

# STATE ROUTE 28

## WASHOE COUNTY/ CARSON CITY LINE TO SAND HARBOR

*Grant Application Packet*

*State of Nevada, Division of State Lands  
Lake Tahoe Environmental Improvement Project  
Water Quality and Erosion Control Grants Program*

*February 2013*

*Submitted by:*



*Tyler Thew, PE  
Senior Hydraulic Engineer  
Nevada Department of Transportation  
1263 S. Stewart Street, Carson City, NV 89423  
Ph: (775) 888-7574 Email: [tthew@dot.state.nv.us](mailto:tthew@dot.state.nv.us)*

## GRANT APPLICATION FORM

A. Project Title: State Route 28 – Carson City/Washoe County Line to Sand Harbor  
(Please refer to project name as listed in EIP)

B. Environmental Improvement Program (EIP Project) # 01.01.02.13

C. Project Location (Please provide map)  
State Route 28 – Carson City/Washoe County Line to Sand Harbor

D. Project Description: Please attach separately, and refer to Project Description Requirements (attached).

E. Applicant's Name and Contact Information  
Nevada Department of Transportation, c/o Tyler Thew  
1263 S. Stewart Street, Carson City, NV 89712

Phone: (775) 888-7574 Fax: (775) 888-7177 Email: tthew@dot.state.nv.us

F. Estimated Total Project Cost: \$5,000,000

Grant Amount Requested (Grant amounts requested from non-state agencies cannot exceed 75% of total cost of design & construction).

\$2,500,000

Sources and amounts of matching funds:

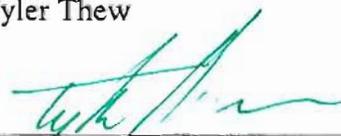
G. Owner of Property(ies): State of Nevada, United State of America (USFS)

If others hold any outstanding property rights (additional owners, public/private easements, etc.), attach explanation of how they will participate.

A Special Use Permit shall be obtained from USFS as needed to acquire right-of-way. USFS may partner with additional funds for fish passage and erosion control improvements. Tahoe Transportation District may partner to include improvements identified in the SR 28 Corridor Management Plan.

H. On behalf of the Nevada Department of Transportation, I request this Application be considered for financial assistance with the Nevada Division of State Lands, Water Quality and Erosion Control Grants Program.

Tyler Thew

  
Signature

Senior Hydraulic Engineer

Title

2/14/2013

Date

## ASSURANCES

### State of Nevada, Division of State Lands Lake Tahoe Water Quality Grant Program

The Applicant hereby assures and certifies that they will comply with the regulations, policies, guidelines and requirements of the Division of State Lands (the "DIVISION"). Also, the Applicant gives assurance and certifies with respect to the grant that:

- A. The Applicant possesses legal authority to apply for the grant, along with the ability to finance and construct the proposed facilities.
- B. The Applicant gives assurance that a resolution, motion, statute, authority or similar action has been duly adopted or passed as an official act of the applicant's governing body, authorizing the filing of the application, including all understandings and assurances contained therein, and directing and authorizing the person identified as the official representative of the applicant to act in connection with the application and to provide such additional information as may be required.
- C. The Applicant will have sufficient funds available to meet the non-Bond Act share of the costs (match) with the understanding that Grant payments are on a reimbursement basis only. The non-Bond Act share of costs claimed as match will be documented to the same standards as expenditures reimbursed by Bond-Act funds.
- D. The Applicant will have sufficient funds available when construction is completed to assure effective operation and maintenance of the facilities for at least 20 (twenty) years after project completion for the purposes constructed. The Applicant will not dispose of or encumber its title or other interests in the site and facilities for 20 years without state approval. The applicant will maintain the project and associated infrastructure for a minimum of 20 years.
- E. To the fullest extent permitted by law, the applicant will agree to indemnify, hold harmless and defend the State of Nevada, its officers, employees, agents and invitees from and against all liabilities, claims, actions, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of any alleged negligent or willful acts or omissions of the Applicant, its officers, employees and agents.
- F. The Applicant will furnish progress reports and such other information as the DIVISION may require. At a minimum the DIVISION will be notified and given the opportunity to review the project design and construction at multiple project milestones:
  - Project Initiation after grant award
  - Completion of 25, 50, and 90 percent of the Project design

- Final design prior to advertisement and award of contract
  - Preconstruction Meeting
  - Completion of 25, 50 and 75% of construction
  - Project completion prior to release of contractor
- G. The Applicant will provide and maintain competent and adequate engineering supervision and inspection at the construction site to insure that completed work conforms to the approved plans and specifications.
- H. The Applicant will operate and maintain the work done in accordance with the minimum standards as may be required or prescribed by the applicable state and local agencies.
- I. The Applicant will obtain all permits, easements and other private and governmental agency approvals required for the project prior to the commencement of construction.
- J. The Applicant must receive notice to proceed from the DIVISION prior to advertisement of bids and commencement of construction.
- K. The Applicant will give the DIVISION or its designate, access to and the right to audit project records.
- L. The Applicant will cause work on the project to be commenced within a reasonable time after receipt of notification from the approving state agency that funds have been approved and that the project will be prosecuted to completion with reasonable diligence.
- M. The Applicant will comply with Title IV of the Civil Rights Act of 1964 (P. O. 88-352).
- N. The Applicant will establish safeguards to prohibit employees from using their positions for a purpose that is or gives the appearance of being motivated by a desire for private gain for themselves or others, particularly those with whom they have family, business, or other ties.
- O. The Applicant will comply with the provisions of the Hatch Act which limit the political activity of employees.
- P. The applicant understands that competitive opening bidding is required as outlined in Nevada Revised Statutes Chapter 338.

Name NEVADA DEPT. OF TRANSPORTATION  
Tyler Thew

Signature  Date: 2/14/2013

# STATE ROUTE 28

## Washoe County / Carson City Line to Sand Harbor

---

### Project Schedule

#### Completed Work

1. **Existing Conditions Analysis (ECA) report:** Completed February 2012
2. **Formulation and Evaluation of Alternatives (FEA) report:** Completed August 2012
3. **Preliminary (30%) Plans and Design Report:** Completed November 2012

#### Future Milestones

1. **Intermediate (60%) Plans and Design Report:** work is currently underway on this task. Estimated October 2013
2. **Final Plans and Design Report:** Estimated June 2014
3. **Advertise:** Estimated October 2014
4. **Construction:** Estimated May 2015 through October 2015

### Project Participants / TAC Members

A Technical Advisory Committee (TAC) has been formed for this project. The following is a list of TAC members:

#### Nevada Department of Transportation – Applicant and Project Manager

---

Matt Nussbaumer, PE, Project Manager  
(775) 888-7623 | mnussbaumer@dot.state.nv.us

Tyler Thew, PE, Project Engineer  
(775) 888-7574 | tthew@dot.state.nv.us

#### Atkins – Consultant Design Engineer

---

Brian Janes, PE, Project Manager  
(775) 789-9831 | Brian.Janes@atkinsglobal.com

Daniel Stucky, PE, Project Engineer  
(775) 789-9860 | Daniel.Stucky@atkinsglobal.com

### Tahoe Transportation District – Project Proponent

---

Alfred Knotts, Transportation Projects Manager  
(775) 589-5503 | aknotts@tahoetransportation.org

Derek Kirkland, Capital Program Specialist  
(775) 589-5504 | dkirkland@tahoetransportation.org

### Nevada Division of State Lands – Project Proponent

---

Elizabeth Harrison, Lake Tahoe Program Coordinator  
(775) 684-2736 | eharrison@lands.nv.gov

### Nevada Division of State Parks – Property Administrator and Project Proponent

---

Jay Howard, Supervisor, Sand Harbor State Park  
(775) 831-0494 x229 | JayAtTahoe@gmail.com

### Nevada Division of Environmental Protection – Project Proponent

---

Jason Kuchniki, Lake Tahoe Watershed Program Manager  
(775) 687-9450 | jkuchnic@ndep.nv.gov

Ed Skudlarek, Environmental Scientist, Lake Tahoe Watershed Unit  
(775) 697-9451 | eskudlarek@ndep.nv.gov

### United States Forest Service – Property Administrator and Project Proponent

---

Garret Villanueva, Assistant Forest Engineer  
(530) 543-2600 | gvillanueva@fs.fed.us

### Tahoe Regional Planning Agency – Project Proponent

---

Brian Judge, Principal Planner  
(775) 589-5262 | bjudge@trpa.org

Shannon Friedman, Associate Environmental Specialist  
(775) 589-5205 | sfriedman@trpa.org

### Washoe County – Project Proponent

---

Kris Klein, PE, Senior Engineer  
(775) 328-2046 | kklein@washoecounty.us

## Project Summary and Site Plan

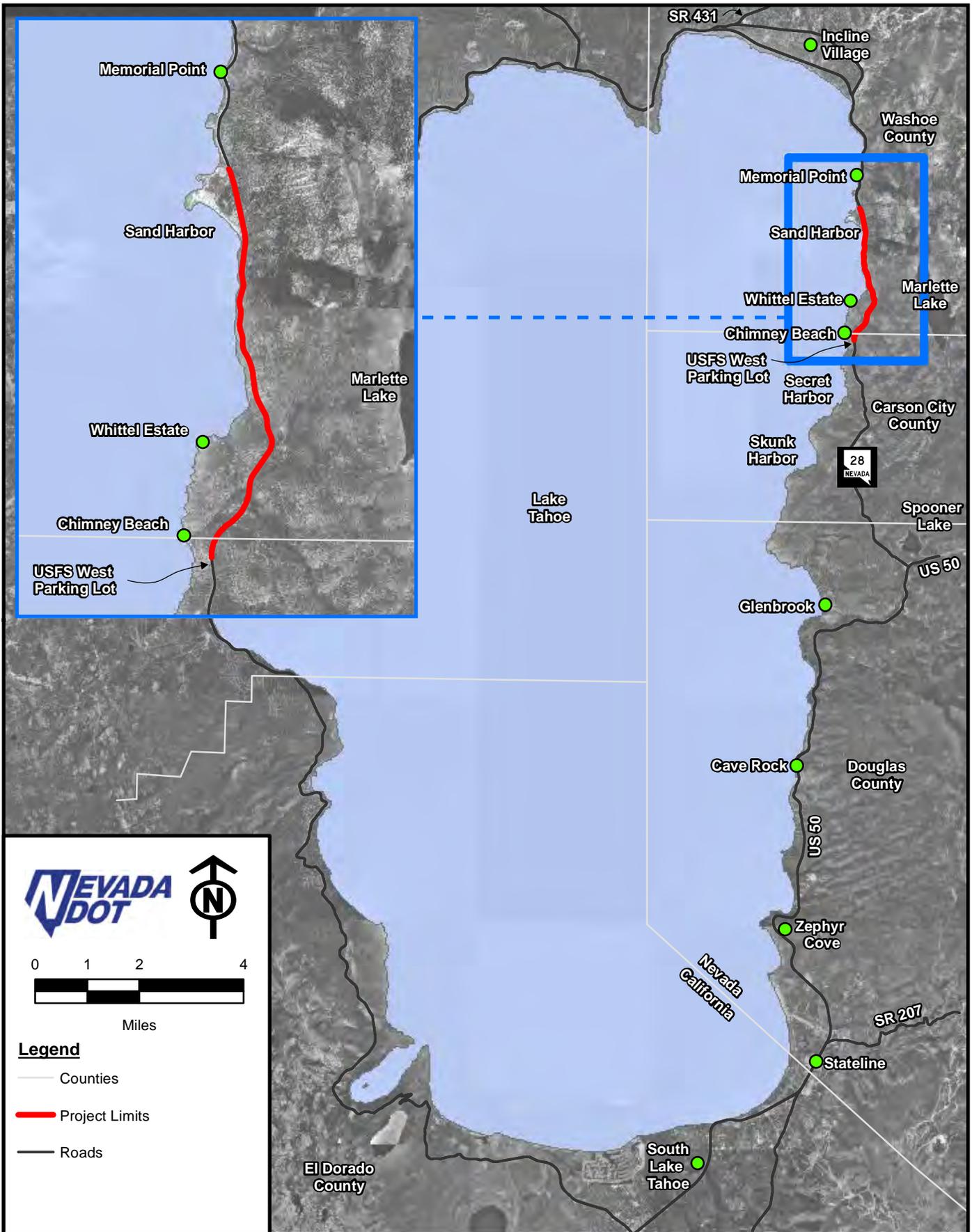
### Project Description

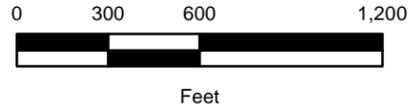
The project limits for the SR 28 Water Quality and Erosion Control Project extend from the Carson City/Washoe County line to Sand Harbor (Figure 1). The project goals are to reduce fine sediment particle (FSP) loading, improve traffic safety, and improve the maintainability of drainage structures. Urban stormwater runoff has been identified as the major contributor of FSP (responsible for degrading Lake Tahoe clarity) and accounts for 70 percent of the total fine sediment loading. The Final Lake Tahoe Total Maximum Daily Load Report (TMDL) has identified roadway systems as the primary source of fine sediment within the Lake Tahoe Basin. The water quality improvement design for this project is focused on FSP reduction; however it is likely that the improvements will also have a positive impact on nutrient concentrations.

An Existing Condition Analysis (ECA), Formulation and Evaluation of Alternatives (FEA) analysis, and a 30% Preliminary Design Report have been completed. This grant application summarizes information found in these reports. A Technical Advisory Committee (TAC) consisting of project stakeholders and proponents has been created and the TAC has reviewed the project design documents and provided guidance throughout the process. The TAC consists of representatives from the Nevada Division of State Lands (NDSL), the Nevada Division of Environmental Protection (NDEP), the Tahoe Regional Planning Agency (TRPA), the Nevada Division of State Parks (NDSP), the Tahoe Transportation District (TTD), the United States Forest Service (USFS), and Washoe County.

### Connectivity

The project is located very close to Lake Tahoe along most of its length. At the point where the project is approximately most distant from the Lake it crosses Marlette Creek which is a directly connected perennial stream and a Stream Environment Zone (SEZ). The existing watersheds draining to the project are identified on Figure 2. Each drainage discharge from the road, (i.e. culverts, ditches, etc.) was field reviewed to determine its connectivity to Lake Tahoe and assigned an Outlet Connectivity Rapid Assessment Methodology (OCRAM) score. The OCRAM score is based on a visual assessment of the ratio of erosion/deposition length over the total stormwater travel length to the lake. OCRAM scores range from 0 to 5 with 0 having no connection and 5 being 100% connected. OCRAM values for the outfall connectivity along the roadway are shown in Figures 3-A and 3-B.





**Legend**

- Approximate Project Limits
- ▲ SD Outlet
- Drop Inlet
- Storm Drain Lines
- Flow Path
- - - Streams
- ▭ Sub-basins
- Contours (10')

Note: USGS contours (not shown) were used for areas not covered by provided Washoe County contours

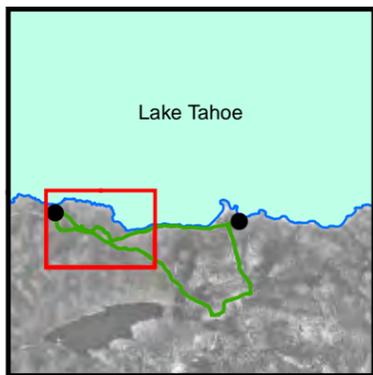
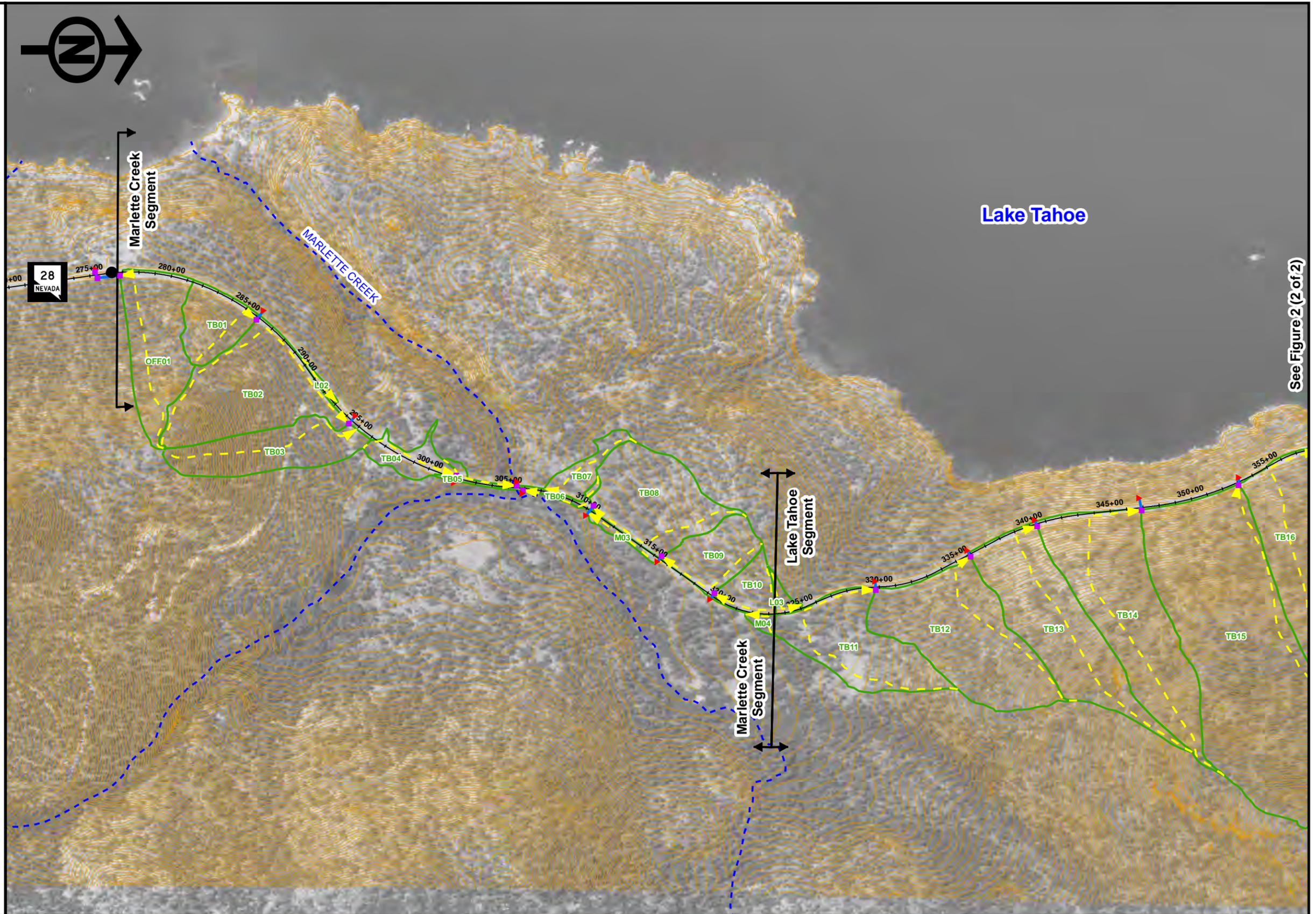


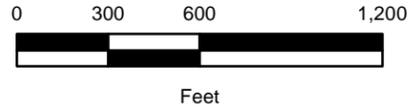
Figure Location



See Figure 2 (2 of 2)



**SR 28 Erosion Control and Water Quality Project  
Existing Condition Hydrologic Summary Map (1 of 2)**



See Figure 2 (1 of 2)

Lake Tahoe

- Legend**
- Approximate Project Limits
  - ▲ SD Outlet
  - Drop Inlet
  - Storm Drain Lines
  - ▶ Flow Path
  - - - Streams
  - ▭ Sub-basins
  - Contours (10')

Note: USGS contours (not shown) were used for areas not covered by provided Washoe County contours

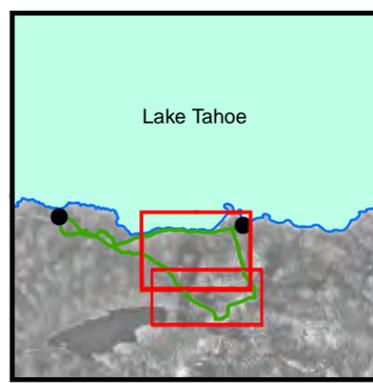
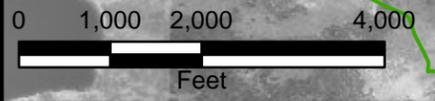
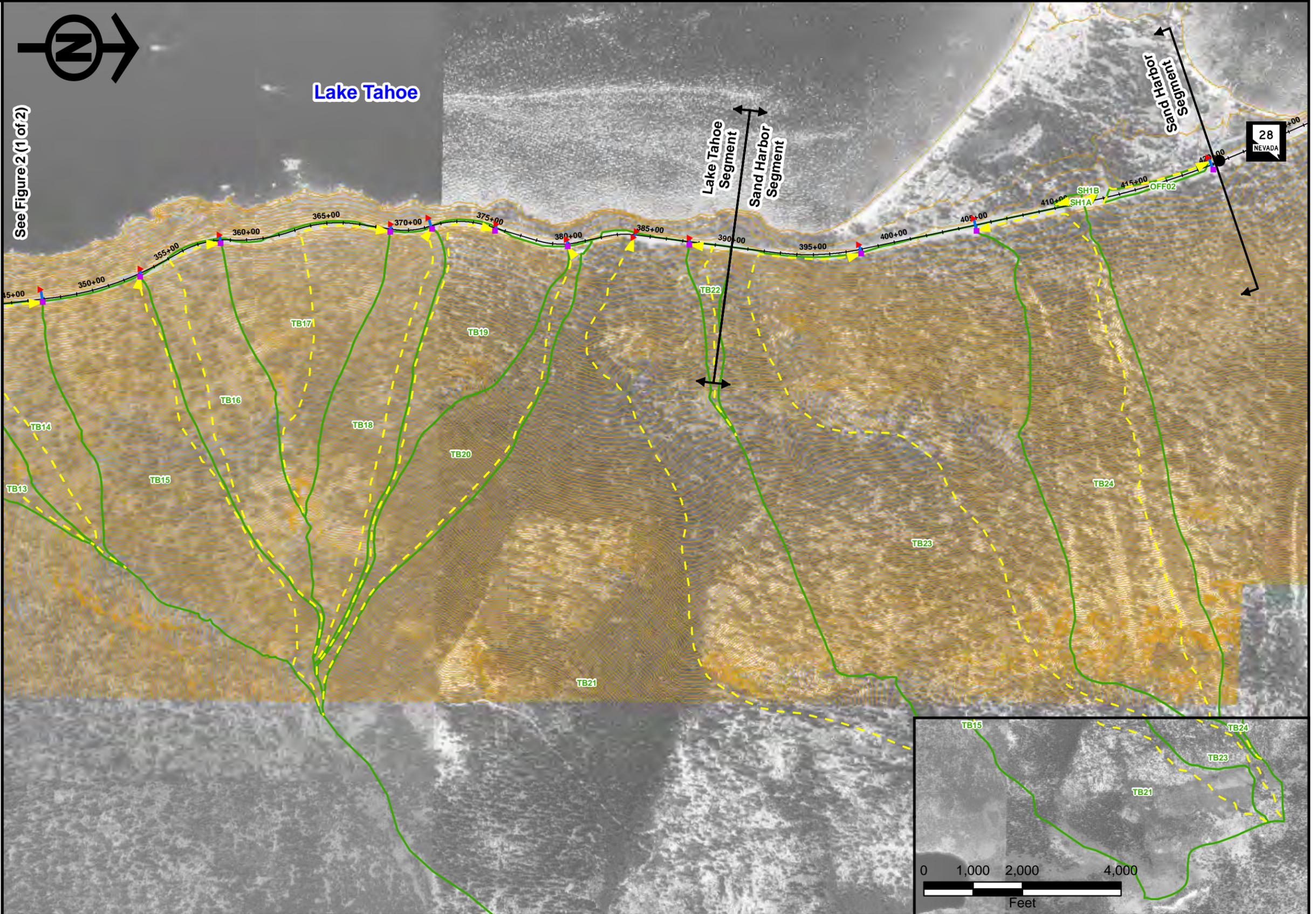
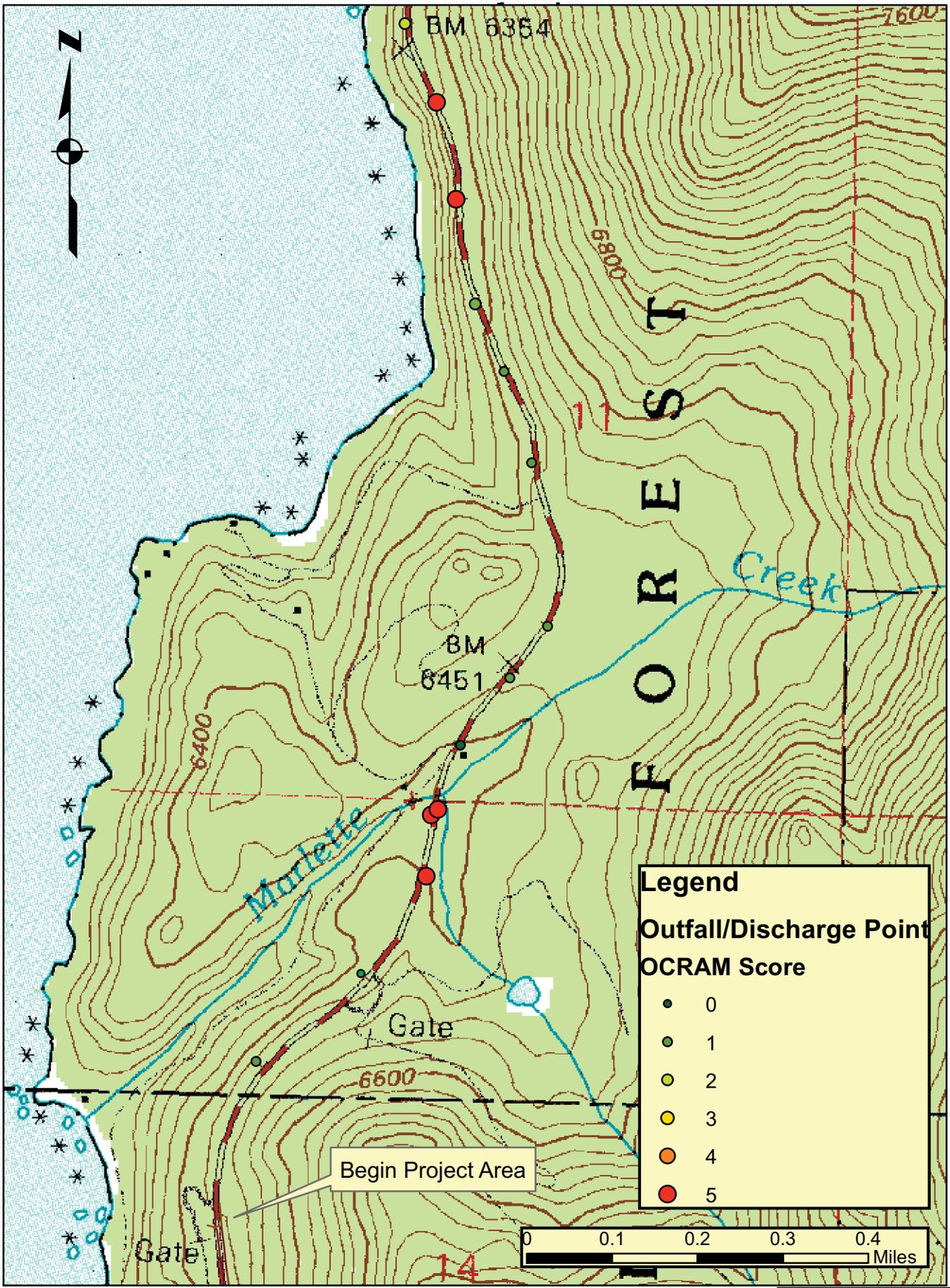


Figure Location



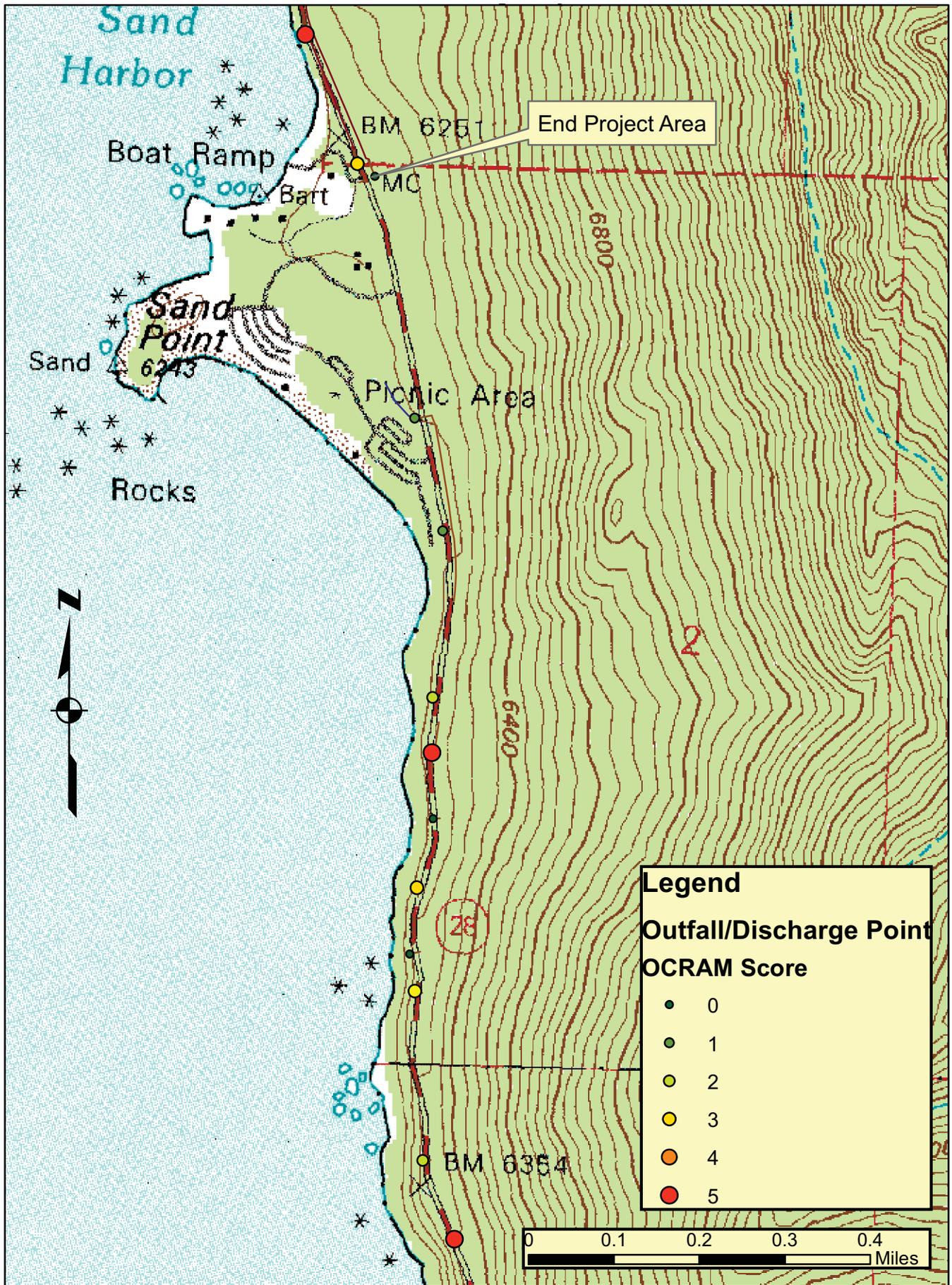
**SR 28 Erosion Control and Water Quality Project  
Existing Condition Hydrologic Summary Map (2 of 2)**

**Figure  
2  
(2 of 2)**



**Outlet Connectivity Map**  
(Sheet 1)

**FIGURE**  
**3-A**



**Outlet Connectivity Map**  
(Sheet 2)

**FIGURE**  
**3-B**

## Existing Water Quality Problem Areas

---

The most problematic existing condition areas of the project based on field observations are:

- 17 erosion problem areas have been documented within the project limits during field investigations.
- 15 catchments generate over 100 pounds of FSP (adjusted) annually and are highly connected to Lake Tahoe or Marlette Creek.
- 4 cut/fill slopes generate over 100 pounds of FSP (adjusted) annually and are highly connected to Lake Tahoe or Marlette Creek. (Figure 4)
- Existing shoulders are erodible. (Figure 5)
- Shoulder parking along State Route 28 has created significant soil erosion problems due to the frequent and significant soil disturbance of shoulders and slopes. (Figure 6)
- The fill slope between the Marlette Creek culvert headwalls and the roadway is extremely steep and unstable.
- 20 locations where stormwater overtops the roadway creating a safety hazard on the road and eroding the roadway fill slope on downstream. (Figure 7)
- 8 locations where there is not enough capacity to convey stormwater along the road and stormwater spreads onto the roadway creating a safety hazard. (Figure 7)



**Figure 4: Eroding Slopes along SR 28 south of Sand Harbor. The project proposes to stabilize and protect these slopes and others that are similar.**



**Figure 5: Eroding shoulders and ditches. Existing ditches are difficult to maintain and street sweepers cannot reach the ditches. Sediment accumulates in the ditches and is later washed away. The project will improve these ditches so they are stable and protected and can be cleaned as soon as possible before and after a storm event.**



**Figure 6:** Existing Road shoulder parking throughout the project limits disturbs the soil and mobilizes fine sediment particles. The project proposes to stabilize and revegetate these areas and protect them from further parking. Areas where parking will continue to be allowed will be stabilized so that the use does not generate fine sediment.



**Figure 7:** Existing ponding and spread of stormwater runoff into roadway creates a safety hazard and requires a large amount of abrasive application and more frequent abrasive application.

## Pollutant Controls, Treatment Practices, and Policies

Development of the proposed improvements targeted improving the existing condition problem areas and considered many other factors. Generally, the main design approach attempts to reduce FSP loading, avoid increasing erosion risk, improve maintenance opportunities, promote traffic safety, and avoid aesthetic impacts.

FSP reduction has been accomplished by incorporating road shoulder treatments, stabilizing cut slopes, revegetation, reducing impervious area, incorporating media filtration treatment devices, constructing new infiltration areas, redirecting runoff to existing infiltration areas, and other modifications to runoff drainage patterns to reduce the amount Directly Connected Impervious Area (DCIA).

The proposed improvements significantly reduce cut/fill slope FSP loading and improved the road shoulder condition. Based on the improvements identified in the proposed condition, the existing condition problem areas will be improved as follows:

- Slope erosion will be addressed by stabilizing and revegetating slopes, armoring slopes with riprap, and reducing slope steepness by constructing retaining walls. Only 2 cut/fill slopes will remain (out of 4) with FSP greater than 100 pounds. (Figure 8)
- Culvert outlet erosion will be addressed by adding various types of energy dissipation measures including riprap weir outlets, steep riprap aprons, and dual outlet vaults.
- Only 2 proposed catchments remain (out of 15) with adjusted FSP of greater than 100 pounds. Shoulder conditions will be stabilized and protected. (Figure 9)
- Directly Connected Impervious Area (DCIA) will be reduced. (Figure 10)
- Shoulder parking will be relocated to a formal parking area where possible. Areas where shoulder parking will be allowed will be stabilized. Areas where shoulder parking is not allowed will be protected by bollards, guardrail, or other methods. (Figure 11)
- The slopes adjacent to Marlette Creek will be stabilized and the Marlette Creek culvert headwalls will be extended.
- Stormwater overtopping locations will be reduced.
- Stormwater spread violations will be eliminated.
- Reducing areas of overtopping and spread directly reduces FSP loading from the roadway by reducing the amount of abrasives that are needed to keep the road safe during storm events.

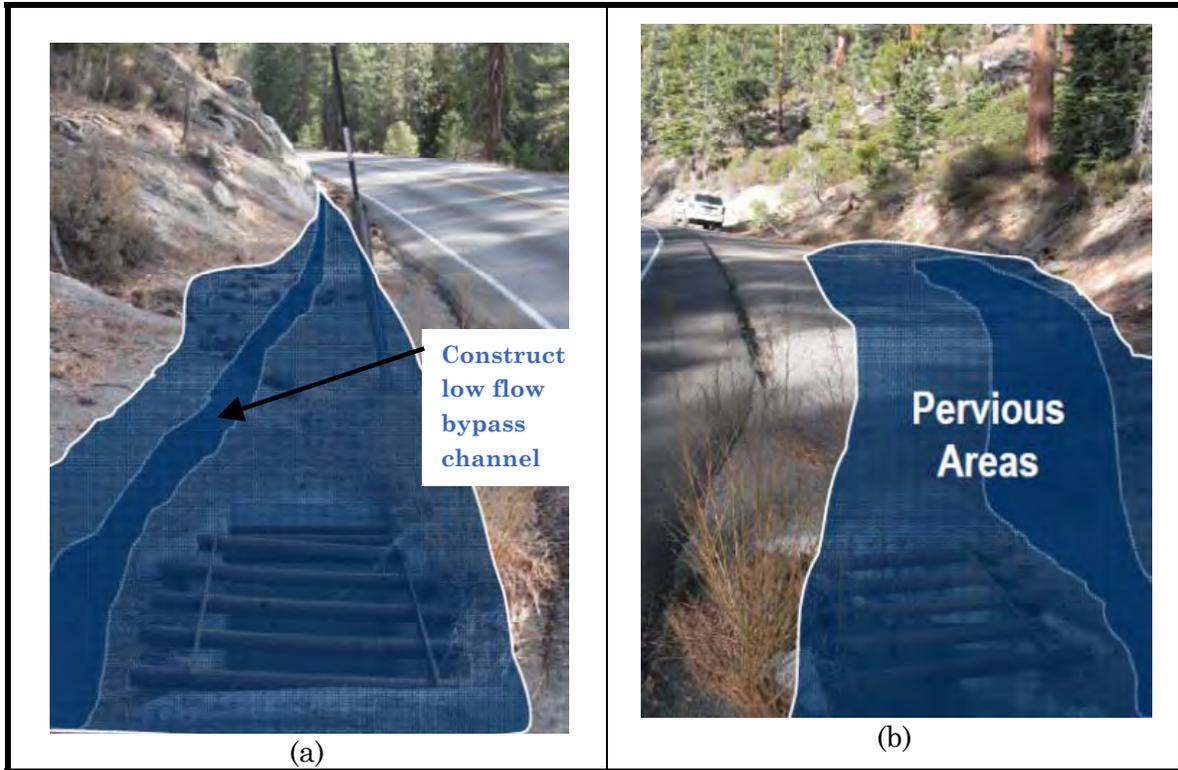
- Infiltration facilities will be constructed where possible. (Figure 12)
- Media filter treatment devices will be used on runoff before it is discharged from the roadway where other methods of FSP source control or treatment are not viable. (Figure 13)



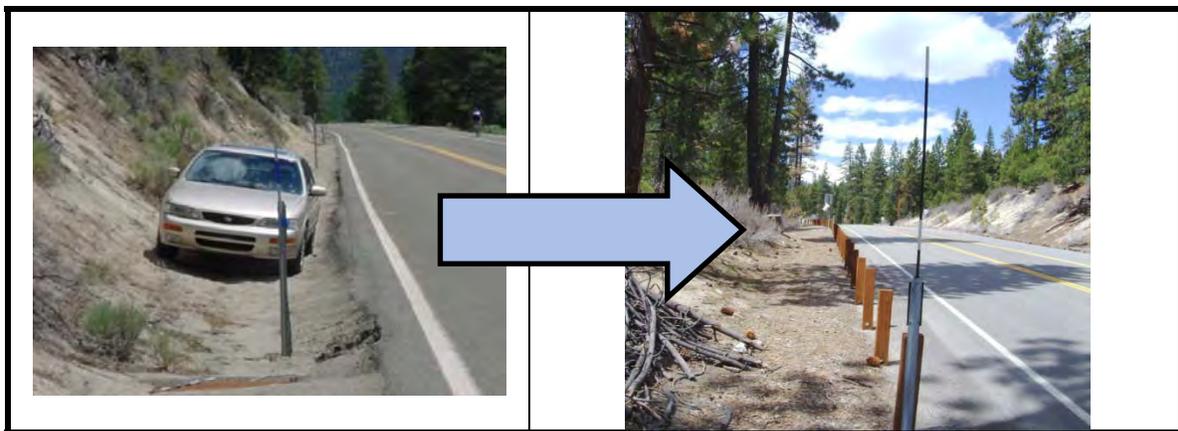
**Figure 8:** Slope stabilization. Riprap will be constructed on steep slopes and curb is placed along the toe of the slope to prevent undermining of the riprap and erosion of the shoulder. Retaining walls will be constructed in steep areas adjacent to the roadway to flatten the slope. The flatter slopes reduce runoff velocity and allow for flat areas of ponding and infiltration.



**Figure 9:** Shoulder and ditch stabilization. Curb protects the shoulder from erosive stormwater runoff. Revegetation, slope reduction and riprap stabilizes the shoulder.



**Figure 10: Disconnect impervious areas.** (a) looking upstream from a drop inlet. In this picture a proposed low flow bypass channel is provided so stormwater bypasses the DI and goes to a downstream pervious infiltration area. During larger events the first flush runoff is infiltrated and larger flows continue to drain directly to the drop inlet. (b) Looking downstream of the drop inlet showing the low flow infiltration area.



**Figure 11: Protect shoulders from shoulder parking.** This will improve safety in addition to stabilizing and protecting shoulders and significantly reduce erosion and fine sediment particles generated from the surface disturbance.



**Figure 12: Infiltration Facilities.** These facilities will be constructed along existing drainage conveyance routes and small facilities will be constructed in areas where a new low-flow bypass is created to disconnect impervious areas. Pipe risers and check dams are simple improvements that could be constructed to promote infiltration. Large facilities will be constructed where room is available prior to discharge of runoff from the right-of-way.



**Figure 13: Media Filter Treatment Devices.** These devices filter the captured stormwater runoff and remove FSP. Typically used to treat roadway runoff from areas that are directly connected to Lake Tahoe and where the use and efficacy of other methods is limited.

## Priority for Implementation

---

The Baseline SLRP report is not yet complete however draft documents identify this stretch of State Route 28 as a highly connected watershed with substantial opportunity to maximize FSP reduction. Significant evaluation, analysis, and design work has already occurred on this project and direction has been received from many different jurisdictions and stakeholders through the TAC.

The projects benefits Lake Tahoe in many ways. The primary benefit is FSP reduction. Additional benefits include improved roadway safety and improved visual aesthetics. The Tahoe Transportation District (TTD) is currently working a corridor management plan for State Route 28. The NDOT has coordinated this project with TTD plan and many goals of their plan such as reducing shoulder parking, providing new stabilized parking areas, and creating transit stops will be achieved by the project. The NDOT is also discussing with USFS the possibility of including fish passage improvements at Marlette Creek.

## Conceptual Project Goals, Objectives, and Anticipated Results

The primary goal of the project is to reduce FSP reaching Lake Tahoe. The objectives are to stabilize and protect erodible areas, promote infiltration, reduce impervious area, disconnect impervious surfaces, treat runoff before discharging from the road, and improve drainage conditions and road features so less abrasives are needed for road operations and sweepers are able to more effectively pick up abrasives and FSP. The FEA report identified many different treatment possibilities and combinations and the most beneficial and cost-effective methods were chosen. These methods vary along the length of the project in order to select the treatment method that would be most appropriate at different locations.

## Physical Feasibility Factors

---

The ECA, FEA, and Preliminary Design Report studied soil conditions, water table, drainage area, slopes, and hydraulic requirements that may impact the project. No problems were identified and the information will be incorporated into the final design documents.

## Source Control

---

The best way to reduce fine sediment is to keep it from being mobilized. Source control is therefore the primary objective of the project. Areas that are generating FSP will be stabilized through revegetation using native seed and plants, native

organic mulches, soil amendments, and armoring with riprap or other structural devices where needed. Stabilization will also be provided by protecting areas from shoulder parking and other disturbances. Revegetation survival performance standards will be incorporated into the project specifications.

### **Hydrologic Analysis**

---

The project maintains naturally functioning hydrologic conditions and where possible allows runoff from undisturbed areas to flow in natural channels and creeks. New flow concentration points are not created with the project and existing flow concentration points were reviewed and removed in many instances.

All impervious areas outside the right-of-way have been reviewed for removal. Where removal was not feasible the project attempted to distribute the flow from the area to a pervious area some point downstream. Existing infiltration areas continue to be used and where possible new areas were created. Drainage patterns have been modified to disconnect impervious areas where possible.

### **Stormwater Treatment**

---

#### **Initial Treatment and Conveyance Strategies**

---

Double sediment cans and drop inlets will be installed in many areas as a pre-treatment device to capture coarse sediment and improve the function of downstream facilities that are only intended to treat fine sediment. Runoff from non-urban areas that is assumed to be “clean” has been separated from roadway runoff where possible and treated runoff is kept separate from untreated runoff.

#### **Primary Water Quality Treatment**

---

Where source control or hydrologic modifications are ineffective or not feasible (typically due to site conditions) an infiltration basin, media filter treatment device or other facility will be installed to remove FSP. The FEA report reviewed many different treatment types and combinations. The strategies that were shown to be cost effective and maximize the FSP load reduction were selected and have been implemented with this project.

### **Other Factors**

---

The project takes a comprehensive approach to reducing FSP. Improvements proposed with the project will improve roadway safety and reduce maintenance activities in addition to reducing FSP. This combination of improvements makes this one of the most beneficial projects that could be implemented and the best use limited funding.

The NDOT has reached out to multiple agencies for input and feedback on this project and the best way their goals and objectives can be integrated into this project. As an example, the USFS wishes to expand parking areas near the project and improve fish passage at Marlette Creek, TTD desires to reduce shoulder parking and facilitate future transit facilities, and the NDOT wants to stabilize shoulders, slopes and improve safety. The goals of all three agencies can be realized through this project.

### **Stream Environment Zones (SEZ)**

---

The project will stabilize roadway slopes within the SEZ for Marlette Creek. Additional improvements and disturbances in the SEZ will be minimized in order to retain the natural geomorphology, hydrology, and landform

### **Pollutant Load Modeling**

---

Pollutant load modeling has been performed on the project using the Pollutant Load Reduction Model (PLRM). The PLRM analysis is extensive and can be found in the Preliminary Design Report.

### **Monitoring**

---

Monitoring is a requirement of the NDOT's NPDES MS4 permit and is included in the draft Memorandum of Agreement (MOA) to Implement the Lake Tahoe Total Maximum Daily Load. The NDOT is currently reviewing locations that may be appropriate for pre-project monitoring. We will be working closely with NDSL and other agencies to determine the level of monitoring that should be implemented for this project. All monitoring will utilize the Lake Tahoe Interagency Monitoring Program (LTIMP) and Regional Stormwater Management Program (RSWMP) protocols. Monitoring will be designed to document effectiveness in reducing discharge of sediment and other pollutants.

## **Operations and Maintenance**

---

The NDOT has a maintenance crew that is dedicated to this portion of the road. The existing cut slopes adjacent to the highway shed material on the road and require frequent cleaning and pose a safety hazard. Improvements such as slope stabilization will reduce the maintenance that is currently required. Additional improvements such as reducing areas where stormwater spreads onto the road or overtops the road will reduce the amount of abrasives needed during storm events. The addition of curb and gutter and reducing the slope from the road to the curb and

gutter will allow for street sweepers to clean the roads more effectively and reach areas that previously were not possible.

Some of the reduction in maintenance requirements will be offset by the need to maintain and inspect infiltration facilities and other structural stormwater treatment devices. The maintenance crew reports annually the amount of abrasives applied and material removed from State Route 28.

### Cost Estimate

See attached

### Easements and Acquisitions

Portions of the right-of-way for State Route 28 will be acquired prior to the start of construction. The right-of-way will be acquired from the United States Forest Service and will also require review and approval from the Nevada Division of State Parks. The right-of-way requested for the project will be immediately adjacent to the existing State Route 28 roadway. Preliminary exhibits of the right-of-way have been provided to USFS and NDSP. The NDOT has performed a field visit with both agencies to review the preliminary plans. USFS and NDSP have not identified any significant concerns with the proposed right-of-way.

The NDOT grant request is for construction and does not include funding for project design. All necessary right-of-way will be acquired prior to the start of construction and therefore right-of-way acquisition does not pose a risk to the NDSL grant funds.

### Conformity

The project will conform to all applicable local and regional land use plans. Existing flow patterns have been perpetuated under the post project condition and proposed drainage improvements associated with this project will not adversely impact the adjacent properties.

The National Environmental Policy Act (NEPA) process must be followed all projects that receive Federal funding or involve Federal approval for permits or right-of-way on Federal lands. It is assumed, based on past precedence that a categorical exclusion (CE) will be issued by the FHWA. Past determinations have concluded

that NDOT EIP projects do not have, individually or cumulatively, significant environmental impacts. Data collected during the ECA will be used to support CE documentation and/or NEPA documentation and special use permits that may be required by the FHWA and USFS.

FEMA requirements do not apply to this project as proposed improvements do not impact any FEMA-designated floodplain or floodway. The project area within Washoe County is designated as an unshaded ZONE X, areas determined to be outside the 0.2% annual chance floodplain, and the project area within Carson City is unmapped.

The Tahoe Regional Planning Agency has permitting authority for all projects constructed within the Lake Tahoe Basin. As such, Lake Tahoe EIP projects must comply with TRPA Code of Ordinances and implementers must obtain a TRPA permit which will be submitted after the preliminary design phase of the project. It is anticipated that the Initial Environmental Checklist (IEC) will provide sufficient information for TRPA to make the findings of no significant effect and this project will not negatively impact the nine TRPA environmental thresholds.

The Land Capability Verification request has been submitted and verified by TRPA. Per the TRPA Code of Ordinances, no coverage or disturbance is allowed in land capability districts 1a, 1b (SEZ), 1c, 2, 3, or the backshore unless the land is presently disturbed and there are no other feasible improvement alternatives. The Marlette Creek crossing is the only location within the project limits that has been identified as a Stream Environment Zone (SEZ), requiring a 50 foot setback from identified boundaries for any proposed improvements.

## **COST ESTIMATE**

*(Appendix D from 30% Preliminary Design Report)*

**Table D-1  
Proposed Condition Benefit Cost Results  
SR 28 Water Quality and Erosion Control Project from Washoe County/Carson City County Line to Sand Harbor**

<b>Basin</b>	<b>Probable Cost</b>	<b>Projected FSP Reduction (lbs)</b>	<b>Benefit Cost (\$/lbs of FSP Reduction)</b>
L01	\$55,000	0	No FSP Reduction
L02	\$48,000	3	\$15,403
L03	\$701,000	0	No FSP Reduction
L04	\$216,000	0	No FSP Reduction
L05	\$135,000	0	No FSP Reduction
L06	\$53,000	123	\$432
L07	\$93,000	1	\$102,423
L08	\$167,000	-9	No FSP Reduction
L09	\$129,000	0	No FSP Reduction
M01	\$152,000	4	\$34,604
M02	\$20,000	-4	No FSP Reduction
M03	\$87,000	187	\$464
M04	\$33,000	0	No FSP Reduction
OFF01	\$31,000	0	No FSP Reduction
OFF02	\$35,000	96	\$364
SH1	\$7,000	0	No FSP Reduction
TB01	\$38,000	2	\$24,651
TB02	\$116,000	424	\$274
TB03	\$12,000	10	\$1,209
TB04	\$174,000	549	\$317
TB05	\$115,000	210	\$548
TB06	\$299,000	291	\$1,028
TB07	\$27,000	0	No FSP Reduction
TB08	\$135,000	398	\$339
TB09	\$43,000	256	\$168
TB10	\$24,000	0	No FSP Reduction
TB11	\$136,000	159	\$853
TB12	\$291,000	31	\$9,458
TB13	\$284,000	203	\$1,402
TB14	\$70,000	337	\$208
TB15	\$101,000	28	\$3,597
TB16	\$179,000	342	\$523
TB17	\$163,000	891	\$183
TB18	\$72,000	-1	No FSP Reduction
TB19	\$154,000	352	\$437
TB20	\$19,000	4	\$4,857
TB21	\$167,000	368	\$454
TB22	\$26,000	31	\$831
TB23	\$133,000	59	\$2,273
TB24	\$112,000	0	No FSP Reduction
<b>Totals</b>	<b>\$4,852,000</b>	<b>5342</b>	<b>\$908</b>

Table D-2  
 Proposed Condition Preliminary Cost Summary  
 SR 28 Water Quality and Erosion Control Project from Washoe County/Carson City County Line to Sand Harbor

Description	Unit Price	Unit	L01		L02		L03		L04		L05		L06		L07		L08		
			Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	
Tree Removal	\$ 300.00	EA																	
Cleaning and Grubbing	\$ 2,000.00	AC			0	\$ -	94	\$ -											
Slope Revegetation (Seeding)	\$ 15,000.00	AC																	
Riprap Class 150	\$ 80.00	CUY																	
Riprap Class 300	\$ 60.00	CUY			222	\$ 13,323	17	\$ 1,040											
Riprap Class 550	\$ 60.00	CUY			23	\$ 1,371													
Riprap Class 900	\$ 50.00	CUY																	
Drainage Excavation	\$ 25.00	CUY			22	\$ 547	23	\$ 578											
Type 2 Drain Backfill	\$ 40.00	CUY																	
Structure Excavation	\$ 30.00	CUY			9	\$ 268	99	\$ 2,961	144	\$ 4,319	31	\$ 920	1	\$ 37	2	\$ 63	59	\$ 1,776	
Granular Backfill	\$ 30.00	CUY																	
Non-Woven Geotextile	\$ 3.00	SY			38	\$ 113	40	\$ 119											
Erosion Control Fabric	\$ 6.00	SY																	
Infiltration Basin Revegetation	\$ 10,000.00	AC																	
Riprap Bedding Class 150	\$ 100.00	CUY																	
Riprap Bedding Class 300	\$ 70.00	CUY			5	\$ 383	6	\$ 404											
Subsurface Infiltration System	\$ 350.00	EA																	
Filtration System	\$ 140,000.00	EA																	
Removal of Drop Inlet	\$ 800.00	EA																	
Removal of Culvert Pipe	\$ 30.00	LINF																	
Remove and Reset Guardrail	\$ 15.00	LINF															500	\$ 7,500	444
Removal of Bituminous Shoulder Dike	\$ 3.00	LINF																	
Removal of Trench Drain	\$ 40.00	LINF																	
Parking Bollards	\$ 350.00	EA			9	\$ 3,200											15	\$ 5,250	
Trench Drain	\$ 110.00	LINF																	
Timber Walls	\$ 100.00	LINF							370	\$ 37,000	91	\$ 9,100	367	\$ 36,700	318	\$ 31,800	307	\$ 30,700	
Type FA Barrier Rail	\$ 45.00	LINF			93	\$ 4,185													
12-inch Reinforced Concrete Pipe, Class III	\$ 50.00	LINF																	
15-inch Reinforced Concrete Pipe, Class III	\$ 55.00	LINF																	
18-inch Reinforced Concrete Pipe, Class III	\$ 60.00	LINF																	
24-inch Reinforced Concrete Pipe, Class III	\$ 75.00	LINF																	
30-inch Reinforced Concrete Pipe, Class III	\$ 90.00	LINF																	
42-inch Reinforced Concrete Pipe, Class III	\$ 120.00	LINF																	
15-inch Corrugated Metal Pipe	\$ 65.00	LINF																	
18-inch Corrugated Metal Pipe	\$ 70.00	LINF																	
24-inch Corrugated Metal Pipe	\$ 75.00	LINF																	
30-inch Corrugated Metal Pipe	\$ 90.00	LINF																	
12-inch Precast End Section	\$ 550.00	EACH																	
15-inch Precast End Section	\$ 600.00	EACH																	
18-inch Precast End Section	\$ 700.00	EACH																	
24-inch Precast End Section	\$ 750.00	EACH																	
15-inch Metal End Section	\$ 300.00	EACH																	
18-inch Metal End Section	\$ 350.00	EACH																	
24-inch Metal End Section	\$ 400.00	EACH																	
30-inch Metal End Section	\$ 450.00	EACH																	
15-inch CMP T Section	\$ 390.00	EACH																	
18-inch CMP T Section	\$ 420.00	EACH																	
24-inch CMP T Section	\$ 450.00	EACH																	
Concrete Collar	\$ 600.00	EACH																	
Type 1 Manhole	\$ 4,000.00	EA																	
Diversion Manhole	\$ 5,000.00	EA																	
Special Weir Manhole	\$ 5,000.00	EA																	
Inlet Riser	\$ 1,800.00	EA																	
Dual Riprap Outlet Manhole	\$ 5,000.00	EA																	
Castings	\$ 4.00	LB																	
Structural Steel Grates	\$ 3.00	LB																	
Class AA Concrete (Minor)	\$ 1,800.00	CUY																	
Reinforcing Steel	\$ 3.00	LB																	
Type 1 Curb and Gutter	\$ 20.00	LINF			39	\$ 780	232	\$ 4,640									118	\$ 2,360	
Type 2 Valley Gutter	\$ 30.00	LINF			31	\$ 930	39	\$ 1,170											
Type 7 Curb and Gutter	\$ 20.00	LINF																	
Gutter	\$ 15.00	LINF																	
Gravel Bag	\$ 10.00	EA																	
Sediment Log	\$ 10.00	LINF																	
Silt Fence	\$ 10.00	LINF																	
Dust Control	\$ 4,500.00	LS																	
Mobilization	\$ 150,000.00	LS																	
Rent Traffic Control Devices	\$ 200,000.00	LS																	
Guide Posts (Rigid)	\$ 25.00	EA																	
Anchor Assembly (15-inch)	\$ 200.00	EA																	
Anchor Assembly (18-inch)	\$ 200.00	EA																	
Anchor Assembly (24-inch)	\$ 200.00	EA																	
Anchor Assembly (30-inch)	\$ 200.00	EA																	
Plant Establishment Work	\$ 2,800.00	LS																	
Type 1 Class B Aggregate Base	\$ 15.00	TON			8	\$ 120	124	\$ 1,855	202	\$ 3,028	43	\$ 645	2	\$ 26	3	\$ 44	77	\$ 1,153	
PlantMix Surfacing Type 2 (Wet)	\$ 65.00	TON					33	\$ 2,135	70	\$ 4,578	15	\$ 975	1	\$ 39	1	\$ 67	23	\$ 1,465	
PlantMix Paved Ditches	\$ 23.00	SY																	
PlantMix Miscellaneous Areas	\$ 18.00	SY					177	\$ 3,183	413	\$ 7,442	92	\$ 1,656					131	\$ 2,352	
			<b>SUBTOTAL</b>		<b>SUBTOTAL</b>	<b>\$ 25,408</b>	<b>SUBTOTAL</b>	<b>\$ 18,085</b>	<b>SUBTOTAL</b>	<b>\$ 56,367</b>	<b>SUBTOTAL</b>	<b>\$ 13,296</b>	<b>SUBTOTAL</b>	<b>\$ 36,801</b>	<b>SUBTOTAL</b>	<b>\$ 31,975</b>	<b>SUBTOTAL</b>	<b>\$ 52,556</b>	<b>SUBTOTAL</b>
Construction Engineering (10% of Subtotal)	1	LS				\$ 2,541		\$ 1,809		\$ 5,637		\$ 1,330		\$ 3,680		\$ 3,197		\$ 5,256	
Contingency (20% of Subtotal)	1	LS				\$ 5,082		\$ 3,617		\$ 11,273		\$ 2,659		\$ 7,360		\$ 6,395		\$ 10,511	
			<b>TOTAL</b>		<b>TOTAL</b>	<b>\$ 33,000</b>	<b>TOTAL</b>	<b>\$ 24,000</b>	<b>TOTAL</b>	<b>\$ 73,000</b>	<b>TOTAL</b>	<b>\$ 17,000</b>	<b>TOTAL</b>	<b>\$ 48,000</b>	<b>TOTAL</b>	<b>\$ 42,000</b>	<b>TOTAL</b>	<b>\$ 68,000</b>	<b>TOTAL</b>

Table D-2  
Proposed Condition Preliminary Cost Summary  
SR 28 Water Quality and Erosion Control Project from Washoe County/Carson City County Line to Sand Harbor

Description	Unit Price	Unit	L09		M01		M02		M03		M04		OFF01		OFF02		SH1		TB01	
			Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity
Tree Removal	\$ 300.00	EA	\$ -		\$ -		\$ -		2	600	\$ -		\$ -		\$ -		\$ -		\$ -	
Clearing and Grubbing	\$ 2,000.00	AC	\$ -	0	\$ 17		\$ -		0	160	\$ -		\$ 72		\$ -		\$ -		0	81
Slope Revegetation (Seeding)	\$ 15,000.00	AC	\$ -		\$ -		\$ -		0	359	\$ -		\$ -		\$ -		\$ -		0	179
Riprap Class 150	\$ 80.00	CUY	\$ -		\$ -		\$ -				3	205	\$ -		\$ -		\$ -		197	15,798
Riprap Class 300	\$ 60.00	CUY	\$ -	78	\$ 4,699		\$ -		309	18,533	11	647	157	9,443	53	3,204	\$ -		124	7,427
Riprap Class 550	\$ 60.00	CUY	\$ -	4	\$ 240		\$ -		27	1,630	\$ -		17	1,049	\$ -		\$ -		14	825
Riprap Class 900	\$ 50.00	CUY	\$ -		\$ -		\$ -		17		\$ -		\$ -		\$ -		\$ -			
Drainage Excavation	\$ 25.00	CUY	\$ -	82	\$ 2,042		\$ -		249	3,721	19	466	\$ -		71	1,780	\$ -		328	8,191
Type 2 Drain Backfill	\$ 40.00	CUY	\$ -		\$ -		\$ -		1	53	\$ -		\$ -		\$ -		\$ -		1	53
Structure Excavation	\$ 30.00	CUY	\$ -	8	\$ 237	36	\$ 1,068		194	5,812	152	4,561	49	1,460	69	2,057	1	20	72	2,175
Granular Backfill	\$ 30.00	CUY	\$ -		\$ -		\$ -		7	220	\$ -		\$ -		\$ -		\$ -		7	220
Non-Woven Geotextile	\$ 3.00	SY	\$ -	62	\$ 187		\$ -		70	211	34	102	\$ -		122	367	\$ -		371	1,114
Erosion Control Fabric	\$ 6.00	SY	\$ -	45	\$ 273		\$ -		113	679	\$ -		\$ -		\$ -		\$ -			
Infiltration Basin Revegetation	\$ 10,000.00	AC	\$ -	0	\$ 94		\$ -		0	234	\$ -		\$ -		\$ -		\$ -			
Riprap Bedding Class 150	\$ 100.00	CUY	\$ -		\$ -		\$ -				2	171	\$ -		\$ -		\$ -		131	13,106
Riprap Bedding Class 300	\$ 70.00	CUY	\$ -	14	\$ 989		\$ -		22	1,508	4	251	\$ -		18	1,246	\$ -			
Subsurface Infiltration System	\$ 350.00	EA	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Filtration System	\$ 140,000.00	EA	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Removal of Drop Inlet	\$ 800.00	EA	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -		1	800
Removal of Culvert Pipe	\$ 30.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Remove and Reset Guardrail	\$ 15.00	LINF	\$ 6,660		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Removal of Bituminous Shoulder Dike	\$ 3.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		625	1,875	\$ -			
Removal of Trench Drain	\$ 40.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Parking Bollards	\$ 350.00	EA	\$ -		\$ -	7	\$ 2,310		4	1,260	\$ -		\$ -		\$ -		\$ -			
Trench Drain	\$ 110.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Timber Walls	\$ 100.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Type FA Barrier Rail	\$ 45.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
12-inch Reinforced Concrete Pipe, Class III	\$ 50.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
15-inch Reinforced Concrete Pipe, Class III	\$ 55.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
18-inch Reinforced Concrete Pipe, Class III	\$ 60.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
24-inch Reinforced Concrete Pipe, Class III	\$ 75.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
30-inch Reinforced Concrete Pipe, Class III	\$ 90.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
42-inch Reinforced Concrete Pipe, Class III	\$ 120.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
15-inch Corrugated Metal Pipe	\$ 65.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
18-inch Corrugated Metal Pipe	\$ 70.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
24-inch Corrugated Metal Pipe	\$ 75.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
30-inch Corrugated Metal Pipe	\$ 90.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
12-inch Precast End Section	\$ 550.00	EACH	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
15-inch Precast End Section	\$ 600.00	EACH	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
18-inch Precast End Section	\$ 700.00	EACH	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
24-inch Precast End Section	\$ 750.00	EACH	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
15-inch Metal End Section	\$ 300.00	EACH	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
18-inch Metal End Section	\$ 350.00	EACH	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
24-inch Metal End Section	\$ 400.00	EACH	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
30-inch Metal End Section	\$ 450.00	EACH	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
15-inch CMP T Section	\$ 390.00	EACH	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
18-inch CMP T Section	\$ 420.00	EACH	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
24-inch CMP T Section	\$ 450.00	EACH	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Concrete Collar	\$ 600.00	EACH	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Type 1 Manhole	\$ 4,000.00	EA	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Diversion Manhole	\$ 5,000.00	EA	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Special Weir Manhole	\$ 5,000.00	EA	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Inlet Riser	\$ 1,800.00	EA	\$ -	1	\$ 1,800		\$ -		1	1,800	\$ -		\$ -		\$ -		\$ -			
Dual Riprap Outlet Manhole	\$ 5,000.00	EA	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Castings	\$ 4.00	LB	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Structural Steel Grates	\$ 3.00	LB	\$ -		\$ -		\$ -		262	786	\$ -		\$ -		\$ -		\$ -		349	1,047
Class AA Concrete (Minor)	\$ 1,800.00	CUY	\$ -	17	\$ 30,654		\$ -		1	2,544	\$ -		\$ -		\$ -		\$ -		1	2,538
Reinforcing Steel	\$ 3.00	LB	\$ -	1351	\$ 4,052		\$ -		76	228	\$ -		\$ -		\$ -		\$ -		76	228
Type 1 Curb and Gutter	\$ 20.00	LINF	\$ -		\$ -		\$ -		444	8,888	204	4,080	438	8,760	617	12,340	6	120	450	9,006
Type 2 Valley Gutter	\$ 30.00	LINF	\$ -	45	\$ 1,350	63	\$ 1,890		26	780	\$ -		\$ -		\$ -		\$ -			
Type 7 Curb and Gutter	\$ 20.00	LINF	\$ -	11	\$ 220	32	\$ 640				\$ -		\$ -		\$ -		\$ -			
Gutter	\$ 15.00	LINF	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
Gravel Bag	\$ 10.00	EA																		
Sediment Log	\$ 10.00	LINF																		
Silt Fence	\$ 10.00	LINF																		
Dust Control	\$ 4,500.00	LS																		
Mobilization	\$ 150,000.00	LS																		
Rent Traffic Control Devices	\$ 200,000.00	LS																		
Guide Posts (Rigid)	\$ 25.00	EA																		
Anchor Assembly (15-inch)	\$ 200.00	EA																		
Anchor Assembly (18-inch)	\$ 200.00	EA																		
Anchor Assembly (24-inch)	\$ 200.00	EA																		
Anchor Assembly (30-inch)	\$ 200.00	EA																		
Plant Establishment Work	\$ 2,800.00	LS																		
Type 1 Class B Aggregate Base	\$ 15.00	TON	\$ -	7	\$ 111	44	\$ 658	232	\$ 3,481	203	\$ 3,039	45	\$ 682	64	\$ 961	1	\$ 9	64	\$ 953	
PlantMix Surfacing Type 2 (Wet)	\$ 65.00	TON	\$ -		\$ -	11	\$ 722	64	\$ 4,134	63	\$ 4,114	\$ -		\$ -		\$ -		6	\$ 380	
PlantMix Paved Ditches	\$ 23.00	SY	\$ -		\$ -		\$ -				\$ -		\$ -		\$ -		\$ -			
PlantMix Miscellaneous Areas	\$ 18.00	SY	\$ -		\$ -	37	\$ 660	294	\$ 5,292	300	\$ 5,392	\$ -		\$ -		\$ -				
			\$ 6,660	SUBTOTAL	\$ 46,964	SUBTOTAL	\$ 7,948	SUBTOTAL	\$ 62,912	SUBTOTAL	\$ 23,028	SUBTOTAL	\$ 21,467	SUBTOTAL	\$ 23,831	SUBTOTAL	\$ 149	SUBTOTAL	\$ 64,052	
Construction Engineering (10% of Subtotal)	1	LS	\$ 666		\$ 4,696		\$ 795		\$ 6,291		\$ 2,303		\$ 2,147		\$ 2,383		\$ 15		\$ 6,405	
Contingency (20% of Subtotal)	1	LS	\$ 1,332		\$ 9,393		\$ 1,590		\$ 12,582		\$ 4,606		\$ 4,293		\$ 4,766		\$ 30		\$ 12,810	
			\$ 9,000	TOTAL	\$ 61,000	TOTAL	\$ 10,000	TOTAL	\$ 82,000	TOTAL	\$ 30,000	TOTAL	\$ 28,000	TOTAL	\$ 31,000	TOTAL	\$ -	TOTAL	\$ 83,000	

Table D-2  
Proposed Condition Preliminary Cost Summary  
SR 28 Water Quality and Erosion Control Project from Washoe County/Carson City County Line to Sand Harbor

Description	Unit Price	Unit	TB02		TB03		TB04		TB05		TB06		TB07		TB08		TB09		Total Quantity
			Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	
Tree Removal	\$ 300.00	EA	9	\$ 2,700			2	\$ 600					2	\$ 600	1	\$ 300	2	\$ 600	
Cleaning and Grubbing	\$ 2,000.00	AC	0	\$ 288	0	\$ 43	0	\$ 349	0	\$ 63			0	\$ 33	0	\$ 194	0	\$ 45	
Slope Revegetation (Seeding)	\$ 15,000.00	CUY	0	\$ 291			0	\$ 847	0	\$ 93			0	\$ 245	0	\$ 400	0	\$ 339	
Riprap Class 150	\$ 80.00	CUY	26	\$ 2,054															
Riprap Class 300	\$ 60.00	CUY	543	\$ 32,568	93	\$ 5,587	514	\$ 30,821	110	\$ 6,571					305	\$ 18,326	14	\$ 843	
Riprap Class 550	\$ 60.00	CUY	60	\$ 3,619	10	\$ 621	57	\$ 3,425	12	\$ 730					34	\$ 2,036			
Riprap Class 900	\$ 50.00	CUY	27	\$ 1,360															
Drainage Excavation	\$ 25.00	CUY	58	\$ 1,448														19	\$ 468
Type 2 Drain Backfill	\$ 40.00	CUY	3	\$ 106			1	\$ 53	1	\$ 53	1	\$ 53			8	\$ 319	3	\$ 106	1
Structure Excavation	\$ 30.00	CUY	217	\$ 6,497	6	\$ 185	304	\$ 9,106	154	\$ 4,633	155	\$ 4,656	40	\$ 1,208	304	\$ 9,106	113	\$ 3,387	63
Granular Backfill	\$ 30.00	CUY	17	\$ 497	3	\$ 86	207	\$ 6,219	60	\$ 1,810	71	\$ 2,115			166	\$ 4,971	17	\$ 517	8
Non-Woven Geotextile	\$ 3.00	SY	139	\$ 416			9	\$ 28	9	\$ 28	9	\$ 28			56	\$ 168	51	\$ 153	9
Erosion Control Fabric	\$ 6.00	SY		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Infiltration Basin Revegetation	\$ 10,000.00	AC		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Riprap Bedding Class 150	\$ 100.00	CUY	23	\$ 2,316															
Riprap Bedding Class 300	\$ 70.00	CUY		\$ -													5	\$ 328	
Subsurface Infiltration System	\$ 350.00	EA		\$ -															
Filtration System	\$ 140,000.00	EA		\$ -							1	\$ 140,000							
Removal of Drop Inlet	\$ 800.00	EA	1	\$ 800			1	\$ 800	1	\$ 800	1	\$ 800			1	\$ 800	1	\$ 800	1
Removal of Culvert Pipe	\$ 30.00	LINF		\$ -			47	\$ 1,410	27	\$ 810	21	\$ 630			75	\$ 2,250	41	\$ 1,230	
Remove and Reset Guardrail	\$ 15.00	LINF		\$ -				\$ -	501	\$ 7,515	845	\$ 12,675				\$ -		\$ -	
Removal of Bituminous Shoulder Dike	\$ 3.00	LINF		\$ -				\$ -	501	\$ 1,503	845	\$ 2,535				\$ -		\$ -	
Removal of Trench Drain	\$ 40.00	LINF		\$ -				\$ -	10	\$ 400	10	\$ 400				\$ -		\$ -	
Parking Bollards	\$ 350.00	EA		\$ -			7	\$ 2,520		\$ -		\$ -				\$ -		\$ -	
Trench Drain	\$ 110.00	LINF	5	\$ 550				\$ -	10	\$ 1,100	10	\$ 1,100			10	\$ 1,100		\$ -	
Timber Walls	\$ 100.00	LINF		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Type FA Barrier Rail	\$ 45.00	LINF		\$ -	6	\$ 270	670	\$ 30,150	149	\$ 6,705		\$ -	231	\$ 10,395		\$ -		\$ -	
12-inch Reinforced Concrete Pipe, Class III	\$ 50.00	LINF		\$ -				\$ -		\$ -	54	\$ 2,700				\$ -		\$ -	
15-inch Reinforced Concrete Pipe, Class III	\$ 55.00	LINF		\$ -			376	\$ 20,680	80	\$ 4,400	84	\$ 4,620			221	\$ 12,155		\$ -	
18-inch Reinforced Concrete Pipe, Class III	\$ 60.00	LINF		\$ -	5	\$ 300		\$ -		\$ -		\$ -		26	\$ 1,560	39	\$ 2,340	3	
24-inch Reinforced Concrete Pipe, Class III	\$ 75.00	LINF	3	\$ 225				\$ -		\$ -		\$ -		90	\$ 6,750		\$ -		
30-inch Reinforced Concrete Pipe, Class III	\$ 90.00	LINF		\$ -				\$ -		\$ -		\$ -			\$ -		\$ -		
42-inch Reinforced Concrete Pipe, Class III	\$ 120.00	LINF		\$ -				\$ -		\$ -		\$ -			\$ -		\$ -		
15-inch Corrugated Metal Pipe	\$ 65.00	LINF		\$ -				\$ -		\$ -		\$ -			\$ -		\$ -		
18-inch Corrugated Metal Pipe	\$ 70.00	LINF		\$ -				\$ -		\$ -		\$ -			\$ -		\$ -		
24-inch Corrugated Metal Pipe	\$ 75.00	LINF		\$ -				\$ -		\$ -		\$ -			\$ -		\$ -		
30-inch Corrugated Metal Pipe	\$ 90.00	LINF		\$ -				\$ -		\$ -		\$ -			\$ -		\$ -		
12-inch Precast End Section	\$ 550.00	EACH		\$ -				\$ -		\$ -	1	\$ 550				\$ -		\$ -	
15-inch Precast End Section	\$ 600.00	EACH		\$ -				\$ -		\$ -	1	\$ 600				\$ -		\$ -	
18-inch Precast End Section	\$ 700.00	EACH		\$ -				\$ -		\$ -		\$ -				\$ -	1	\$ 700	
24-inch Precast End Section	\$ 750.00	EACH		\$ -				\$ -		\$ -		\$ -		2	\$ 1,500		\$ -		
15-inch Metal End Section	\$ 300.00	EACH		\$ -				\$ -		\$ -		\$ -			\$ -		\$ -		
18-inch Metal End Section	\$ 350.00	EACH		\$ -	1	\$ 350		\$ -		\$ -		\$ -			\$ -		\$ -	1	
24-inch Metal End Section	\$ 400.00	EACH		\$ -				\$ -		\$ -		\$ -			\$ -		\$ -		
30-inch Metal End Section	\$ 450.00	EACH		\$ -				\$ -		\$ -		\$ -			\$ -		\$ -		
15-inch CMP T Section	\$ 390.00	EACH		\$ -				\$ -		\$ -		\$ -			\$ -		\$ -		
18-inch CMP T Section	\$ 420.00	EACH		\$ -				\$ -		\$ -		\$ -			\$ -		\$ -		
24-inch CMP T Section	\$ 450.00	EACH	1	\$ 450				\$ -		\$ -		\$ -			\$ -		\$ -		
Concrete Collar	\$ 600.00	EACH	1	\$ 600	1	\$ 600		\$ -		\$ -		\$ -			\$ -		\$ -	1	
Type 1 Manhole	\$ 4,000.00	EA		\$ -			1	\$ 4,000	1	\$ 4,000	1	\$ 4,000			1	\$ 4,000		\$ -	
Diversion Manhole	\$ 5,000.00	EA		\$ -				\$ -		\$ -	1	\$ 5,000				\$ -		\$ -	
Special Weir Manhole	\$ 5,000.00	EA		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Inlet Riser	\$ 1,800.00	EA		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Dual Riprap Outlet Manhole	\$ 5,000.00	EA		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Castings	\$ 4.00	LB		\$ -			365	\$ 1,460	365	\$ 1,460	730	\$ 2,920			365	\$ 1,460		\$ -	
Structural Steel Grates	\$ 3.00	LB	478	\$ 1,434			211	\$ 633	211	\$ 633	211	\$ 633			1456	\$ 4,368	612	\$ 1,836	306
Class AA Concrete (Minor)	\$ 1,800.00	CUY	3	\$ 5,186			1	\$ 2,133	2	\$ 3,111	2	\$ 3,111			8	\$ 14,154	3	\$ 4,644	1
Reinforcing Steel	\$ 3.00	LB	120	\$ 360			61	\$ 183	61	\$ 183	61	\$ 183			364	\$ 1,092	120	\$ 360	60
Type 1 Curb and Gutter	\$ 20.00	LINF	805	\$ 16,100			250	\$ 5,000		\$ -		\$ -			548	\$ 10,960	391	\$ 7,820	399
Type 2 Valley Gutter	\$ 30.00	LINF	46	\$ 1,380	8	\$ 240		\$ -		\$ -		\$ -	28	\$ 840		\$ -		\$ -	
Type 7 Curb and Gutter	\$ 20.00	LINF		\$ -				\$ -	662	\$ 13,244	632	\$ 12,638				\$ -		\$ -	
Gutter	\$ 15.00	LINF		\$ -			225	\$ 3,375	66	\$ 990		\$ -	252	\$ 3,774		\$ -		\$ -	
Gravel Bag	\$ 10.00	EA		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Sediment Log	\$ 10.00	LINF		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Silt Fence	\$ 10.00	LINF		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Dust Control	\$ 4,500.00	LS		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Mobilization	\$ 150,000.00	LS		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Rent Traffic Control Devices	\$ 200,000.00	LS		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Guide Posts (Rigid)	\$ 25.00	EA		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Anchor Assembly (15-inch)	\$ 200.00	EA		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Anchor Assembly (18-inch)	\$ 200.00	EA		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Anchor Assembly (24-inch)	\$ 200.00	EA		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Anchor Assembly (30-inch)	\$ 200.00	EA		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Plant Establishment Work	\$ 2,800.00	LS		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
Type 1 Class B Aggregate Base	\$ 15.00	TON	227	\$ 3,399	3	\$ 51	274	\$ 4,113	119	\$ 1,790	125	\$ 1,869	46	\$ 687	123	\$ 1,838	121	\$ 1,818	52
PlantMix Surfacing Type 2 (Wet)	\$ 65.00	TON	48	\$ 3,098	1	\$ 52	117	\$ 7,584	22	\$ 1,458	30	\$ 1,965	9	\$ 556	28	\$ 1,817	32	\$ 2,064	4
PlantMix Paved Ditches	\$ 23.00	SY		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	
PlantMix Miscellaneous Areas	\$ 18.00	SY		\$ -				\$ -		\$ -		\$ -				\$ -		\$ -	97
			<b>SUBTOTAL</b>	<b>\$ 87,742</b>	<b>SUBTOTAL</b>	<b>\$ 8,385</b>	<b>SUBTOTAL</b>	<b>\$ 135,488</b>	<b>SUBTOTAL</b>	<b>\$ 64,083</b>	<b>SUBTOTAL</b>	<b>\$ 205,781</b>	<b>SUBTOTAL</b>	<b>\$ 18,338</b>	<b>SUBTOTAL</b>	<b>\$ 101,626</b>	<b>SUBTOTAL</b>	<b>\$ 32,140</b>	<b>SUBTOTAL</b>
Construction Engineering (10% of Subtotal)	1	LS		\$ 8,774		\$ 838		\$ 13,549		\$ 6,408									

Table D-2  
 Proposed Condition Preliminary Cost Summary  
 SR 28 Water Quality and Erosion Control Project from Washoe County/Carson City County Line to Sand Harbor

Description	Unit Price	Unit	TB10		TB11		TB12		TB13		TB14		TB15		TB16		TB17		TB18			
			Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity
Tree Removal	\$ 300.00	EA	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Clearing and Grubbing	\$ 2,000.00	AC	\$ -	0	\$ 168	0	\$ -	342	\$ -		\$ -		\$ -	0	\$ 165	0	\$ 212	0	\$ -	305	0	\$ 69
Slope Revegetation (Seeding)	\$ 15,000.00	AC	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Riprap Class 150	\$ 80.00	CUY	\$ -	402	\$ 32,152	1982	\$ 158,547	409	\$ 32,737	29	\$ 2,357	37	\$ 2,964	141	\$ 11,316	35	\$ 2,795	32	\$ 2,526		\$ 2,526	
Riprap Class 300	\$ 60.00	CUY	\$ -	389	\$ 23,337	746	\$ 44,736		\$ -		\$ -		\$ -	360	\$ 21,600	461	\$ 27,685	667	\$ 39,991	149	\$ 8,953	
Riprap Class 550	\$ 60.00	CUY	\$ -	41	\$ 2,435	83	\$ 4,971		\$ -		\$ -		\$ -	40	\$ 2,400	51	\$ 3,076	74	\$ 4,428	17	\$ 995	
Riprap Class 900	\$ 50.00	CUY	\$ -		\$ -		\$ -		\$ -		\$ -	31	\$ 1,560	39	\$ 1,961	150	\$ 7,489	37	\$ 1,850	33	\$ 1,672	
Drainage Excavation	\$ 25.00	CUY	\$ -	728	\$ 18,211	3303	\$ 82,577	682	\$ 17,050	66	\$ 1,661	84	\$ 2,088	319	\$ 7,974	87	\$ 2,048	71	\$ 1,780		\$ 1,780	
Type 2 Drain Backfill	\$ 40.00	CUY	\$ 53	34	\$ 1,364	11	\$ 426	5	\$ 213	53	\$ 2,118	1	\$ 53	48	\$ 1,901	183	\$ 7,335	4	\$ 160		\$ 160	
Structure Excavation	\$ 30.00	CUY	\$ 1,881	329	\$ 9,876	265	\$ 7,950	206	\$ 6,174	301	\$ 9,042	137	\$ 4,107	318	\$ 9,528	410	\$ 12,312	181	\$ 5,417		\$ 5,417	
Granular Backfill	\$ 30.00	CUY	\$ 241	107	\$ 3,212	69	\$ 2,076	121	\$ 3,626	110	\$ 3,288	18	\$ 526	136	\$ 4,091	38	\$ 1,128	92	\$ 2,772		\$ 2,772	
Non-Woven Geotextile	\$ 3.00	SY	\$ 28	869	\$ 2,606	3150	\$ 9,449	526	\$ 1,578	382	\$ 1,146	183	\$ 548	904	\$ 2,712	792	\$ 2,376	176	\$ 527		\$ 527	
Erosion Control Fabric	\$ 6.00	SY	\$ -	70	\$ 417		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Infiltration Basin Revegetation	\$ 10,000.00	AC	\$ -	0	\$ 144		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Riprap Bedding Class 150	\$ 100.00	CUY	\$ -	268	\$ 26,793	1321	\$ 132,123	273	\$ 27,281	27	\$ 2,658	33	\$ 3,341	128	\$ 12,758	32	\$ 3,152	28	\$ 2,848		\$ 2,848	
Riprap Bedding Class 300	\$ 70.00	CUY	\$ -	8	\$ 555		\$ -		\$ -		\$ -		\$ -		\$ -	1	\$ 55		\$ -		\$ -	
Subsurface Infiltration System	\$ 350.00	EA	\$ -	10	\$ 3,500		\$ -		\$ -		\$ -		\$ -	13	\$ 4,550	5	\$ 1,750		\$ -		\$ -	
Filtration System	\$ 140,000.00	EA	\$ -		\$ -		\$ -	1	\$ 140,000		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Removal of Drop Inlet	\$ 800.00	EA	\$ 800	1	\$ 800	1	\$ 800	1	\$ 800	1	\$ 800	1	\$ 800	1	\$ 800	1	\$ 800	1	\$ 800	1	\$ 800	
Removal of Culvert Pipe	\$ 30.00	LINF	\$ -	54	\$ 1,620	41	\$ 1,230	39	\$ 1,170		\$ -		\$ -	48	\$ 1,440	62	\$ 1,860	38	\$ 1,140		\$ 1,140	
Remove and Reset Guardrail	\$ 15.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Removal of Bituminous Shoulder Dike	\$ 3.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Removal of Trench Drain	\$ 40.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Parking Bollards	\$ 350.00	EA	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Trench Drain	\$ 110.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	10
Timber Walls	\$ 100.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Type FA Barrier Rail	\$ 45.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
12-inch Reinforced Concrete Pipe, Class III	\$ 50.00	LINF	\$ -	68	\$ 3,400		\$ -	43	\$ 2,150		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
15-inch Reinforced Concrete Pipe, Class III	\$ 55.00	LINF	\$ -		\$ -	230	\$ 12,650	207	\$ 11,385	74	\$ 4,070		\$ -	87	\$ 4,785		\$ -		\$ -		\$ -	
18-inch Reinforced Concrete Pipe, Class III	\$ 60.00	LINF	\$ 180		\$ -	65	\$ 3,900	38	\$ 2,280		\$ -		\$ -		\$ -	46	\$ 2,760	62	\$ 3,720		\$ 3,720	
24-inch Reinforced Concrete Pipe, Class III	\$ 75.00	LINF	\$ -	53	\$ 3,975		\$ -		\$ -	3	\$ 225		\$ -		\$ -		\$ -		\$ -		\$ -	
30-inch Reinforced Concrete Pipe, Class III	\$ 90.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -	35	\$ 3,150		\$ -		\$ -		\$ -		\$ -	
42-inch Reinforced Concrete Pipe, Class III	\$ 120.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
15-inch Corrugated Metal Pipe	\$ 65.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	86	\$ 5,590		\$ -		\$ -		\$ -	
18-inch Corrugated Metal Pipe	\$ 70.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	66
24-inch Corrugated Metal Pipe	\$ 75.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	4,620
30-inch Corrugated Metal Pipe	\$ 90.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
12-inch Precast End Section	\$ 550.00	EACH	\$ -	1	\$ 550		\$ -		\$ -		\$ -	22	\$ 1,980		\$ -		\$ -		\$ -		\$ -	
15-inch Precast End Section	\$ 600.00	EACH	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
18-inch Precast End Section	\$ 700.00	EACH	\$ -		\$ -		\$ -	1	\$ 700		\$ -		\$ -		\$ -		\$ -	1	\$ 700		\$ -	
24-inch Precast End Section	\$ 750.00	EACH	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
15-inch Metal End Section	\$ 300.00	EACH	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	6	\$ 1,800		\$ -		\$ -		\$ -	
18-inch Metal End Section	\$ 350.00	EACH	\$ 350		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
24-inch Metal End Section	\$ 400.00	EACH	\$ -		\$ -		\$ -		\$ -	1	\$ 400		\$ -		\$ -		\$ -		\$ -		\$ -	4
30-inch Metal End Section	\$ 450.00	EACH	\$ -		\$ -		\$ -		\$ -		\$ -	2	\$ 900		\$ -		\$ -		\$ -		\$ -	
15-inch CMP T Section	\$ 390.00	EACH	\$ -		\$ -	4	\$ 1,560	1	\$ 390		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
18-inch CMP T Section	\$ 420.00	EACH	\$ -		\$ -	1	\$ 420		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
24-inch CMP T Section	\$ 450.00	EACH	\$ -	1	\$ 450		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Concrete Collar	\$ 600.00	EACH	\$ 600		\$ -		\$ -		\$ -		\$ -	1	\$ 600		\$ -		\$ -		\$ -		\$ -	2
Type 1 Manhole	\$ 4,000.00	EA	\$ -		\$ -	1	\$ 4,000	1	\$ 4,000		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Diversion Manhole	\$ 5,000.00	EA	\$ -		\$ -		\$ -	1	\$ 5,000		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Special Weir Manhole	\$ 5,000.00	EA	\$ -	1	\$ 5,000		\$ -		\$ -	1	\$ 5,000		\$ -	4	\$ 20,000	1	\$ 5,000		\$ -		\$ -	
Inlet Riser	\$ 1,800.00	EA	\$ -	1	\$ 1,800		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Dual Riprap Outlet Manhole	\$ 5,000.00	EA	\$ -		\$ -		\$ -		\$ -		\$ -	1	\$ 5,000	3	\$ 15,000	1	\$ 5,000	1	\$ 5,000		\$ 5,000	
Castings	\$ 4.00	LB	\$ -	365	\$ 1,460	365	\$ 1,460	730	\$ 2,920	365	\$ 1,460	365	\$ 1,460	2555	\$ 10,220	730	\$ 2,920	365	\$ 1,460		\$ 1,460	
Structural Steel Grates	\$ 3.00	LB	\$ 918	698	\$ 2,094	1878	\$ 5,634	844	\$ 2,532	560	\$ 1,680	390	\$ 1,170	1245	\$ 3,735	612	\$ 1,836	918	\$ 2,754		\$ 2,754	
Class AA Concrete (Minor)	\$ 1,800.00	CUY	\$ 2,322	3	\$ 5,076	42	\$ 76,374	5	\$ 8,532	2	\$ 4,329	2	\$ 2,736	6	\$ 11,043	3	\$ 4,644	4	\$ 7,584		\$ 7,584	
Reinforcing Steel	\$ 3.00	LB	\$ 180	152	\$ 456	3555	\$ 10,665	244	\$ 732	127	\$ 381	75	\$ 225	303	\$ 909	120	\$ 360	170	\$ 510		\$ 510	
Type 1 Curb and Gutter	\$ 20.00	LINF	\$ 7,970	641	\$ 12,820	541	\$ 10,820	463	\$ 9,260	651	\$ 13,020	613	\$ 12,260	534	\$ 10,680	1048	\$ 20,959	258	\$ 5,160		\$ 5,160	
Type 2 Valley Gutter	\$ 30.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Type 7 Curb and Gutter	\$ 20.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Gutter	\$ 15.00	LINF	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	
Gravel Bag	\$ 10.00	EA																				
Sediment Log	\$ 10.00	LINF																				
Silt Fence	\$ 10.00	LINF																				
Dust Control	\$ 4,500.00	LS																				

Table D-2  
Proposed Condition Preliminary Cost Summary  
SR 28 Water Quality and Erosion Control Project from Washoe County/Carson City County Line to Sand Harbor

Description	Unit Price	Unit	TB19		TB20		TB21		TB22		TB23		TB24		Total Amount	
			Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount	Total Quantity	Amount
Tree Removal	\$ 300.00	EA		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	18	\$ 5,400
Clearing and Grubbing	\$ 2,000.00	AC	0	\$ 254		\$ -		\$ 97		\$ -		\$ -		\$ -	2	\$ 3,050
Slope Revegetation (Seeding)	\$ 15,000.00	AC		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	0	\$ 2,753
Riprap Class 150	\$ 80.00	CUY	182	\$ 14,557	138	\$ 11,023	190	\$ 15,193	213	\$ 17,044	7	\$ 598	12	\$ 991	4025	\$ 322,798
Riprap Class 300	\$ 60.00	CUY	553	\$ 33,198		\$ -	373	\$ 22,375		\$ -		\$ -		\$ -	6248	\$ 374,910
Riprap Class 550	\$ 60.00	CUY	61	\$ 3,689		\$ -	24	\$ 1,411		\$ -		\$ -		\$ -	649	\$ 38,950
Riprap Class 900	\$ 50.00	CUY		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	318	\$ 15,891
Drainage Excavation	\$ 25.00	CUY	303	\$ 7,582	230	\$ 5,741	744	\$ 18,604	355	\$ 8,877	169	\$ 4,223	111	\$ 2,778	8017	\$ 200,434
Type 2 Drain Backfill	\$ 40.00	CUY	42	\$ 1,688	8	\$ 305	1	\$ 53	14	\$ 556	51	\$ 2,046	7	\$ 266	483	\$ 19,333
Structure Excavation	\$ 30.00	CUY	334	\$ 10,010	68	\$ 2,051	185	\$ 5,565	95	\$ 2,861	249	\$ 7,480	129	\$ 3,876	5489	\$ 164,668
Granular Backfill	\$ 30.00	CUY	82	\$ 2,446	16	\$ 469	57	\$ 1,722	24	\$ 709	93	\$ 2,782	64	\$ 1,918	1589	\$ 47,661
Non-Woven Geotextile	\$ 3.00	SY	577	\$ 1,730	345	\$ 1,034	591	\$ 1,772	506	\$ 1,517	1187	\$ 3,562	623	\$ 1,869	11830	\$ 35,491
Erosion Control Fabric	\$ 6.00	SY		\$ -		\$ -	201	\$ 1,208		\$ -		\$ -		\$ -	430	\$ 2,578
Infiltration Basin Revegetation	\$ 10,000.00	AC		\$ -		\$ -	0	\$ 416		\$ -		\$ -		\$ -	0	\$ 888
Riprap Bedding Class 150	\$ 100.00	CUY	121	\$ 12,131	92	\$ 9,186	127	\$ 12,661	142	\$ 14,204	5	\$ 498	8	\$ 826	2761	\$ 276,053
Riprap Bedding Class 300	\$ 70.00	CUY		\$ -		\$ -	54	\$ 3,771		\$ -		\$ -		\$ -	136	\$ 9,491
Subsurface Infiltration System	\$ 350.00	EA	13	\$ 4,550	2	\$ 700		\$ -	4	\$ 1,400	15	\$ 5,250		\$ -	78	\$ 27,300
Filtration System	\$ 140,000.00	EA		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	2	\$ 280,000
Removal of Drop Inlet	\$ 800.00	EA	1	\$ 800	1	\$ 800		\$ -	1	\$ 800	1	\$ 800	1	\$ 800	21	\$ 16,800
Removal of Culvert Pipe	\$ 30.00	LINF		\$ -		\$ -	44	\$ 1,320	41	\$ 1,230	56	\$ 1,680	76	\$ 2,280	710	\$ 21,300
Remove and Reset Guardrail	\$ 15.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	2290	\$ 34,350
Removal of Bituminous Shoulder Dike	\$ 3.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	1971	\$ 5,913
Removal of Trench Drain	\$ 40.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	20	\$ 800
Parking Bollards	\$ 350.00	EA		\$ -		\$ -	88	\$ 30,800		\$ -		\$ -		\$ -	130	\$ 45,430
Trench Drain	\$ 110.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	45	\$ 4,950
Timber Walls	\$ 100.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	1453	\$ 145,300
Type FA Barrier Rail	\$ 45.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	1149	\$ 51,705
12-inch Reinforced Concrete Pipe, Class III	\$ 50.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	165	\$ 8,250
15-inch Reinforced Concrete Pipe, Class III	\$ 55.00	LINF		\$ -		\$ -	39	\$ 2,145		\$ -		\$ -		\$ -	1398	\$ 76,890
18-inch Reinforced Concrete Pipe, Class III	\$ 60.00	LINF		\$ -		\$ -	58	\$ 3,480		\$ -	56	\$ 3,360	228	\$ 13,680	626	\$ 37,560
24-inch Reinforced Concrete Pipe, Class III	\$ 75.00	LINF	7	\$ 525		\$ -		\$ -		\$ -	70	\$ 5,250	144	\$ 10,800	370	\$ 27,750
30-inch Reinforced Concrete Pipe, Class III	\$ 90.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	35	\$ 3,150
42-inch Reinforced Concrete Pipe, Class III	\$ 120.00	LINF		\$ -		\$ -	54	\$ 6,480		\$ -		\$ -		\$ -	54	\$ 6,480
15-inch Corrugated Metal Pipe	\$ 65.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	86	\$ 5,590
18-inch Corrugated Metal Pipe	\$ 70.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	66	\$ 4,620
24-inch Corrugated Metal Pipe	\$ 75.00	LINF	40	\$ 3,000		\$ -		\$ -		\$ -		\$ -		\$ -	40	\$ 3,000
30-inch Corrugated Metal Pipe	\$ 90.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	22	\$ 1,980
12-inch Precast End Section	\$ 550.00	EACH		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	2	\$ 1,100
15-inch Precast End Section	\$ 600.00	EACH		\$ -		\$ -	1	\$ 600		\$ -		\$ -		\$ -	2	\$ 1,200
18-inch Precast End Section	\$ 700.00	EACH		\$ -		\$ -		\$ -		\$ -	1	\$ 700	1	\$ 700	5	\$ 3,500
24-inch Precast End Section	\$ 750.00	EACH		\$ -		\$ -		\$ -		\$ -	1	\$ 750	2	\$ 1,500	5	\$ 3,750
15-inch Metal End Section	\$ 300.00	EACH		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	6	\$ 1,800
18-inch Metal End Section	\$ 350.00	EACH		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	6	\$ 2,100
24-inch Metal End Section	\$ 400.00	EACH		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	1	\$ 400
30-inch Metal End Section	\$ 450.00	EACH		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	2	\$ 900
15-inch CMP T Section	\$ 390.00	EACH		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	5	\$ 1,950
18-inch CMP T Section	\$ 420.00	EACH		\$ -		\$ -	1	\$ 420		\$ -		\$ -		\$ -	2	\$ 840
24-inch CMP T Section	\$ 450.00	EACH	4	\$ 1,800		\$ -		\$ -		\$ -		\$ -		\$ -	6	\$ 2,700
Concrete Collar	\$ 600.00	EACH	2	\$ 1,200		\$ -		\$ -		\$ -		\$ -		\$ -	8	\$ 4,800
Type 1 Manhole	\$ 4,000.00	EA		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	6	\$ 24,000
Diversion Manhole	\$ 5,000.00	EA		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	2	\$ 10,000
Special Weir Manhole	\$ 5,000.00	EA	1	\$ 5,000	1	\$ 5,000		\$ -	1	\$ 5,000	1	\$ 5,000		\$ -	11	\$ 55,000
Inlet Riser	\$ 1,800.00	EA		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	3	\$ 5,400
Dual Riprap Outlet Manhole	\$ 5,000.00	EA		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	6	\$ 30,000
Castings	\$ 4.00	LB	365	\$ 1,460	365	\$ 1,460		\$ -	365	\$ 1,460	365	\$ 1,460		\$ -	9125	\$ 36,500
Structural Steel Grates	\$ 3.00	LB	349	\$ 1,047	349	\$ 1,047	211	\$ 633	306	\$ 918	763	\$ 2,289	1264	\$ 3,792	14483	\$ 43,449
Class AA Concrete (Minor)	\$ 1,800.00	CUY	1	\$ 2,538	1	\$ 2,538	4	\$ 7,623	1	\$ 2,322	4	\$ 7,423	7	\$ 12,303	126	\$ 227,264
Reinforcing Steel	\$ 3.00	LB	76	\$ 228	76	\$ 228	347	\$ 1,040	60	\$ 180	212	\$ 636	348	\$ 1,044	8214	\$ 24,643
Type 1 Curb and Gutter	\$ 20.00	LINF	828	\$ 16,560	149	\$ 2,980	371	\$ 7,420	252	\$ 5,040	374	\$ 7,470		\$ -	11664	\$ 233,273
Type 2 Valley Gutter	\$ 30.00	LINF	9	\$ 270	9	\$ 270	6	\$ 180		\$ -		\$ -		\$ -	310	\$ 9,300
Type 7 Curb and Gutter	\$ 20.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	1337	\$ 26,741
Gutter	\$ 15.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	543	\$ 8,139
Gravel Bag	\$ 10.00	EA		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	500	\$ 5,000
Sediment Log	\$ 10.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	3100	\$ 31,000
Silt Fence	\$ 10.00	LINF		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	1900	\$ 19,000
Dust Control	\$ 4,500.00	LS		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	1	\$ 4,500
Mobilization	\$ 150,000.00	LS		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	1	\$ 150,000
Rent Traffic Control Devices	\$ 200,000.00	LS		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	1	\$ 200,000
Guide Posts (Rigid)	\$ 25.00	EA		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	100	\$ 2,500
Anchor Assembly (15-inch)	\$ 200.00	EA		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	9	\$ 1,800
Anchor Assembly (18-inch)	\$ 200.00	EA		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	9	\$ 1,800
Anchor Assembly (24-inch)	\$ 200.00	EA		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	2	\$ 400
Anchor Assembly (30-inch)	\$ 200.00	EA		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	3	\$ 600
Plant Establishment Work	\$ 2,800.00	LS		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	1	\$ 2,800
Type 1 Class B Aggregate Base	\$ 15.00	TON	209	\$ 3,137	48	\$ 714	121	\$ 1,819	77	\$ 1,159	488	\$ 7,325	296	\$ 4,446	4780	\$ 71,699
PlantMix Surfacing Type 2 (Wet)	\$ 65.00	TON	43	\$ 2,764	11	\$ 700	32	\$ 2,100	21	\$ 1,395	166	\$ 10,791	117	\$ 7,617	1317	\$ 85,589
PlantMix Paved Ditches	\$ 23.00	SY		\$ -		\$ -		\$ -		\$ -	805	\$ 18,506	465	\$ 10,700	1270	\$ 29,206
PlantMix Miscellaneous Areas	\$ 18.00	SY	108	\$ 1,952		\$ -		\$ -		\$ -		\$ -		\$ -	2048	\$ 36,861
			<b>SUBTOTAL</b>	<b>\$ 134,115</b>	<b>SUBTOTAL</b>	<b>\$ 46,244</b>	<b>SUBTOTAL</b>	<b>\$ 150,908</b>	<b>SUBTOTAL</b>	<b>\$ 66,673</b>	<b>SUBTOTAL</b>	<b>\$ 99,880</b>	<b>SUBTOTAL</b>	<b>\$ 82,186</b>	<b>SUBTOTAL</b>	<b>\$ 3,730,960</b>
Construction Engineering (10% of Subtotal)	1	LS		\$ 13,411		\$ 4,624		\$ 15,091		\$ 6,667		\$ 9,988		\$ 8,219		\$ 330,973
Contingency (20% of Subtotal)	1	LS		\$ 26,823		\$ 9,249		\$ 30,182		\$ 13,335		\$ 19,976		\$ 16,437		\$ 661,945
			<b>TOTAL</b>	<b>\$ 174,000</b>	<b>TOTAL</b>	<b>\$ 60,000</b>	<b>TOTAL</b>	<b>\$ 196,000</b>	<b>TOTAL</b>	<b>\$ 87,000</b>	<b>TOTAL</b>	<b>\$ 130,000</b>	<b>TOTAL</b>	<b>\$ 107,000</b>	<b>TOTAL</b>	<b>\$ </b>