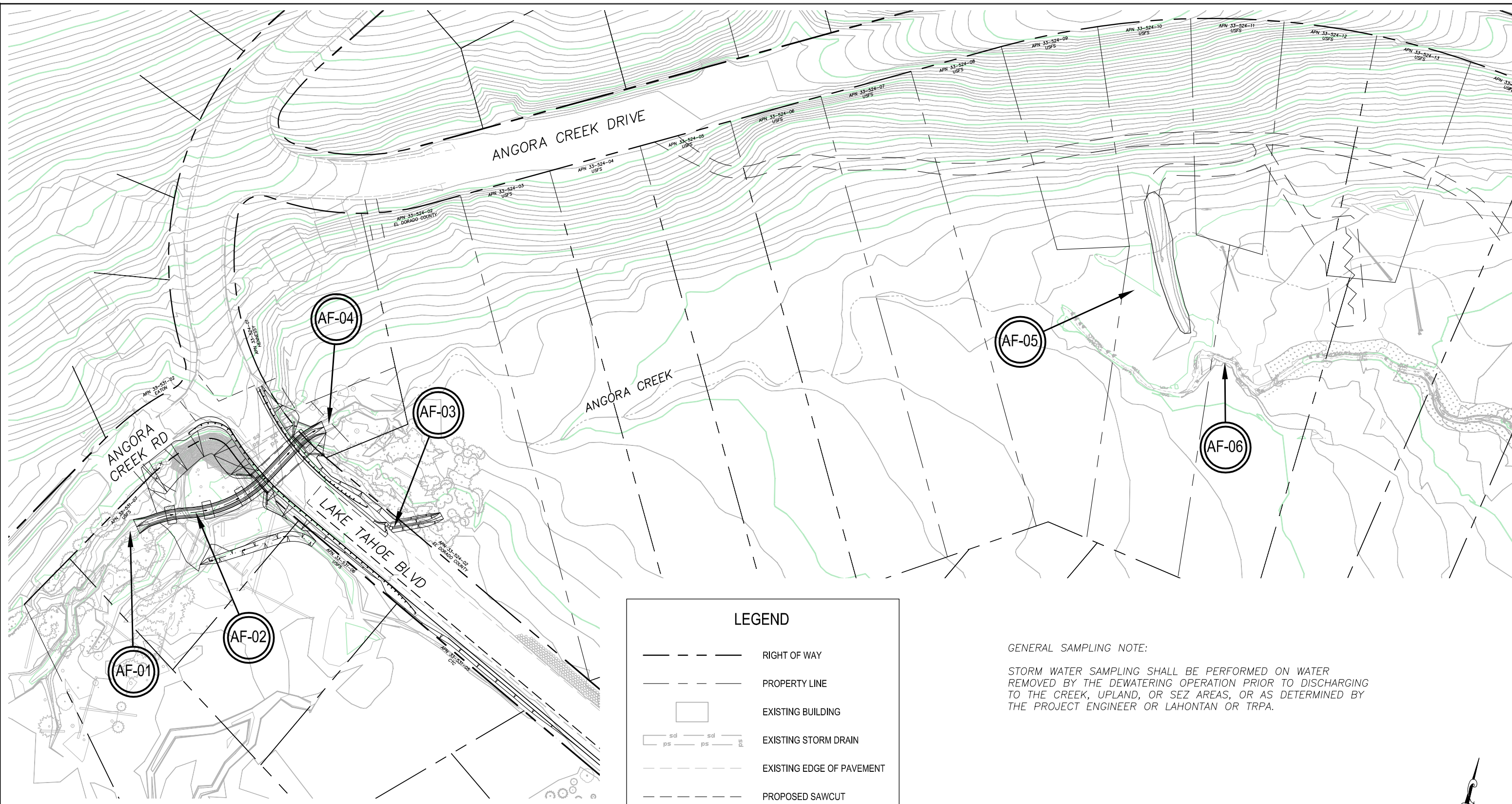
An evaluation of the water quality sample analytical results will be submitted to the Resident Engineer with the results following each event. As determined by the data evaluation, appropriate BMPs will be repaired or modified to address increases in sediment concentrations

in the water body. Any revisions to the BMPs will be recorded as an amendment to the SWPPP.

CHANGE OF CONDITIONS

Whenever SWPPP monitoring indicates a change in site conditions that might affect the appropriateness of sampling locations, sampling locations and protocols will be revised accordingly. All such revisions will be recorded as amendments to the SWPPP.

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 ORIGINAL SCALE IS IN INCHES
 FOR REDUCED PLANS
 REVISION

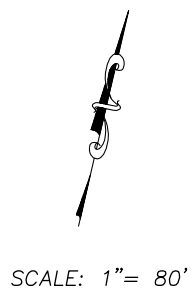


NOTE:
 PORTIONS OF BASE MAP REFLECTS
 PRE-ANGORA FIRE CONDITIONS.

LEGEND

	RIGHT OF WAY
	PROPERTY LINE
	EXISTING BUILDING
	EXISTING STORM DRAIN
	EXISTING EDGE OF PAVEMENT
	PROPOSED SAWCUT
	PROPOSED IMPROVEMENTS
	SAMPLING LOCATION

GENERAL SAMPLING NOTE:
 STORM WATER SAMPLING SHALL BE PERFORMED ON WATER REMOVED BY THE DEWATERING OPERATION PRIOR TO DISCHARGING TO THE CREEK, UPLAND, OR SEZ AREAS, OR AS DETERMINED BY THE PROJECT ENGINEER OR LAHONTAN OR TRPA.

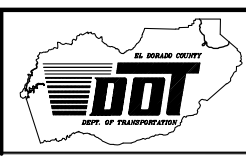


REVISION	NUMBER	DATE	DESCRIPTION	BY



PREPARED UNDER THE SUPERVISION OF :
 REGISTERED CIVIL ENGINEER
 DATE: _____

DESIGNED: BF
 DRAWN: ALD
 CHECKED: BF
 DATE: 12/09
 ROAD NUMBER: _____



EL DORADO COUNTY
 DEPARTMENT OF TRANSPORTATION
 TAHOE ENGINEERING DIVISION

**ANGORA CREEK FISHERIES/SEZ
 ENHANCEMENT PROJECT**
 SAMPLING AND ANALYSIS PLAN (SAP)
 WATER POLLUTION CONTROL DRAWING (WPCD)

SHEET
A
 1 of 1
 W.O. No. 95161

APPENDIX F

SEZ DISTURBANCE

SEZ DISTURBANCE

General

Protection and restoration of stream environment zones are essential for improving and maintaining the amenities of the Lake Tahoe Basin and for achieving environmental thresholds for water quality, vegetation preservation, and soil conservation.

Stream Environment Zones (SEZ land capability 1b) consist of the natural marsh and meadowlands, watercourses and drainage ways, and floodplains, which provide surface water conveyance from upland areas to Lake Tahoe and its tributaries. Stream environment zones are determined by the presence of riparian vegetation, alluvial soil, water influence areas, and floodplains. The plant associations of stream environment zones are perhaps the single most valuable plant community in terms of their role in providing for wildlife habitat, purification of water, and scenic enjoyment.

The Contractor shall not disturb any area of the SEZ beyond the construction area limits as delineated by construction limit fencing or filter fence, or disturb any areas outside of the areas to be disturbed by construction of the improvements as indicated on the Plans. If the Contractor inadequately protects the SEZ, or should such disturbance occur, the Contractor would be subject to remedial costs and/or potential regulatory enforcement action.

Excavated material shall be stored up grade from the excavated areas to the extent possible. No material shall be stored in any stream environment zone (SEZ land capability 1b).

All trees and natural vegetation to remain on the site shall be fenced for protection. Scarring of trees shall be avoided and, if scarred, damaged areas shall be repaired with tree seal.