

**Final
Environmental Assessment**

**Third and Incline Creeks Restoration
Phase II
Washoe County, Nevada**

August 2010



**US Army Corps
of Engineers** ®
Sacramento District



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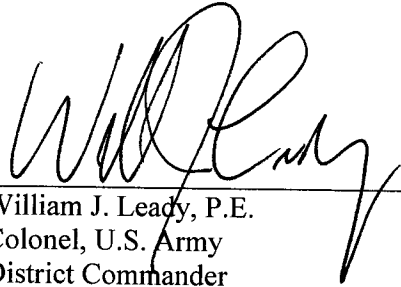
FINDING OF NO SIGNIFICANT IMPACT
Third & Incline Creeks Restoration Project, Phase II
Washoe County, Nevada

I have reviewed and evaluated the information in this Environmental Assessment (EA) for the Third & Incline Creeks Restoration Project, Phase II, Washoe County, Nevada. This project would restore aquatic habitat functions and improve fish passage by removing and replacing three culverts with two Conspan structures and a bridge. Approximately 4,700 linear feet of aquatic habitat and 1 acre of riparian habitat would also be enhanced and restored to benefit fish and wildlife. The project would result in improvements to Stream Environment Zones, fish passage, overbank flooding, streambank stabilization, erosion control, and riparian vegetation. This restoration work would also contribute to preserving Lake Tahoe water quality and improving aquatic conditions for its nearshore fish and wildlife and their habitats.

During this review, the possible consequences of the work described in the EA have been studied with consideration given to environmental, economic, social, and engineering feasibility. In evaluating the effects of the proposed project, specific attention has been given to significant environmental conditions that could potentially be affected. I have also considered the views of other interested agencies, organizations, and individuals concerning the study. The effects and mitigation measures have been coordinated with the U.S. Fish and Wildlife Service, Nevada State Historic Preservation Officer, Tahoe Regional Planning Agency, and Nevada Division of Environmental Protection.

Based on my review of the EA and my knowledge of the project area, I am convinced that the proposed Third and Incline Creeks Restoration Project, Phase II, is a logical and desirable alternative. Furthermore, I have determined that the work would have no significant, long-term effects on the environment. All construction will be implemented in strict compliance with applicable Federal, State, and local laws and regulations. Based on the results of the environmental evaluation, completion of interagency coordination, and adequately addressing public review comments, I have determined that the EA and Finding of No Significant Impact provide adequate documentation and that no further environmental document is required.

4 AUGUST 2010
Date



William J. Leady, P.E.
Colonel, U.S. Army
District Commander

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1.0 PURPOSE AND NEED

1.1 Proposed Action

The US Army Corps of Engineers (Corps), Nevada Division of State Lands (NDSL) and the Incline Village General Improvement District (IVGID) propose to implement the Third and Incline Creeks Restoration Phase II (Third and Incline Phase II), to restore aquatic habitat and water quality functions to the stream environment zone (SEZ) of lower Third and Incline Creeks. Third and Incline Phase II includes replacement of three roadway crossings and SEZ habitat restoration at select locations along Third and Incline Creeks above Incline Way and below Lakeshore Boulevard. Watershed functions within Third and Incline Creeks have been compromised with respect to aquatic habitat including fish passage and migration, water quality, overbank flooding, sediment and nutrient retention and terrestrial wildlife habitat. The proposed Third and Incline Phase II project would be consistent with restoration work conducted under the Third Creek Restoration Project, Phase I. Phase I included aquatic and terrestrial habitat enhancement and bank stabilization of Third Creek between Lakeshore Boulevard and Incline Way. Approximately 4,700 linear feet of SEZ and aquatic habitat would be restored as a result of this project. Cumulatively, these enhancements would provide a geomorphically restored channel for lower portions of both Third and Incline Creeks from State Route 28 to its terminuses at Lake Tahoe.

1.2 Location of the Project Area

The Third and Incline Phase II project area is located in the lower portions of the Third Creek and Incline Creek watersheds within the Community of Incline Village, Washoe County, Nevada (Plate 1). The project area includes the roadway crossings of Third and Incline Creeks at Incline Way and the Incline Creek roadway crossing at Lakeshore Boulevard (Plate 2). In addition, SEZ restoration would be conducted between SR 28 and Incline Way and between Lakeshore Boulevard and Lake Tahoe on both Third and Incline Creeks. IVGID owns the land within the Third and Incline Phase II project area. An easement would be required from Washoe County for work on the roadway culvert crossings located within Washoe County right-of-way.

The project area can be accessed from both Incline Way and Lakeshore Boulevard. Construction workers and visitors including agency personnel would access the site from either Incline Way or Lakeshore Boulevard.

1.3 Need for Proposed Action

Land use and resource extraction throughout the Third and Incline Creek watersheds began in the Comstock Era (1858-1890) and again during the tourism growth and population expansion after 1950 (Susfalk, 2005). Today, the lower portions of the watersheds near the project area are densely urbanized and include a mix of residential and commercial development. Historic land use activities that have adversely affected the Third and Incline Creek watersheds include:

- Deforestation in the Third and Incline Creek upper watersheds during the Comstock Era and subsequent cattle grazing of cutover lands;
- Logging of the lower Third and Incline Creek watersheds by the Boise Cascade Corporation in the 1950's and subsequent subdivision and development of the area by IVGID in the 1970's; and
- Relocation and channelization of streams to accommodate development of residential and commercial buildings and roadways.

These historic adverse effects have impaired the natural hydrological function of the Third and Incline Creek watershed with respect to aquatic habitat including fish passage and migration, water quality, overbank flooding, groundwater recharge, sediment and nutrient retention and terrestrial wildlife habitat. Developmental activities increased impervious surfaces within the watersheds, which has reduced infiltration capacity while simultaneously amplifying peak flows during run-off events resulting in periodic backwater flooding (Corps, 2004). These land use practices, combined with the steep rocky slopes and thin soils found in the upper portions of the watersheds, have contributed to accelerated erosion, increased sedimentation, constricted floodplains, as well as degraded riparian, wetland, and aquatic habitat. Within the project area between SR 28 and Incline Way there are several areas where the streambanks are unstable and will potentially fail if untreated. Between Lakeshore Boulevard and Lake Tahoe both Incline Creek and Third Creek are overly wide producing a depth barrier to fish passage. In addition, the presence of the park in this area, with no riparian vegetation on the streambanks, has resulted in erosion along the stream corridor and limited vegetative cover for fish. Restoration of SEZ areas between Lakeshore Blvd and Lake Tahoe as well as between Incline Way and SR 28 is needed to improve fish habitat and productivity, reduce sedimentation, and enhance wildlife habitat.

Within the project area, roadway culverts are undersized and/or blocked with debris and lack an open bottom channel. Currently, these culverts do not pass 100-year flood events. The culverts on Incline Creek impede adult and juvenile fish passage and limit their use of aquatic habitat due to depth and leap barriers. While the leap barrier at Incline Way and Third Creek was improved during Phase I of the project, culvert replacement is required to more effectively improve fish habitat and passage which is restricted due to culvert blockage and lack of an open bottom channel. The proposed Third and Incline Phase II project presents an opportunity for significant benefits to watershed functions.

1.4 Project Authorization

This project was authorized under Section 108 of the Energy and Water Development Appropriations Act of 2005 (Public Law 108-447) which authorizes the Corps to participate in water-related environmental infrastructure and resource protection projects in the Lake Tahoe Basin.

1.5 Purpose of the Environmental Assessment

The purpose of this Environmental Assessment (EA) is to describe the construction methods for this project; discuss the environmental resources in the project area; evaluate the effects the alternatives could have on the natural and human environment; and propose measures to avoid, minimize, or mitigate any adverse effects of the project to a less-than-significant level. The purpose of an EA is to provide sufficient information on potential environmental effects of the proposed action and, if appropriate, its alternatives, for determining whether to prepare an EIS or a Finding of No Significant Impact (FONSI) (40 CFR 1508.9).

This EA is in compliance with the National Environmental Policy Act (NEPA). If there are significant changes in, or additions to, the existing conditions or basic design of the restoration project during future designs or construction, the required subsequent environmental documentation would be prepared and submitted to the appropriate agencies to ensure compliance with Federal, State, TRPA, and local laws and regulations. The Draft EA was available for public review for a period of 30 days from June 1 to July 2, 2010. Public review comments and responses are presented in Appendix F.

2.0 ALTERNATIVES

2.1 Project Area Existing Conditions

Third Creek between S.R. 28 and Incline Way. Within this area, Third Creek is considered a G-type channel. G channel types are found on alluvial fans, are well-entrenched, have a low width-depth ratio, typically have high rates of bank erosion and bedload transport rates, and are considered very unstable (Rosgen, 1996). The stream profile within this area has a gentle valley gradient, of approximately 2 to 5 percent. Within portions of the riparian buffer and along the banks, there is evidence of accelerated bank erosion due to heavy public use of informal footpaths and access trails that cross the streambank. Many of the footpaths have resulted in a loss of ground cover leading to sloughing of the sandy bank material into the creek. A sizeable woody debris jam is located within the reach. The woody debris jam is stabilizing the creek bed, but is also rerouting creek flows, thereby inducing bank erosion.

The existing culvert at Incline Way on Third Creek consists of twin pipe culverts. The existing culvert design results in a loss of velocity on the upstream side of Incline Way and a build up of sediment and debris. Currently, the left culvert is blocked during low flows due to debris build up. In addition, the closed pipe culvert design provides limited habitat for providing adequate fish due to the lack of a natural bed. While the leap barrier to fish passage has been improved by the restoration effort conducted in 2009 just downstream of Incline Way, the current culvert design is not optimal for fish passage, habitat, or maintenance.

Incline Creek between Tahoe Boulevard (Hwy 28) and Incline Way. This section of the creek is approximately 1,625 feet in length. At Hwy 28, there are twin pipe

culverts with an approximate four foot drop from the outlet of the culvert to the creek bed below. This drop presents a barrier to fish passage. Along the streambanks, there is evidence of erosion due to heavy public use of informal footpaths and access trails that cross the streambank. In one location, there is an informal bridge crossing the stream between Sierra Nevada College to the east and a housing community to the west. The college and housing community are not located in the flood plain. In some locations, streambank riparian vegetation is sparse.

The existing culvert at Incline Way is similar in design to the culvert on Third Creek at Incline Way. There is a build up of sediment on the upstream side of Incline Way on Incline Creek. This sediment deposition is likely caused by the reduction in velocity caused by the current design. In addition, the current culvert presents a leap barrier to fish passage as there is a drop in elevation from the upstream side of Incline Way to the downstream side.

Third Creek from Lakeshore Boulevard to Lake Tahoe. Based on the channel geomorphic characteristics, a Rosgen C-type channel is most representative of this reach. Within this reach, the water depth is shallow year round. This results in a depth barrier to fish migrating upstream to spawn. There is also limited sorting of cobbles and sediment providing limited habitat quality for fish and other aquatic species. This area experiences substantial foot traffic along the streambanks due to frequent use of the public park found adjacent to the streamzone. There is limited riparian vegetation growing along the streambanks within this reach to buffer the creek from human traffic.

At the Lakeshore Boulevard roadway crossing of Third Creek there is a double concrete box culvert with concrete aprons. In 2009, fish passage improvements were applied at this culvert. Prior to the restoration there was a leap barrier at the downstream end of the culvert. To correct the elevation drop, a boulder weir was installed to raise the water surface elevation up to the elevation of the concrete apron creating a pool that allows fish to jump onto the apron. Half-ton boulders, 3 to 8 inch river run cobble with riffle gravel and sand were placed at the upstream apron to ramp the channel down from the existing boulder step. Low flows were directed towards the eastern box culvert creating greater water depth within the culvert for spawning fish populations. The second box culvert was left open to maintain conveyance of flood flows through the culvert. In addition, half-ton rocks/baffles were also grouted into the culvert bottom providing additional roughness and fish resting pools. As a result of these restoration measures introduced in 2009, no culvert replacement or further restoration at Lakeshore Boulevard and Third Creek is necessary.

Incline Creek from Lakeshore Boulevard to the shoreline of Lake Tahoe. This approximately 700 foot-long (ft) stretch of Incline Creek exhibits two different channel types (Corps 2002). These channel types are based on the Rosgen classification system. From Lake Tahoe to the first pedestrian bridge crossing, the channel is a Rosgen B-type stream. The channel is moderately entrenched, has a moderately low width-to-depth ratio, and low sinuosity. There is woody debris and boulders within this section. The bed surface material is predominantly sand in the pools and on the bars. Large boulders

have been placed along both banks near the confluence with Lake Tahoe. No bank erosion is evident on the west bank, but moderate and frequent bank erosion is occurring on the east bank. Vegetation along the bank consists of alders along the channel near the top of the bank and pines beyond that growing at slightly higher elevations.

Between the first pedestrian bridge and Lakeshore Boulevard, the channel becomes more entrenched and has lower sinuosity. This reach is a Rosgen G-type, with less potential for overbank flow than the B-type channel downstream. Stream bank erosion is similar to the sub-reach downstream of the pedestrian bridge, with large cobble to boulder bed material near the toe of banks that resist undercutting. Vegetation along the bank consists of alders.

One fish passage barrier was identified within this area, a concrete box culvert located at Lakeshore Boulevard. This culvert appears to be undersized. This results in increased velocities, which can be a problem for fish passage. The increased velocities have also led to bank scour behind a wing wall that is part of the culvert.

2.2 Alternatives Considered But Eliminated From Detailed Consideration

A Technical Advisory Committee (TAC) was convened as part of the planning and design process for Third and Incline Phase II. The TAC membership includes representatives from the Corps, NDSL, IVGID, the Tahoe Regional Planning Agency (TRPA), the Nevada Division of Environmental Protection (NDEP), Nevada Department of Wildlife (NDOW), the Nevada Tahoe Conservation District (NTCD), the US Fish and Wildlife Service (USFWS), and Washoe County.

The TAC met in July 2009 to discuss restoration options for Third and Incline Phase II and identify priority locations in need of restoration. The areas that were identified for restoration are described in Section 2.1 above. In December 2009, the TAC was convened to evaluate restoration alternatives for the culvert replacement portion of Third and Incline Phase II. Alternatives were evaluated relative to the restoration project goals. Restoration goals for Third and Incline Phase II include:

- Restore fish passage on the lower portions of Third and Incline Creeks for special interest species identified by Nevada Department of Wildlife (NDOW) and Tahoe Regional Planning Agency (TRPA);
- Ensure that the culvert replacement design is compatible with existing creek features to avoid substantial creek alternations upstream and downstream of culverts and to protect previous Federal and State funded investments;
- Stabilize eroding banks to reduce sediment delivery to Lake Tahoe;
- Design project improvements to enhance fish passage and aquatic habitat while providing for adequate public safety; and
- Optimize the selection of improvements to balance fish passage benefits, constructability, traffic issues and cost.

The alternatives that were evaluated for roadway crossings at Incline Way and Lakeshore Boulevard include: Alternative 1 - a closed bottom culvert; Alternative 2 - an

open bottom culvert; and Alternative 3 - a bridge. For Alternatives 1 and 2, two options were considered for evaluation. For Alternative 1, a box culvert or a squashed pipe culvert were considered. For Alternative 2, both a corrugated metal pipe culvert and a Conspan culvert were considered. It was identified early in the evaluation process that neither a closed or open corrugated metal pipe culvert would meet Washoe County design standards due to maintenance requirements. Both the squashed pipe culvert and corrugated metal pipe culvert options were thus eliminated from further consideration early in the evaluation process leaving only one option for further evaluation under Alternatives 1 and 2. Tables 1 and 2 below present the results of the evaluation process for both the culverts at Incline Way and the culvert at Lakeshore Boulevard.

Table 1: Alternative Evaluation Incline Way

Evaluation Criteria	Alternative 1	Alternative 2	Alternative 3
Restore fish passage to Incline Creek and Third Creek at Incline Way for special interest species identified by NDOW, TRPA, and the USACOE.			
Allows low flow fish passage	2	5	5
Allows medium flow fish passage	5	5	5
Overall fish passage is beneficial	2	4	5
Compatible with existing creek features, avoid substantial creek alterations upstream and downstream of culverts and protect previous Federal and State funded investments.			
Aesthetically pleasing and compatible with existing channel	3	4	5
Geomorphically stable	3	4	5
Provide a design that avoids the need for routine maintenance.			
Requires limited annual cleaning or repairs	3	4	5
Allows access to clean debris or repair damage.	3	4	5
Longevity/durability	5	5	5
Stabilize eroding banks adjacent to restored reaches where needed.			
Allows for the passage of the 100-year flood	5	5	5
Promotes channel stability	1	3	5
Acceptable hydraulic conditions	1	3	5
Optimize the selection of improvements to balance fish passage benefit, constructability, traffic issues and cost.			
Utilities	5	5	2
Traffic	3	3	2
Time	5	4	2
Construction	5	4	2
Cost	4	4	2
Total	55	66	65

At Incline Way, Alternative 2, an open bottom Conspan culvert, was selected as the preferred alternative. At Lakeshore Boulevard, Alternative 3, a bridge, was selected as the preferred alternative (See Table 2 below). Different structures were selected to replace the existing culverts at Incline Way as opposed to Lakeshore Boulevard due to substantial utility constraints at Incline Way and concerns regarding traffic and road closures. Because the Conspan culverts are prefabricated and could be constructed in less

time than a bridge, these structures would reduce the amount of time required for road closures. In addition, because there are sewer lines at Incline Way, greater protection of the sewer lines could be provided by burying the lines in the Conspan culvert as opposed to hanging the lines from a bridge. For these reasons both Third and Incline Creek crossings at Incline Way will use a Conspan culvert.

Table 2: Alternative Evaluation Lakeshore Boulevard

Evaluation Criteria	Alternative 1	Alternative 2	Alternative 3
Restore fish passage to Incline Creek and Third Creek at Lakeshore Boulevard for special interest species identified by NDOW, TRPA, and the USACOE.			
Allows low flow fish passage	2	5	5
Allows medium flow fish passage	5	5	5
Overall fish passage is beneficial	2	4	5
Compatible with existing creek features, avoid substantial creek alterations upstream and downstream of culverts and protect previous Federal and State funded investments.			
Aesthetically pleasing and compatible with existing channel	3	4	5
Geomorphically stable	3	4	5
Provide a design that avoids the need for routine maintenance.			
Requires limited annual cleaning or repairs	3	4	5
Allows access to clean debris or repair damage.	3	4	5
Longevity/durability	5	5	5
Stabilize eroding banks adjacent to restored reaches where needed.			
Allows for the passage of the 100-year flood	5	5	5
Promotes channel stability	1	3	5
Acceptable hydraulic conditions	1	3	5
Optimize the selection of improvements to balance fish passage benefit, constructability, traffic issues and cost.			
Utilities	5	5	4
Traffic	3	3	3
Time	5	4	3
Construction	5	4	3
Cost	4	4	3
Total	55	66	71

2.3 No Action

Under the No Action Alternative, there would be no construction within the project area and the existing habitat and water quality would not be restored. While future projects within other reaches along Third and Incline Creeks, primarily upstream, could affect the conditions within the Restoration Project area by potentially improving water quality and wildlife habitat, the No Action Alternative would not significantly affect resource conditions within the project area. The environmental goals and the threshold carrying capacities adopted by the TRPA Regional Plan, as a means to achieving the goals established in the TRPA Compact, would not be supported by the No Action Alternative. Wildlife and fish use of the area would remain minimal and the area

would attract limited species under the No Action Alternative since the restoration of the riparian and aquatic habitats including fish passage improvements would not be implemented. The No Action Alternative establishes the baseline conditions that determine the action alternative's effects on environmental conditions.

2.4 Preferred Alternative

The following section describes construction activities associated with the Preferred Alternative. The Preferred Alternative activities consist of replacement of the existing culverts at selected locations along Incline and Third Creeks including at the roadway stream crossings on SR 28, Incline Way, and Lakeshore Boulevard. The culverts on Third Creek and Incline Creek at Incline Way would be replaced with Conspan culverts and the culvert at Lakeshore Boulevard would be replaced with a bridge. Aquatic habitat enhancements would be applied to Third and Incline Creeks between Lakeshore Blvd and Lake Tahoe to increase depth and improve habitat quality for spawning fish. In addition, erosion control treatments and aquatic habitat improvements including revegetation of the riparian corridor and grade control would be applied at select locations between Incline Way and SR 28 on Third and Incline Creeks. The aquatic habitat enhancements and erosion control treatments proposed in this restoration project are consistent with treatments applied under other Section 108 projects. These treatments have the support of the TAC and other local stakeholders including the U.S. Fish and Wildlife Service (USFWS). The expected benefits include reestablishing the functions and conditions of a self sustaining aquatic ecosystem, improved water quality, and reduced nutrient and fine sediment transport to Lake Tahoe. Construction details are provided in Section 2.4.2 below.

2.4.1 Pre-Construction Activities

Environmental Permits. Prior to initiation of construction, IVGID would be required to obtain all permits necessary to perform the work. These permits are further described in Section 5.1 and 5.2 below. Recommended BMPs must be reviewed and approved by the resource agencies prior to construction. Easements would be obtained from Washoe County for construction of the culvert replacements at Incline Way and Lakeshore Boulevard and other improvements within Washoe County right-of-way.

Dewatering. A phase specific dewatering plan would be developed for each phase of work and would be provided to NDEP and TRPA for review prior to construction. A dewatering plan for work proposed in 2010 is provided in Plate 3. Diversion structures such as sandbags and appropriate BMPs would be installed upstream and downstream to divert water away from areas where active construction is occurring. A dewatering pipe and noise attenuated pumps would be placed upstream of a sandbag dam and would divert creek flows around the area of construction and back into Third and Incline Creeks. A discharge dissipater would be installed downstream of the active work area where flows would be discharged back into Third and Incline Creeks. Localized pumping would be used to hydraulically contain turbid groundwater or standing water as a result of excavation of saturated soil. Turbid water would be pumped

into a detention basin or treated in a dirt bag for infiltration. Prior to release of creek flow into restored areas of the Third and Incline Creeks, re-wetting flows would be released over restoration features to wash excess sediment from the area. Water resulting from the flush would be pumped and treated as described above. This process would be repeated until the channel is flushed clean of debris and the water at the downstream end of the site meets the water quality standards for the TRPA and the NDEP. The IVGID and their Construction Manager would be responsible for developing and implementing a water quality monitoring plan to ensure water quality standards are met prior to release into the Third Creek or Incline Creek channel downstream of the restoration activities.

Utilities. Prior to construction, the depths of all existing utilities would be verified. In addition, because of the multiple utility lines in the location of the culvert replacements at both Lakeshore Boulevard and Incline Way, a plan for managing utilities during construction would be developed by IVGID. Utility constraints at Incline Way include a ten-inch waterline, a two-inch gas line, a ten-inch sanitary sewer force main, and a 14-inch sanitary sewer force main.

Traffic. During construction of the culvert replacements at Lakeshore Boulevard and Incline Way, temporary lane and/or road closures would be necessary. Prior to construction, a traffic management/control plan would be developed by IVGID for approval by Washoe County, and traffic control measures would be implemented in accordance with the plan. Preliminary traffic control measures are included on Appendix B, Sheets TC-1, TC-2 and TC-3. Elements of the plan include appropriate use of signage, flaggers, traffic calming, and alternative routes to accommodate local and through traffic. In addition, local residents would be advised regarding schedules for construction traffic detours through distribution of flyers in the area in advance of construction initiation. Meetings would be held with local residents and businesses to discuss construction plans, including implications to traffic within the area.

2.4.2 Construction Details

Bridge. Construction of a bridge across Incline Creek at Lakeshore Boulevard is the preferred alternative to replace the existing undersized culvert. The bridge would have a span of approximately 40 feet and provide for a natural bottom including a low flow channel and floodplain. The bridge would be at the same elevation as the existing roadway. Construction of the bridge at Lakeshore Boulevard would include excavation and removal of the existing concrete box culvert. It would also include modifications to the creek to allow for a low-flow channel and natural floodplain. These modifications would include, but not be limited to, construction of a low-flow channel to tie-in with the upstream and downstream channel, revegetation of the floodplain area, removal of boulders at the upstream end of the existing box culvert, and installation of grade control structures.

The road would be narrowed down to a single lane during construction of the bridge, and traffic could potentially be rerouted for a short duration during construction. The waterline, which is currently buried in the road at this location, would be attached to

the bridge to span Incline Creek. Construction of a bridge at this location would allow the 100-year flow to pass below the road and stay within the channel, while not scouring the bank downstream or upstream. A bridge at this location would also improve aquatic habitat with a natural channel and floodplain and improve fish passage during low flows.

In addition to the bridge at Lakeshore Boulevard, a pedestrian crossing would be constructed just south of Lakeshore Boulevard. The pedestrian crossing would allow for continued pedestrian traffic along Lakeshore Boulevard while keeping pedestrians off of the roadway for public safety. The final location and design of the pedestrian crossing will be developed through coordination with stakeholders.

Conspan culverts. Construction of Conspan culverts is the preferred alternative for replacement of corrugated metal pipe culverts on both Third and Incline Creeks at Incline Way. Construction of Conspan culverts would include removal of the existing twin pipe culverts on both Incline Creek and Third Creek. Following excavation, the foundation and pre-cast wingwalls would be installed. The pre-cast concrete Conspan culvert would be installed within the footings. Both the culvert and the wingwalls would be backfilled with materials as specified in the Final Design Plans and Specifications. The Conspan culverts would be approximately 24 feet wide to span the entire channel and provide a small floodplain area within the culvert. There would be approximately five feet of clearance between the channel and the bridge, and the footings would extend 2.0 feet below the channel invert. To prevent scour, the channel at the base of the footings would be composed of aggregate with a D_{50} of 12 inches and a width of two feet. Following backfilling of the bridge, the roadway would be restored. Traffic would be reduced to one lane and/or traffic on Incline Way would be rerouted during the period of construction. It is expected that traffic could be closed at each culvert for up to two weeks during construction.

Existing sediment and debris deposition upstream of the culverts on Third and Incline Creeks would be removed. A new low-flow channel and adjacent floodplain would be constructed within the culvert and would tie-in with the upstream and downstream channel. Within the culvert, rock would be used to prevent scour and to provide habitat value. The floodplain would be revegetated following construction. On Incline Creek, downstream of the culvert, log grade control structures would be installed to maintain grade at the culvert. On Incline Creek, channel work would be conducted up to 75 feet upstream of the culvert and 25 feet downstream of the culvert to tie-in to the existing channel. On Third Creek, the new channel would connect to areas restored during the Third Creek Restoration (Phase I).

Conspan culverts at Third and Incline Creek on Incline Way would allow for passage of 100-year flows below the roadway. It would also allow for a low-flow channel and floodplain area. These improvements would provide fish passage to areas upstream on Third and Incline Creek as well as enhance in-stream aquatic habitat. These structures would also have reduced maintenance requirements due to the reduced potential for debris and sediment build up.

Aquatic Habitat Enhancement. Downstream of Lakeshore Boulevard on both Third and Incline Creeks, aquatic habitat enhancement would consist of adding gravel bars to concentrate low-flows towards the channel mid-line and increase depth. In addition, gravel, cobble, and woody debris would be added to the channel including riffle areas, to increase roughness and improve aquatic habitat diversity. These in-stream enhancements would improve habitat for both juvenile and adult fish as well as macroinvertebrates. It is proposed that channel modifications within this area would be constructed with hand crews. In these areas, the channel is overly wide and the current conditions produce a depth barrier to fish passage. The proposed channel improvements would allow fish to access the restored habitats within Third and Incline Creeks from Lake Tahoe.

Additional aquatic habitat enhancement would be conducted at select locations between Incline Way and SR28 on Third and Incline Creeks. These habitat enhancements would utilize native materials, such as wood and rock, to replicate the function of the materials in the natural environment. Riffles and pools may be added within this reach to improve aquatic habitat. Small woody debris would be placed within the riffle and cobble to increase fish habitat diversity for juvenile and adult fish. In addition, the streambanks would be vegetated. The use of woody debris within the channel and the planting of native riparian vegetation species would also improve fish and macroinvertebrate habitat by providing food sources and cover. Prior to construction an engineered final design will be developed detailing the aquatic habitat enhancements on Third and Incline Creeks between Lakeshore Boulevard and Lake Tahoe as well as between Incline Way and SR 28. The final design for restoration of these areas will be subject to TRPA, NDEP, and Corps approval and would be developed in coordination with the project TAC.

Channel Stabilization. Above Incline Way on both Third and Incline Creeks, channel stabilization treatments would be applied at specific locations where erosion is evident. Channel stabilization treatments could include regrading to construct a more stable channel, installation of grade control structures, and revegetation. Regrading would be conducted at locations of eroding stream banks to reduce erosion and create a stable bank. Toe treatments including rock and logs may be used to stabilize the bank toe. After grading, these areas would be revegetated with willows and other riparian vegetation to provide long-term stability. The treatments on both Third and Incline Creek would be designed to improve long-term channel stability and reduce sediment erosion to Lake Tahoe. These treatments would be consistent with creek restoration conducted previously downstream at the Village Green Park, providing for geomorphic restoration of Third and Incline Creeks between Lake Tahoe and SR 28.

Terrestrial and Riparian Habitat Enhancement. Third and Incline Creeks between Lakeshore Boulevard and Lake Tahoe are subject to frequent human disturbance. There is a public park located within this area with no riparian buffer along the creek corridor. Planting of rose, currant and other vegetation to reduce human disturbance would improve habitat quality and provide a riparian corridor for wildlife use. Between Incline Way and SR28 on Incline Creek, there are informal pedestrian trails and crossings of

Incline Creek between Sierra Nevada College and the residential community located west of Incline Creek. Providing a vegetative buffer along the creek corridor would improve habitat and reduce the disturbance frequency along the streambanks. Logs would be strategically placed to direct foot traffic away from sensitive areas. Informal trails would also be seeded with native and area appropriate vegetation and covered with pine needles and woody debris. All areas where there are bare soils would be replanted.

Native riparian vegetation and herbaceous vegetation would also be planted or seeded in select locations along Third and Incline Creeks. Revegetation would benefit juvenile and adult wildlife. Prior to construction, an engineered final design will be developed detailing the terrestrial and riparian habitat enhancements on Third and Incline Creeks between Lakeshore Boulevard and Lake Tahoe as well as between Incline Way and SR 28. The final design for restoration of these areas will be subject to TRPA, NDEP, and Corps approval and would be developed in coordination with the project TAC.

2.4.3 Staging, Stockpiling, Disposal and Temporary Access

Staging and Storage. Staging and storage areas for Third Creek Phase II would be located in paved parking lots accessible from Lakeshore Blvd and Incline Way. These areas serve as overflow parking for IVGID recreation areas (Plate 4). Materials as required for each phase of construction would be stored for use in the staging area. Staging areas would be stabilized with appropriate BMPs and would be enclosed by BMPs such as coir logs, construction limit fencing, and silt fencing secured in place to minimize erosion. After construction, the staging and stockpile areas would be returned to pre-project conditions.

Stockpiling and Disposal. Project components such as replacement of roadway culverts, streambank stabilization treatments, aquatic habitat improvements, and grade control structures would require grading and excavation. Soil not reused onsite could be stockpiled for short periods of time within the staging areas and exported from the project area to an appropriate location in accordance with local, State, and Federal laws.

Temporary Access Roads. Temporary access roads would be constructed for transport of equipment and material from the staging areas to the construction areas (Plate 4). Temporary access roads within SEZ areas would consist of a layer of reinforced geotextile fabric covered with a minimum of twelve inches of native material. All access roads would be contained with construction limit fencing. In riparian areas, temporary filter fencing and sediment logs would be installed between the roads and the riparian areas. Upon the completion of construction, the access roads would be removed and the area restored to pre-construction conditions through revegetation and stabilization applications. Paved access routes would be cleaned with street sweepers and water trucks.

2.4.4 Construction Schedule

Third and Incline Phase II would be completed within two construction seasons. Construction of the Conspan culverts at Incline Way are expected to begin after Labor Day (September 6) of 2010 and to be concluded by October 15, 2010. Replacement of the bridge at Lakeshore Boulevard, as well as streambank modifications downstream of Lakeshore Boulevard and the streambank stabilization and wildlife habitat enhancements upstream of Incline Way; would be conducted in the 2011 construction season. Most of the channel excavation and grading activities would occur during August and September, the driest months of the year when there is minimal flow within Third and Incline Creeks. Construction activities requiring road closure would be conducted after Labor Day to minimize the effects to area traffic.

2.4.5 Monitoring

Post-construction monitoring of revegetated areas would be conducted for a minimum of two years after completion of construction activities, and until vegetation success (70 percent of pre-disturbance plant cover) has been achieved. During the vegetation monitoring period, vegetation would be replaced as needed and invasive weeds removed. Should the vegetation criteria not be met within two years of planting, additional planting and vegetation monitoring would continue in subsequent years until vegetative growth is deemed successful.

In addition to vegetation monitoring, fish passage along Third and Incline Creeks would be monitored to determine the success of the fish passage measures implemented. Fish monitoring would include monitoring in both the spring and fall for spawning activity along Third and Incline Creeks. Monitoring would be conducted for both juvenile and adult fish populations. Benthic macroinvertebrate monitoring could also be conducted to evaluate aquatic habitat quality within Third and Incline Creeks both pre- and post-project. Monitoring will be conducted for a minimum of two years to evaluate the effects of the restoration on habitat quality.

3.0 AFFECTED RESOURCES AND ENVIRONMENTAL EFFECTS

This section describes the resources in the Restoration Project area, as well as any effects of the alternatives on those resources. When necessary, mitigation measures have been incorporated into the project to reduce potential effects to a less-than-significant level. Appendix C contains a tabulated summary of potential effects of construction and proposed mitigation measures. Appendix C contains a mitigation measures monitoring checklist. All avoidance, reduction, and minimization measures would conform to the requirements in TRPA's Handbook of Best Management Practices (TRPA, 1988), LRWQCB, Basin Plan, Chapter 5.3 Best Management Practices and other more recent best available technologies.

3.1 Resources Not Considered in Detail

Initial evaluation of the effects associated with the Restoration Project indicate that there would likely be no effect(s) on the quality of the human environment and no unresolved conflicts concerning alternative uses of several resources. These resources are discussed below to add to the overall understanding of the project area.

3.1.1 Climate

The climate in the Lake Tahoe Basin is characterized by cool, dry summers with maximum daily temperatures around 75 degrees Fahrenheit and cold winters with daily average temperatures around 30 degrees Fahrenheit. Annual precipitation occurs mostly in the form of winter snow or mixed rain and snow between November and March. Mean annual precipitation within the project area as measured at the Tahoe City Western Regional Climate Center (WRCC) Station is 31.49 inches over the period of record (WRCC, 2009). Average annual snowfall, as measured from 1903 to 2007, is 194.4 inches. Because this is a small restoration project that would require only two or three pieces of construction equipment over a four month time period, the project would result in very limited emissions of green house gasses and would thus have no effect on climate.

3.1.2 Geology and Seismicity

The Lake Tahoe Basin spans the border between the Sierra Nevada Batholith to the west and the Basin and Range province to the east and shares the character of each province (Corps, 2001). Much of the Sierra Nevada has been affected by glaciation during the past 1.5 million years. The rocks of the Sierra Nevada can be divided into granitic, metamorphic, and volcanic (Hyne, et al., 1972). Cretaceous granodiorite of the Sierra Nevada Batholith is the predominant basement bedrock of the Tahoe Basin.

The Lake Tahoe Basin is located in an area of low to high seismicity (USFS, 2008). Active faults in the area include the North Tahoe fault that extends northeast through Incline Village and the Truckee Meadows fault northeast of Incline Village (Ichinose, 1999). The surface geology of the lower Third and Incline Creek watershed is primarily derived from glacial outwash, alluvium, and lakeshore sediments of Quaternary age (Glancy, 1988). The proposed restoration project would have no effect on geology and seismicity because the proposed project is a stream restoration project which has no relationship to geology or seismicity.

3.1.3 Topography and Soil Types

The topography of the Lake Tahoe Basin is due to the geologic activity coupled with glaciation during the last ice age. Most of the land within the basin is mountainous, limiting development mainly to the relatively flat-lying areas along the tributary streams around the lake. The study area is relatively flat, with elevations ranging from approximately 6360 feet at Hwy 28 to 6240 feet at Lake Tahoe.

The Soil Survey of the Tahoe Basin Area, California and Nevada (USDA 2007) identifies two soil type units mapped within the study area. They include: Inville gravelly coarse sandy loam, 2 to 9 percent slopes, stony (Map Unit 7141) and beach (Map Unit 7011).

Inville gravelly coarse sandy loam, 2 to 9 percent slopes, stony (Map Unit 7141) soils consist of very deep, well-drained soils that formed from outwash derived from mixed materials. These soils are found on hillslopes on outwash terraces with slopes of 2 to 9 percent and are more than 80 inches in depth. A typical soil profile demonstrates a range of soil textures from the ground level down consisting of slightly decomposed plant material to gravelly coarse sandy loam to extremely cobbly sandy loam to extremely gravelly loamy coarse sand. Depth to the water table is more than 80 inches and the soils are not subject to flooding and/or ponding. The soils have a typical xeric moisture regime. Inville gravelly coarse sandy loam, 2 to 9 percent slopes, stony soils are not listed as hydric soils on the NRCS, Local Hydric Soils Lists.

Beach (Map Unit 7011) consists of beach sand with rapid permeability that formed on the shores of Lake Tahoe. Beach deposits are not listed as hydric soils on the NRCS, Local Hydric Soils Lists.

The proposed project is a restoration project that involves limited excavation of soils. This project would not change the soils or topography of the project area. As a result there would be no effect to soils or topography as a result of the project.

3.1.4 Land Use

Land use within and surrounding the project area is regulated by the TRPA, the Community of Incline Village, and Washoe County. All agencies use the TRPA Plan Area Statements (PASs) as guidelines for determining appropriate land use and zoning within the Tahoe Basin. The TRPA has divided the basin into approximately 175 Plan Areas and each of the Plan Areas includes a PAS that describes general policies, permissible land uses, remedial action programs, and developmental limits. The project area is located within the 048-Incline Village Tourist Community Plan Area, which is designated by the TRPA as a SEZ Special Area (Washoe County, 2008). Activities within this zone are generally limited to restoration, erosion control, and revegetation projects by TRPA policies (TRPA 1991). Recreational uses are also permitted in portions of the SEZ. There would be no change in land use as a result of the proposed project.

3.1.5 Esthetics

The Lake Tahoe Basin is well-known for its scenic beauty and esthetics. The Tahoe Center for a Sustainable Future (1997) reports that 80 percent of visitors come to the area to enjoy the esthetic beauty of the lake. The project area offers views of local commercial and residential development in Incline Village, as well as distant views of the Lake and the rugged surrounding mountains.

Portions of the project area are visible from SR 28, Lakeshore Boulevard, Incline Way, and surrounding upland and urban areas. Both Third and Incline Creeks are viewed primarily by residents, visitors, and outdoor enthusiasts near the streambanks and by motorists traveling on local roadways. Effects to esthetics would be primarily temporary during construction and minimal as the culverts at Incline Way can only be viewed when standing along the streambank, and there is no established trail or roadway that these structures would be viewed from. Over the long-term, the Restoration Project would also restore native riparian vegetation along Third and Incline Creeks, thus improving the visual character of the area.

3.1.6 Socioeconomics/Environmental Justice

Socioeconomic conditions in the vicinity of the project area include population, employment, housing, and public utilities and services. According to the 2000 census, the population of Incline Village and Crystal Bay was 9,952 (Census 2000).

Tourism and recreation provide the largest share of both revenue and employment for the economy in the Lake Tahoe Basin. The visitor population to the area has increased over the last 20 years and is currently estimated to average around 2.2 million people per year. Approximately eighty percent of all jobs in the Lake Tahoe Basin are related to or dependent upon tourism, with the gaming industry and ski resorts comprising the largest employers.

Executive Order 12898 directs all Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. Minority population is defined as including all non-white racial groups and Hispanics of any racial group; low-income population is defined based on Federal poverty thresholds. Temporary construction-related effects as a result of the Restoration Project to adjacent residential properties including traffic, noise, or visual effects would not have a disproportionate effect to low income and/or minority populations because there are no low income and/or minority populations living adjacent to the project area.

3.1.7 Hazardous, Toxic, and Radiological Waste

The Corps conducted a Phase I Environmental Site Assessment (ESA) in December 2001 and May 2002 in the Third Creek and Incline Creek areas. The purpose of the ESA was to identify any existing or potential hazardous, toxic, or radiological waste (HTRW) or other substances that could affect construction along Third, Incline, or Rosewood Creeks. A literature search, phone interviews, and site visits were conducted in order to compile information for the ESA.

The ESA did not confirm any known contamination due to HTRW in the project area. Data research and phone interviews identified 25 sources of potential contamination within one mile, but all of these sources were investigated and considered

closed cases by regulatory agencies and would not interfere with proposed construction and/or restoration activities (Corps, 2002).

The Restoration Project construction activities do not explicitly involve the use, release, or transport of hazardous, toxic, or radiological materials. However, traditional use of heavy construction equipment often involves the use of substances which could be considered hazardous, such as various fuels and oils. While the use of heavy construction equipment may increase the risk of a fuel or oil spill, proper mitigation measures taken to minimize the risk of spills and limit the impacts from such spills can ameliorate the situation to the point that potential risks of hazardous spills would be less than significant (see Section 3.2.1.3, Spill Control).

3.1.8 Flooding

Within the Third and Incline Creek Watersheds a range of natural and human-induced changes in the flow and sediment regime have occurred over the past 100 to 150 years. The urbanization that occurred within the vicinity has resulted in channel incision on the lower reaches of both Third and Incline Creeks. This has resulted in a disconnection of the creeks from their adjacent floodplains reducing the frequency and extent of overbank flooding. In the area below the three culverts and immediately upstream, there are no houses located in the flood plain that are subject to flooding.

For culvert designs at Incline Way and Lakeshore Boulevard on Third and Incline Creeks, information was obtained to estimate 100-year peak flow for both creeks (Entrix 2010). Previous modeling of the watersheds had overestimated the peak flows relative to stream gauge information. In 2010, the estimated peak flow was updated on the basis of available USGS stream gauge information for both creeks (Entrix 2010).

Table 3: Estimated 100-year Flow for Third and Incline Creeks.

Source	100-Year Peak Flow	
	Third Creek (cfs)	Incline Creek (cfs)
John Webster Brown Civil and Structural Engineers (1967)	2,560	2,750
Sacramento District, Army Corps of Engineers (1979)	1,040	1,150
Sacramento District, Army Corps of Engineers (2000)	1,333	698
USGS, Analysis of Tahoe Basin Data (2005)	230 ¹	158 ^{2,3}
ENTRIX	195 ¹	217 ²

Source: Entrix, 2010

1 – at USGS station 10336698. Watershed area = 6.05 square miles

2 – at USGS station 10336700. Watershed area = 6.74 square miles

3 – USGS did not include 1997 peak in the calculation. 1997 peak flow estimated by USGS to be 179 cfs.

The alternatives analysis and design for the Project culverts uses the estimate of 230 cfs for the Third Creek 100-year flow to maintain consistency with the restoration work downstream of the culvert completed in 2009, and because this discharge is slightly more conservative than the ENTRIX number of 195 cfs. For Incline Creek, the alternatives analysis would use the ENTRIX estimate of 217 cfs. This is considered a better estimate than the USGS estimate of 158 cfs because the USGS estimate does not consider the 1997 flood of 179 cfs in the analysis. The estimated flows for several return periods used in the alternatives analysis are shown in Table 4.

Table 4: Peak Flows to be used in the Alternatives Analysis.

Creek	2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)
Third Creek	57	130	170	230
Incline Creek	38	111	153	217

The existing culverts at Third Creek and Incline Way are not sufficient to convey water under the road and overtopping of the road is expected during a 100-year event. On Incline Creek at Lakeshore Boulevard, the existing backwater created by the existing culvert, forces water to leave the channel on the right bank (facing downstream) and flood into the adjacent parking lot and Lakeshore Boulevard. Because of the ground topography, this overflow does not reenter Incline Creek, but most likely flows across Lakeshore Boulevard and into the beach club and eventually Lake Tahoe. The culvert replacement and design proposed for Third and Incline Phase II would maintain flood water in the channel. This would reduce flood damage to roads and other public works. The final design of the replacement structures and the downstream channel would accommodate the flood flow within the channel and with non-erosive velocity. As a result, the proposed project would have a potentially beneficial effect on flooding. The proposed project would not have a significant effect on flooding.

3.2 Resources Considered in Detail

3.2.1 Water Resources and Quality

3.2.1.1 Existing Conditions

Water Resources. Water resources within the restoration project area include two perennial streams, Third Creek and Incline Creek.

Third and Incline Creek watersheds are similar in size. Third Creek drains a total area of approximately 6.03 mi² and Incline Creek drains approximately 6.98 mi² (Corps, 2002). Both watersheds drain the steep mountains to the east of Incline Village. The upper reaches of the watershed are undeveloped forest sub-alpine areas. The lower reaches are urbanized with residential and commercial developments. Urbanization within the lower reaches has caused hydrologic changes that have resulted in adjustments in the channel morphology. The primary source of surface water for both creeks is runoff

from rainfall and spring snowmelt. The gradients are steep in the mountains and very low in the lower reaches from Tahoe Boulevard (SR 28) to Lake Tahoe.

Habitat features such as meanders, overhanging banks, vegetated banks, pool, riffles and substrate diversity are scarce or absent from the lower section of the unrestored areas of Third and Incline Creeks. This is due to development and the subsequent increase of impervious surfaces within the project area since the 1950s. An increasing proportion of water is conveyed to Third Creek in the form of stormwater runoff from residential developments, commercial/industrial developments, and roadways. Urban stormwater is conveyed to both Third and Incline Creeks via storm drains, roadside ditches/gutters, and overland flow.

Both Third and Incline Creek watersheds have been modified from their natural conditions by past land use practices including: logging, livestock grazing, fire exclusion, and urban development. The lower portion of the watersheds near the project area include residential and commercial development. This land use originated in the late 1950's when the Boise Cascade Corporation subdivided the area. Urbanization of the watersheds in the 1970's has increased the amount of impervious surfaces including roads, parking lots, and buildings which have decreased infiltration capacity while increasing peak flows during run-off events (Corps, 2004). Most of the roadway development began prior to stringent water quality regulation. Streams were routinely channelized and relocated to accommodate buildings and roadways without appropriate geomorphic/hydraulic design consideration. Combined with steep slopes in the upper watershed and thin top soils (including erodible soil types), erosion and sediment transport has increased substantially without the stream's ability to reach new restoration equilibrium and provide higher water quality conditions needed by salmonids and other native fishes that are found in the creek and Lake Tahoe (TRPA, 2000). The combined activities have contributed to accelerated erosion, increased sedimentation, constricted floodplains, as well as degraded riparian, wetland, and fish habitats.

Water Quality. Third Creek is currently listed in the State of Nevada's, Division of Environmental Protection 303(d) Impaired Waterbodies List for dissolved zinc and Incline Creek is listed for dissolved zinc and iron (NDEP 2009). Water quality within Third and Incline Creeks, particularly within the project area is a concern to both TRPA and NDEP because they discharge directly to Lake Tahoe and the project area is within close proximity of the Lake. In order to comply with Lake Tahoe's Water Quality Management Plan, established under requirements of the Clean Water Act, TRPA has identified the restoration project as a priority EIP project for soil and SEZ restoration. IVGID would be responsible for obtaining 401 Water Quality Certification from NDEP as well as a 404 Permit from the Corps prior to project construction.

3.2.1.2 Effects

Basis of Significance. An alternative would be considered to have an adverse significant effect on water quality if it would substantially degrade water quality, contaminate a public water supply, substantially degrade or deplete groundwater

resources or interfere with groundwater recharge, or expose sensitive species or humans to substantial pollutant concentrations.

No Action. This alternative would continue to result in less than optimal water quality conditions needed by salmonids and other native fishes inhabiting Third and Incline Creeks and its terminus at the outlet where it empties into Lake Tahoe. The future condition of water quality for Third and Incline Creeks, and at the outlet at Lake Tahoe, would likely continue to degrade and gradually worsen over time. The removal of riparian vegetation and its root mass, resulting in the further erosion of fine sediments into the stream, would continue to have adverse effects on fish and wildlife and their aquatic/riparian habitat. The riparian vegetation maintains bank stability and water quality for fish and wildlife by keeping soil in place and filtering out the fine sediment. In addition, due to existing debris blockage of Third and Incline Creek culverts at Incline Way, there would remain the potential for scour to surrounding areas and sediment erosion during storm events.

Preferred Alternative. Project activities would have substantial long-term benefits, as well as temporary benefits to water quality and area drainage patterns. The project would achieve compliance with NDEP's National Pollutant Discharge Elimination System (NPDES) Stormwater General Permit (No. NVR100000), Temporary Discharge and Working in Waters (WIW) Permit, and 401 Water Quality Certification. The erosion control and habitat restoration that would be achieved through project implementation would have long-term benefits to the water quality of the surface waters draining from the restoration project area into Lake Tahoe. The culvert replacements at Lakeshore Blvd and Incline Way would restore natural water quality functions including over bank flooding within a geomorphically sized channel and would reduce the potential for scour to surrounding and downstream areas during storm events. This restoration would provide for streambank stability due to revegetation efforts and grade controls installed both upstream and downstream of replaced culverts and at appropriate locations along the Third and Incline Creeks. A stable and restored stream channel would achieve sediment source reduction goals of the EIP.

Construction activities that could have potential temporary effects to water quality include removal of existing culverts, construction of a new low-flow channel and floodplain at the roadway stream crossings, streambank stabilization treatments, and fish passage improvements including channel roughness features and gravel bars. Dewatering and other mitigation measures described in Section 3.2.1.3 below would be implemented during project construction to mitigate for short term temporary effects, such that there would be no significant effects to water resources as a result of the restoration project.

While there is the potential for effects to downstream water quality as a result of a discharge of sediment during construction, failure of streambank stabilization treatments, or discharge from a utility line within the area of construction, appropriate BMPs and mitigation measures would be utilized to mitigate potential effects to water quality to a less than significant level. Through the implementation of the mitigation measures in

Section 3.2.1.3, there would be no significant direct or indirect effect to water resources as a result of the project.

3.2.1.3 Mitigation

During construction, flow within Third and Incline Creeks would be diverted via appropriate BMPs around active construction areas until the channel has been stabilized. Following stabilization, the BMPs would be removed and flows restored to the channel. The final project design and restoration project would not adversely alter the course, or hydraulic functions of the 100-year flood event. The Conspan culverts and Bridge at Lakeshore Boulevard have been designed to accommodate a 100-year event while not increasing the potential for scour or erosion to downstream areas. The project will comply with applicable restrictions for work within the floodplain including FEMA, State of Nevada Floodplain Management Program, and TRPA requirements.

Permitting. Section 404 of the Federal CWA requires authorization from the Secretary of the Army for the discharge of dredged or fill material into waters of the United States (WOUS). IVGID is responsible for requesting Corps authorization for General Permit (GP) 16. GP 16 has been authorized for activities with minimal individual or cumulative effects to WOUS in the Lake Tahoe Basin, including restoration of stream channels and wetlands, which is the purpose of the restoration project. IVGID will be required to comply with the conditions of GP 16, including but not limited to, providing compliance documentation to the Corps upon completion of the project and obtaining 401 Water Quality Certification prior to project implementation.

Construction activities would be implemented in full compliance with the TRPA Compact, as amended, the TRPA Code of Ordinances, and Section 401 of the Clean Water Act. Moreover, the mitigation measures and BMPs would be utilized to address potential negative effects to water resources and quality discussed above. IVGID would be responsible for developing a Storm Water Pollution Prevention Plan (SWPPP) consistent with NPDES guidelines, which would further detail the appropriate mitigation measures. IVGID and the Contractor would also be responsible for compliance with measures of the WIW Permit.

Dewatering. A phase specific dewatering plan would be developed for each phase of work and would be provided to NDEP and TRPA for review prior to construction. A dewatering plan for work proposed in 2010 is provided in Plate 3. Diversion structures such as sandbags and appropriate BMPs would be installed upstream and downstream to divert water away from areas where active construction is occurring. A dewatering pipe and noise attenuated pumps would be placed upstream of a sandbag dam and would divert the creek flow around the area of construction and back into Third and Incline Creeks. A discharge dissipater would be installed downstream of the active work area where flows would be discharged back into Third and Incline Creeks. Localized pumping would be used to hydraulically contain turbid groundwater or standing water as a result of excavation of saturated soil. Turbid water would be pumped into a detention basin or treated in a dirt bag for infiltration. Prior to release of creek flows into restored

areas of the Third and Incline Creeks, re-wetting flows would be released over restoration features to wash excess sediment from the area. Water resulting from the flush would be pumped and treated as described above. This process would be repeated until the channel is flushed clean of debris and the water at the downstream end of the site meets the water quality standards for the TRPA and the NDEP. The IVGID and their Construction Manager would be responsible for developing and implementing a water quality monitoring plan to ensure water quality standards are met prior to release into Third Creek or Incline Creek channels downstream of the restoration activities.

Utilities. IVGID would be responsible for coordinating with the construction contractor and for managing utilities including the two sanitary sewer force mains located at Incline Way. Proper planning, protocols, and BMPs for construction in and around utilities would be followed. Proper BMPs include, but are not limited to the use of a back up sewer line during construction. In addition, when construction is within two feet of a utility line all digging would be conducted by hand. Activities around utility lines would be conducted in compliance with State of Nevada requirements.

Temporary Sediment and Erosion Control BMPs. The following temporary sediment and erosion control BMPs have been developed to work within the guidance of applicable regulatory requirements. Temporary BMPs would be reviewed by the TRPA and NDEP resource specialists to ensure they meet agencies required standards. During construction, a temporary access road would be implemented to control traffic to access roads, reduce overall land coverage and soil compaction within the SEZ, and manage potential stormwater runoff. Temporary BMPs would also include construction limit fencing, filter fencing, protection of existing vegetation, sediment logs, storm drain protection, entrance/exit track-off protection, necessary slope stabilization with erosion blankets and field maintenance and adjustments to existing temporary BMPs. BMPs would be consistent with TRPA “Handbook of Best Management Practices,” as well as Federal and state permit conditions including Corps, NDEP, and NDOW permits. Daily BMP inspections during construction would be conducted and remedial actions would be taken should deficiencies be noted.

An internal drainage system would be constructed and maintained within the project site during construction activities to contain runoff within the project boundary and prevent it from exiting the site. Localized pumping would be used to hydraulically contain turbid groundwater or standing water that occurs as a result of excavation of saturated soil, as well as any stormwater runoff generated within construction areas. The dewatering plan above would be implemented for each construction phase.

The project site would be fully winterized according to TRPA and NDEP requirements at the end of the construction season (i.e. no later than October 15th). The following winterization measures would be adhered to: maintain all temporary erosion control including filter fencing and coir logs; revegetate all disturbed areas; clean up and remove all construction site waste including trash, debris and spoil piles.

Spill Control. Construction vehicles and equipment would be limited to restricted areas and would only be serviced in specific areas with BMPs that would prevent accidental spills of fluids, oils and lubricants from entering surface water. Vehicle and equipment staging, storage and service areas would be located on existing paved parking areas. Any spills of hazardous materials that occur would be reported to the NDEP and the TRPA and response protocols for immediate cleanup, as outlined in the SWPPP, would be implemented. Construction equipment would be cleaned to remove any loose dirt or sediment prior to exiting the site. Equipment and vehicle washing would take place in an area stabilized with crushed stone, and drain to an approved sediment trap or basin. Street sweeping and vacuuming equipment would be available to remove sediment from streets, parking lots and roadways as required.

Permanent Erosion and Sediment Control BMPs. The Third and Incline Creek stream channels around the culvert replacements would be stabilized through re-grading, installation of grade control structures, and revegetation of Third and Incline Creek streambanks. Permanent BMP features will include a newly constructed low-flow rock rip-rapped channel within the culverts and native revegetated floodplain areas. Streambanks would be vegetated with species to reduce human impacts to the stream corridor and native riparian vegetation to reduce streambank erosion. Grade control structures would be installed below and above the replaced culverts. The final design of the restoration areas, particularly along Third and Incline Creeks between Lake Tahoe and Lakeshore Boulevard and between Incline Way and SR28 would be subject to further coordination with the permitting agencies to achieve full compliance with local, state and Federal water quality requirements.

Revegetation. To prevent areas of disturbed soil from contributing sediment to waters within the project area, disturbed areas including access roads would be revegetated. Native vegetation and mulch, preferably from within the Tahoe Basin, would be applied. Where appropriate, native plants, rock, wood and soils salvaged from project excavation would be used in revegetation of areas disturbed for construction access. In addition, revegetation would be applied to informal access trails that are existing sediment sources to Third and Incline Creeks. Revegetation would be conducted as soon as practicable to stabilize the ground after construction is completed in an area, and no later than 90 days after construction.

3.2.2 Vegetation and Wildlife

3.2.2.1 Existing Conditions

Upland and riparian habitats with small wetlands adjacent to Third and Incline Creeks are present in the project area (Corps, 2009). Upland areas within the restoration project area are comprised primarily of a mixed-conifer vegetation community with a montane understory. A plant list for the project area is included in the wetland delineation report prepared by Huffman & Carpenter, Inc. (Corps, 2009). In addition, wet meadow and riparian vegetation communities occur within the project area. The mixed-conifer vegetation community is dominated by Jeffrey pine (*Pinus jeffreyi*) and

white fir (*Abies concolor*). The montane understory is comprised of greenleaf manzanita (*Arctostaphylos patula*), antelope bitterbrush (*Purshia tridentata*), and Sierra currant (*Ribes nevadense*). Additional shrub cover within the project area includes Sierra gooseberry (*Ribes roezlii* var. *roezlii*), mountain whitethorn (*Ceanothus cordulatus*), snowbrush ceonanthus (*Ceanothus velutinus*), and tall Oregon grape (*Berberis aquiflorum* var. *aquifolia*). Common groundcover is provided by squaw carpet (*Ceanothus prostrates*), sparse grasses and forbs, and thick pine-needle duff. The riparian vegetation community is comprised of alder (*Alnus incana* var. *tenuifolia*), two types of willow (*Salix lemmonii* and *S. lucida* var. *caudate*), quaking aspen (*Populus tremuloides*), Wood's rose (*Rosa woodsii*), and currants. Small wetland habitats are present directly adjacent to the Incline Creek (Corps, 2009). The wetland areas are dominated by herbaceous plants including small-fruited bulrush (*Scirpus microcarpus*), liverleaf wintergreen (*Pyrola aserifolia*) and Kentucky bluegrass (*Poa pratensis*), horsetail (*Equisetum* species) and wetland graminoids in the understory.

Due to past ground disturbance associated with development, landscaping and past restoration with no post-construction maintenance effort, there are a large number of non-native plants within or adjacent to the study area. Two of these non-native, spotted knapweed (*Centaurea maculosa*) and Fuller's Teasel (*Dipsacus fullonum*) are considered Noxious by the State of Nevada and the Lake Tahoe Basin Management Unit of the U.S. Forest Service (LTBMU). Two other weed species, bull thistle (*Cirsium vulgare*) and Ox-eye daisy (*Leucanthemum vulgare*) are listed in Group 2 with the LTBMU, which requires that they are treated with the goal of eradication. These species are spread throughout the study area in open, disturbed lands and on the edges of landscaped areas.

In 2008, the Nevada Fire Safe Council conducted a forest fuels reduction project between Lakeshore Boulevard and SR 28 along Third Creek. To reduce fire risk, trees were removed and the understory was cleared as a part of this fire safety effort. These trees were either chipped onsite or removed from the site in 2008. The reduction in vegetation density has allowed for increased recreational use and potential streambank erosion along Third Creek within areas that were not restored in 2009. This increased pedestrian traffic has led to trampling of the understory in some areas.

Based on NDOW records, the following migratory bird species have been known to occur, or still occur in or near the restoration project area: American Kestrel (*Falco sparverius*), Western Screech-Owl (*Megascops kennicottii*), Northern Saw-Whet Owl (*Aegolius acadicus*), Northern Pigmy Owl (*Glaucidium gnoma*), Great Horned Owl (*Bubo virginianus*), Flammulated Owl (*Otus flammeolus*), Northern Goshawk (*Accipiter gentilis*), Sharp-shinned Hawk (*Accipiter striatus*), Osprey (*Pandion haliaetus*), Cooper's Hawk (*Accipiter cooperii*), and Chickadee (*Poecile atricapilla*). In addition porcupine (*Erethizon dorsatum*), Douglas squirrel (*Tamiasciurus douglasii*), and Pacific treefrog (*Hyla regilla*) were identified within the area during biological surveys (Harding ESE, 2001).

3.2.2.2 Effects

Basis of Significance. An alternative would be considered to have a significant effect on vegetation and wildlife if it would result in the loss or degradation of unique native vegetation, or loss of resident or migratory wildlife species and/or their habitat.

No Action. In the absence of the restoration effort, this alternative would likely continue to result in the loss of riparian vegetation that provides high wildlife values (food, thermal cover, breeding, juvenile rearing, and hiding cover) as the bank erodes away having an adverse effect on wildlife use and distribution along Third and Incline Creeks. The future condition of riparian habitat for Third and Incline Creeks would likely continue to degrade and gradually worsen over time as the existing incised banks continue to erode fine sediments into the stream, native riparian vegetation erodes, and erosion leads to scour or covering over of aquatic habitats needed to support a diversity of terrestrial and aquatic wildlife use and its distribution.

Preferred Alternative. Construction of the restoration project would temporarily disturb the riparian areas along Third and Incline Creeks and the upland areas adjacent to the creeks. The proposed temporary access roads are located in upland areas that contain very little vegetation and the staging areas are located in paved parking lots. Limited riparian vegetation and trees would be removed during removal of the existing culverts and replacement with Conspan culverts and a bridge. There would also be limited vegetation removal during streambank stabilization and aquatic habitat treatments along Third and Incline Creeks. Vegetation that would require removal includes trees and riparian vegetation that is located within the footprint for the new culvert or bridge, and streambank vegetation located within the area where streambank stabilization treatments would be applied. Removed trees would be utilized in implementation of Third and Incline Phase II to the extent possible. Removed trees would be used to construct the log grade control structures where the removed trees meet the specifications for these structures, in streambank stabilization. Other removed riparian vegetation would be reused in the streambank revegetation where practicable.

Approximately 4,700 linear feet of stream habitat would be restored on Third and Incline Creek. Approximately 1 acre would be planted with riparian and terrestrial vegetation. Vegetation species that would be planted/seeded may include, but would not necessarily be limited to the species identified in Tables 5, 6, and 7 below. Prior to construction a final plant list would be developed through coordination with the TAC. These vegetation species would provide a riparian buffer and a migration corridor for avian species and small mammals. The additional cover provided by the vegetation would help to protect the riparian habitat from human encroachment and provide suitable nesting habitat for a variety of wildlife species endemic to the area.

Table 5: Revegetation Seed Mix Upland.

Botanical Name	Common Name/Variety
<i>Achilles mille folium</i>	Yarrow
<i>Artemisia tridentata ssp. vaseyana</i>	Mtn. sagebrush

<i>Bromus carinatus</i>	California Brome
<i>Elymus elymoides</i>	Squirreltail
<i>Elymus glaucus</i>	Blue wildrye
<i>Elymus trachycaulus</i>	Slender wheatgrass, 'Pryor'
<i>Linum lewisii</i>	Lewis flax. 'Apar'
<i>Lupinus argenteus</i>	Silver lupine
<i>Poa ampla</i>	Big bluegrass, 'Sherman'
<i>Purshia tridentate</i>	Antelope bitterbrush
<i>Ribes cereum</i>	Wax currant
Total	

Table 6: Revegetation Seed Mix Riparian/Wetland.

Botanical Name	Common Name/Variety
<i>Bromus carinatus</i>	California brome
<i>Carex praegracilis</i>	Slender sedge
<i>Deschampsia cespitosa</i>	Tufted hairgrass
<i>Elymus glaucus</i>	Blue wildrye, "Stanislaus"
<i>Elymus trachycaulus</i>	Slender wheatgrass, "Revenue"
<i>Hordeum brachyantherum</i>	Meadow barley, from 6,000' and higher
<i>Juncus balticus</i>	Baltic rush
<i>Leymus triticoides</i>	Creeping wildrye "Shoshone"
<i>Lupinus polyphyllus</i>	Tahoe lupine
<i>Mimulus guttatus</i>	Common monkeyflower
<i>Poa pratensis</i> *	Kentucky bluegrass
<i>Potentilla gracilis</i>	Cinquefoil
Totals	

* Local collections

Table 7: Revegetation Plant List.

Botanical Name	Common Name/Variety
<i>Carex nebrascensis</i>	Nebraska sedge
<i>Juncus balticus</i>	Baltic rush
<i>Juncus ensifolius</i>	Equitant rush
<i>Amelanchier alnifolia</i>	Saskatoon serviceberry
<i>Cornus sericea</i>	Redosier dogwood
<i>Populus tremuloides</i>	Quaking aspen
<i>Prunus virginiana</i>	Chokecherry
<i>Ribes nevadense</i>	Sierra currant
<i>Rosa woodsii</i>	Wood's rose

Any resident or migrating wildlife could be temporarily disturbed and/or displaced due to noise and activity during construction. Displaced species would be expected to return to the enhanced riparian area once construction is complete. There would be no potential indirect effects to vegetation or wildlife as project effects would be

contained within the project area. Restoring riparian habitat would benefit wildlife because it would increase structure and diversity within the riparian areas and remove fish barriers. With the implementation of the mitigation measures described below, there would be no significant effect to vegetation or wildlife as a result of this project.

3.2.2.3 Mitigation

Prior to the proposed removal of trees, a qualified forester would mark trees for removal. During construction, removal of mature trees would be avoided when possible, and other trees in the work area would be protected with fencing. Wherever feasible, native riparian vegetation would be preserved or salvaged for replanting within the restored stream channel. Large woody material from unsalvageable riparian vegetation would be used as cuttings for stake plantings. BMPs required by TRPA would be implemented to minimize effects of traffic or equipment on soil or vegetation and low-impact equipment would be utilized. Upon the completion of construction, disturbed and excavated areas, including temporary access roads, would be revegetated or stabilized where needed. Salvaged riparian vegetation would be propagated and used where possible. Additional seed or vegetation would be added where needed for stabilization measures and for wildlife habitat enhancement. Seed used in revegetation shall be certified weed-free.

Existing noxious weeds would be removed during construction and noxious weed monitoring and removal would continue following construction for a period of three years. Weed removal would be a benefit to the establishment of native vegetation and SEZ vegetation in this area. A post-construction noxious weed abatement program would also be implemented to control for noxious weeds listed by the Nevada Department of Agriculture. In addition to planting/seeding, areas disturbed during construction would be treated with soil inoculants, wood chips, mulch, and tackifier as needed. Post-construction monitoring of revegetated areas would be conducted for a minimum of two years and until vegetation success has been achieved.

Where feasible, management activities that require the removal of trees and shrubs should be conducted outside the avian nesting season (April 1 through August 15). If vegetation removal during the avian nesting season is required, surveys would be conducted by a qualified biologist prior to vegetation removal. The project proponent would retain a qualified biologist to conduct a focused survey for active nest sites of migratory birds in accordance with the Migratory Bird Treaty Act (MBTA) within a 1/8 mile radius of the project area prior to (i.e. within fifteen days) the onset of construction activities initiated during the nesting season. If active nests are located during the preconstruction surveys, the biologist shall consult with Nevada Department of Wildlife (NDOW) and United States Fish and Wildlife Service (USFWS), as required to determine the appropriate buffer around the nest. In addition, all trash created during construction would be properly contained in wildlife-proof containers and removed at the end of each day.

3.2.3 Fisheries

3.2.3.1 Existing Conditions

Aquatic environments that support fisheries in the Lake Tahoe Basin include lake and stream habitats. Both aquatic habitats provide fish with water, cover, and spawning and nursery habitat. As well as restoring Lake Tahoe’s water quality and supporting its fisheries, the justification for this aquatic and riparian restoration effort and fish passage improvement is the significance and unique importance of Third and Incline Creeks. These creeks are the only tributaries flowing directly into Lake Tahoe on the Nevada side of the lake and used by salmonids for spawning. Both environments are critical in sustaining fisheries in Lake Tahoe because some fish species use both lake and stream environments to fulfill their life cycles. The chemical, biological, temperature, and physical condition of the lake and stream environments influence the ability to sustain a healthy, diverse population of fish species in Lake Tahoe. Fish species known to occur in the restoration project are listed in Table 8.

Table 8: Lake Tahoe Fish Species and Spawning Periods.

Common Name	Scientific Name	Spawning Period	Native or Introduced
Brook trout	<i>Salvelinus fontinalis</i>	Fall (mid-September to early November)	Introduced
Brown trout	<i>Salmo trutta</i>	Fall (mid-September to early November)	Introduced
Rainbow trout	<i>Oncorhynchus mykiss</i>	Spring (late April to early May)	Introduced
Kokanee salmon	<i>Oncorhynchus nerka</i>	Fall (mid-September to early November)	Introduced
Tahoe sucker	<i>Catostomus platyrhynchus</i>	Spring	Native
Paiute sculpin	<i>Cottus beldingi</i>	Spring/Summer (May-June)	Native
Lahontan redbside	<i>Richardsonius egragious</i>	Spring/Summer (late May to early August)	Native
Lahontan speckled dace	<i>Rhinichthys osculus robustus</i>	Summer (June – July)	Native
Mountain whitefish	<i>Prosopium williamsoni</i>	Fall	Native

(Source: Corps, 2004)

Entrix (2009) conducted fish rescue on Third Creek prior to dewatering for the summer 2009 restoration work. The majority of the fish identified were brook trout (*Salvelinus fontinalis*) and rainbow trout (*Oncorhynchus mykiss*). The only other species identified was a single Lahontan redbside (*Richardsonius egregious*).

The Nevada Division of Wildlife (NDOW) relies on the adult spawning population as an egg source for a rearing and stocking program. NDOW and the California Department of Fish and Game (CDFG) (who have co-jurisdictional

responsibility for administering the management of fisheries in Lake Tahoe) have a joint stocking program on Third Creek and Incline Creek. The TRPA coordinates with NDOW for management of fish habitat, diversity, and population within the Lake Tahoe Basin. The TRPA Regional Plan was developed to manage fish resources in Lake Tahoe and includes environmental thresholds, goals and policies for fisheries in the Basin. The TRPA policies for fisheries are: “(1) consider and mitigate project effects to fish habitat in streams and lakes, (2) prohibit the development of blockages or other impediment to fish movement within streams, (3) develop an in-stream maintenance program to inventory and remove stream barriers, (4) establish boating standards to reduce associated disturbance in the shallow zone, (5) encourage habitat improvement projects in streams and lakes, (6) maintain and enhance in-stream flows, (7) ensure that existing points of water diversion from streams are transferred back to the lake whenever feasible, (8) support State and Federal efforts to reintroduce Lahontan cutthroat trout, and (9) control the level of Lake Tahoe to reflect season weather and runoff patterns” (TRPA, 2007).

The threshold standard adopted by TRPA to manage fisheries in Lake Tahoe are: “(1) achieve the equivalent of 5,948 acres of excellent fish habitat, (2) maintain 75 miles of excellent, 105 miles of good, and 38 miles of marginal stream habitat as indicated by the Stream Habitat Quality Overlay map, (3) ensure that a non-degradation standard applies to in-stream flows until in-stream flow standards are established in the Regional Plan, and (4) support State and Federal efforts to reintroduce Lahontan cutthroat trout” (TRPA, 1986).

Fish productivity in both Third and Incline Creeks are significantly impaired under existing conditions. Access for spawning by migratory fish to Third Creek from Lake Tahoe is severely limited by depth barriers due to an oversized channel from Lakeshore Boulevard to Lake Tahoe and the existing culverts at Incline Way. On Incline Creek upstream migration is impaired by culverts at Lakeshore Boulevard, Incline Way, Tahoe Boulevard (SR 28) and a poorly designed USGS stream gauge. Likewise, the connectivity of habitat for resident fish (i.e. the ability of fish to move from one reach to another) is similarly limited. The culverts particularly during low flows, are a leap barrier to trout, kokanee, and native fish populations. Past observances have indicated that kokanee have attempted to pass upstream in Third Creek when there were adequate flows in the fall. However, existing conditions have imposed significant barriers to this fall spawning (Corps, 2009). In addition, spawning and rearing habitat is covered with fine sediments along several locations, since the existing culverts prevent flushing flows and recruitment of spawning gravel and cobble.

3.2.3.2 Effects

Basis of Significance. An alternative would have a significant effect on fisheries if it would result in the loss or degradation of resident fish species and/or their habitat.

No Action. In the absence of the restoration effort, the existing fish passage barriers, including depth and leap barriers, within lower Third and Incline Creeks would remain. There would continue to exist limited aquatic habitat between Lakeshore Blvd

and Lake Tahoe on both Third and Incline Creeks. The future condition of restricted fish passage, except during the short period of time when there are conducive flows for fish to pass through the culverts, and the continual loss of riparian habitat would likely result in the further degradation of the creeks and their terminuses at Lake Tahoe. This situation would gradually worsen over time as the existing incised banks continue to erode fine sediments into the stream and as the sloughing banks remove native riparian vegetation and scours or covers aquatic habitats needed to support fisheries use, population growth, and its distribution.

Preferred Alternative. The project could have temporary construction related effects on aquatic resources during construction within the existing creek channel, if unmitigated. Work is proposed to include bank stabilization activities, construction of new aquatic habitat features, grade control structures, and removal and replacement of three culverts. During channel construction, water would be temporarily diverted from a portion of the existing channel while restoration construction is underway. Effects to aquatic resources could occur during these time periods if proper mitigation measures are not applied. Mitigation measures for fisheries are discussed in Section 3.2.3.3 below. Through the implementation of these mitigation measures, no significant direct or indirect effect to fisheries would occur as a result of the restoration project.

The restoration project would provide benefits to fisheries and aquatic resources. Benefits to fisheries and aquatic resources include the improvement of aquatic habitat, as well as access to upstream habitat that is currently blocked by culverts impassable during low flows. Restoration of the stream channels and streambanks would improve fish habitat through the creation of pool complexes, shade cover, and foraging habitat. Benefits also include improved rearing and spawning conditions for fish and increased habitat for macroinvertebrate populations. The restoration project is expected to provide immediate and long term benefits to local fish populations. The removal of fish barriers would provide increased spring or fall spawning opportunities for rainbow trout, brown trout, kokanee, and in particular, allow higher chance of survival by increasing the upstream and downstream movement for adult and juvenile fish to more easily occupy other areas and escape predators or contaminated water if an accidental spill at one of the road crossings occurs. The restoration project supports the TRPA's environmental thresholds, goals and policies for fisheries in the Lake Tahoe Basin.

3.2.3.3 Mitigation

Construction activities would be conducted outside of the spring spawning season (March – May) and would not affect the NDOW and California Department of Fish and Game (CDFG) spawning program. Restoration of the lower portions of Third and Incline Creeks that are expected to provide improvements to fall spawning would occur last. Culvert restoration would be conducted in late summer/early fall when flows within Third and Incline Creeks would be minimal. Fish rescue would be performed prior to dewatering or partial diversion of water from the stream or other aquatic habitats in the project area where fish could be present, in order to avoid stranding of fish during construction activities. A scientific collection permit would be obtained from NDOW prior to fish rescue. The removal and relocation of fish shall be performed by qualified biologists in accordance with NDOW requirements using techniques such as electrofishing and seining. Captured fish would be relocated to viable and comparable habitats in the immediate vicinity that remain undisturbed for the duration of construction activities. During construction activities, BMPs would be used to prevent sediment from entering the restoration project and disturbing fish habitat. With the implementation of these mitigation measures, temporary effects to fisheries during construction would be less than significant.

3.2.4 Special Status Species

3.2.4.1 Existing Conditions

In order to assure proper protection of species, which are designated with a heightened level of concern, efforts have been made to discover and evaluate the presence of special status species within the restoration project area. Special status species are herein defined as: those listed as threatened, endangered, or as candidates for listing by the US Fish and Wildlife Service (USFWS). The USFWS, the Nevada Natural Heritage Program (NNHP), and the Nevada Division of Wildlife (NDOW) were consulted regarding special status species that could potentially occur in and/or near the project area. In addition, the Corps has been coordinating with the USFWS for the restoration project in compliance with the Fish and Wildlife Coordination Act. A copy of the USFWS Planning Aide Letter is included in Appendix A.

In October 2009, the Nevada Natural Heritage Program database and USFWS (Reno) Endangered Species Listing resources were consulted to obtain a current listing of threatened, endangered, and candidate species within or near the restoration project area (Appendix A). No federally listed threatened, endangered, or candidate species are known to occur within the area.

3.2.4.2 Effects

Basis of Significance. An alternative would be considered to have a significant effect on special status species if it would result in the take of a Federally listed threatened or endangered species, adversely affect designated critical habitat, or

substantially affect any other special status species, including degradation of its habitat to the degree of jeopardizing the continued existence of the species or critical habitat.

No Action. This alternative would have no effects on Federally listed special status species or their existing habitat in the project area. However, there would also be no improvement to habitat for potential special status species.

Preferred Alternative. Construction activities associated with the project's culvert replacement, streambank stabilization, aquatic habitat improvement, and riparian habitat restoration components are deemed to have no effect to special status species. Based on the assessment of the potential for special status species and because there are no known occurrences of special status species in the area, the Federal agencies are not required to initiate formal Section 7 consultation with the USFWS and submit a Biological Assessment nor request a Biological Opinion on federally listed species. Thus, there would be no direct or indirect effects to Federally listed threatened or endangered species as a result of the proposed project.

3.2.4.3 Mitigation

There are no effects on Federally listed species since there are no known occurrences in the area, and thereby, the Corps is not required to request section 7 consultation. However, if habitat conditions change as the result of natural or man-made causes forcing listed species to move into the project area prior to construction, the application of the following mitigation measures would reduce potential short-term effects on special status species during construction to a less than significant level. Any sighting of listed species, sensitive species, or location of nest or dens of these species would be reported and a qualified biologist would survey and delineate a protective buffer and consultation would be initiated with the USFWS pursuant to the ESA. If special status wildlife species with agency-mandated protected activity centers and limited operating periods (LOP) are found breeding in the project area, a protected activity center would be delineated by a qualified biologist and a LOP would be implemented. For mitigation measures pursuant to the MBTA see Section 3.2.2.3 above.

3.2.5 Air Quality

3.2.5.1 Existing Conditions

Air Quality Management. Air quality regulation and management is shared by Federal, State, regional, and local agencies. The U.S. Environmental Protection Agency (USEPA) establishes the National Ambient Air Quality Standards (NAAQS) and the TRPA controls or mitigates air pollution through land use decisions and local ordinances. The Washoe County Health District, Air Quality Management Division (Washoe County AQMD), issues permits and is responsible for controlling sources of air pollution and assuring compliance with Federal, State, and local environmental laws governing air quality. Washoe County AQMD has adopted the NAAQS and TRPA's thresholds for air

quality, which are more restrictive than Federal standards for carbon monoxide (CO) and particulate matter of 10 microns or less (PM₁₀) (Table 9).

Table 9: Ambient Air Quality Standards/Thresholds for Federal and TRPA Criteria Pollutants.

Criteria Pollutant¹	Federal Standard²	TRPA Threshold
CO	9.0 ppm per 8-hrs 35.0 ppm per 1-hr	6.0 ppm per 8-hrs
O ₃	0.075 ppm per 8-hrs (2008 std)	0.08 ppm per 1-hr
PM ₁₀	150 µg/m ³ per 24-hrs	50 µg/m ³ per 24-hrs (CA)
PM _{2.5}	15.0 µg/m ³ per Annual (Arithmetic Mean) 35 µg/m ³ per 24-hrs	50 µg/m ³ per 24-hrs (CA)

¹ CO = carbon monoxide. O₃ = ozone, PM₁₀, PM_{2.5} = particulate matter 10 and 2.5 microns or less, respectively.

² Primary Standards per Averaging Time

Air quality conditions are monitored by the Washoe County AQMD at the Incline Village monitoring station located at the public library at 855 Alder Avenue, approximately one mile northwest of the project site. Washoe County AQMD had monitored CO, ozone (O₃), and PM₁₀ at this location since 1993. By multi-agency cooperative agreement, the California Air Resources Board (CARB) began monitoring nitrogen dioxide (NO₂) and PM_{2.5} at this site in 1999. In 2002, the AQMD and CARB discontinued monitoring for CO, PM₁₀, PM_{2.5} and NO₂ (Washoe County, 2008).

The Tahoe Basin, including the project area, is designated as a Federal and State attainment area (TRPA, April 2007). The primary sources of pollutants in the project area are vehicles, wood-burning stoves, and construction activities.

Sensitive Receptors. Sensitive receptors include sensitive land uses and those individuals and/or wildlife that could be affected by changes in air quality due to construction emissions. Sensitive receptors include residents, occasional visitors, and wildlife.

3.2.5.2 Effects

Methodology. Air quality effects were evaluated through identification of all potential air emission sources associated with the project, evaluation of potential emissions, evaluation of existing requirements for their control, and determination of onsite measures to reduce them to a less-than-significant level.

Basis of Significance. An alternative would be considered to have a significant effect on air quality if it would violate any ambient air quality standard, contribute on a long-term basis to existing or projected air quality violation, expose sensitive species or humans to substantial pollutant concentrations, or not conform to applicable, Federal, State, or local standards.

No Action. This alternative would have no effect on existing air quality in the project area. Air quality would continue to be influenced by climatic conditions, wildfires, and local and regional emissions from vehicles, forest fires, and wood-burning stoves.

Preferred Alternative. Construction of the restoration project would have minor short-term effects on air quality. The operation of vehicles and heavy equipment including trucks, backhoes, and excavators would produce emissions such as exhaust and PM₁₀. In addition, there would be short-term increases in PM₁₀ due to clearing and grading, soil excavation, and operation of vehicles and heavy equipment. It is expected that there would be approximately 2-3 pieces of construction equipment on the site at any given time. In addition, this equipment would only be operating during the period of active construction which includes approximately two months a year for a two year construction period. During construction, the area of disturbance would be less than one acre, with limited potential for dust emissions. Due to the limited duration of the project, limited amount of construction equipment involved, and small area of land disturbance, the short term emissions associated with the project are not expected to exceed Federal, State, or regional air quality standards, and no sensitive receptors would be exposed to substantial pollutant concentrations. In addition, there would be no long-term effects on air quality in the region. As a result, there would be no significant direct or indirect effects on air quality.

3.2.5.3 Mitigation

During construction, adjacent area roadways would be swept, roadways and exposed dirt areas would be watered as needed to control dust, and stockpiles and transported material would be covered. In addition, diesel engine idling time would be prohibited for periods longer than 15 minutes.

3.2.6 Traffic

3.2.6.1 Existing Conditions

The roadways near the project area include Tahoe Boulevard (SR 28), Incline Way, and Lakeshore Boulevard, which border the project site to the north and the south, respectively. Roadways within the vicinity of the project site include Village Boulevard to the west and Country Club Drive to the east. Types of traffic on these roadways include cars, sport utility vehicles, trucks, and motorcycles.

The Nevada Department of Transport (NDOT) records traffic counts on the roadways in Washoe County. Table 10 shows the annual average daily traffic (AADT) counts near the Restoration Project area (NDOT, 2007).

Table 10: Traffic Volumes in the vicinity of the Project Area, Incline Village.

Station #	Location	AADT
0310373	SR28, North Shore Rd, .1 mi E of SR-431 (Mt Rose Hw)	12,000

0310379	SR28, Tahoe Bl, 200' E of Village Bl	12,000
0310380	SR28, Tahoe Bl, .2 mi W of the E end of Lakeshore Bl	6,200
0310733	Village Bl, 330' N of Southwood in Incline Village	3,200
0310736	Country Club Dr, 100' N of Lakeshore Bl Boulevard	3,100
0310737	Southwood Bl, 50' S of SR-028 (Tahoe Bl) in Incline Village	5,200
0310749	Southwood Bl, 50' S of SR-028 (Tahoe Bl) in Incline Village	1,900
0310756	Lakeshore Bl, 100' E of Village Bl	4,300

Annual Average Daily Traffic (AADT) volumes obtained from the NDOT 2007 Annual Traffic Count

3.2.6.2 Effects

Basis of Significance. An alternative would be considered to have a significant effect on traffic if it would cause an increase in vehicle traffic that is substantial in relation to the existing load and capacity of a roadway or a substantial deterioration of the physical condition of area roadways.

No Action Alternative. This alternative would have no effects on existing vehicle traffic in the region. The types and volume of traffic would be expected to remain the same.

Preferred Alternative. Third and Incline Phase II would require detouring traffic to other roads in the area while the culverts are replaced on both Incline Way and Lakeshore Boulevard. Proposed traffic control during construction on Incline Way in 2010 is indicated in Appendix B on Sheets TC-1, TC-2, and TC-3. Construction of each culvert would require closure of Incline Way and rerouting of traffic for a period up to three weeks. Following that period, traffic could be reduced to one-lane for an additional period during paving.

Heavy equipment would access the project site from either Incline Way or Lakeshore Boulevard for replacement of the culverts. Restoration of Third and Incline Creeks between Lakeshore Boulevard and Lake Tahoe and between Incline Way and SR28 would require the use of heavy equipment within specific areas. Equipment would access the site from either Incline Way or Lakeshore Boulevard.

Staging and storage areas for Third Creek Phase II would be located in paved parking lots accessible from Lakeshore Blvd and Incline Way that serve as overflow parking areas for IVGID recreational areas (Plate 4). Materials as required for each phase of construction would be stored for use in the staging area. Materials would be transported from the staging area to the active work area during construction via either temporary construction roads or existing area roadways.

Construction workers and visitors would enter and exit the site throughout the construction period using either the eastern parking lot from Lakeshore Boulevard or the parking area north of Incline Way. An average of ten worker vehicles would enter and exit the project site when construction begins and ends each day. Trucks would also be required to deliver and off-haul material. The delivery of material would be limited to

materials required for the culverts on Incline Way in 2010. In 2011, material delivery would be required for the bridge at Lakeshore Boulevard as well as rocks, spawning gravel, logs, and other materials as required for restoration of Third and Incline Creeks.

Construction of Third and Incline Phase II would have short-term effects to traffic along Lakeshore Boulevard and Incline Way. Effects would include traffic closure for a short duration during construction, rerouting of traffic, and increased traffic delays and possible congestion due to road closures and traffic reduction to one-lane during construction. During local events, the parking lots within the project area are utilized for event and overflow parking. This parking would be limited by construction activities and by the use of the parking lots as staging areas. With the implementation of mitigation measures as described below, the effects to traffic as a result of this project would be less than significant.

3.2.6.3 Mitigation

During the period of construction, to replace the culverts, traffic would be detoured around the project area. In the case of the culvert at Lakeshore Boulevard, the road would be closed and traffic would be redirected as indicated in Appendix B, Sheets TC-1, TC-2, and TC-3. At Third and Incline Creeks on Incline Way, the road would be closed and traffic redirected with the option to use either SR 28 or Lakeshore Boulevard to get around the road closure. Notice of road closures and detour routes would be provided to nearby residents and to local fire departments, police, and others in the community. Notice would be posted at IVGID recreational areas where access would be affected during construction on Incline Way. The two culverts on Incline Way would be constructed separately to allow access to the IVGID recreational center throughout the period of construction.

Traffic control would be utilized on days when heavy equipment is entering and exiting the project site to prevent congestion and safety hazards at the Lakeshore Boulevard entrance to the project area. The temporary construction entrances would be lined with gravel and maintained throughout the construction period to ensure prevention of tracking or flowing of sediment onto roadways. When necessary, vehicle wheels would be cleaned at a wheel washing station prior to transportation on public right-of-ways. Once construction is complete, traffic volumes and travel time would return to pre-construction conditions.

3.2.7 Cultural Resources

3.2.7.1 Existing Conditions

Prehistoric Background. Native American occupation in the Lake Tahoe area has been consistent for approximately 8,000 years. The earliest known cultural expression in the area is the Pre-Archaic postglacial Tahoe Reach Phase. Outside of Parman projectile points, little is known of the Phase, which dates from approximately 8,000 to 7,000 years

before present (BP). The Early Archaic, Spooner Phase dating from approximately 7,000 to 4,000 BP produced both Pinto and Humboldt series projectile points (Moratto, 1984).

The Middle Archaic Martis Phase is divided into Early, Middle, and Late Martis. Early Martis, approximately 4000 to 3500 BP, is noted for the Martis series, contracting stem Elko points. There is a proliferation of large basalt artifacts that are associated with the Martis artifact assemblage. Middle Martis, approximately 3500 to 2500 BP, retains the earlier Elko points and large basalt artifacts, but steamboat projectile points enter the artifact assemblage. Late Martis, approximately 2500 to 1500 BP, retains the basalt tools, but new projectile points include the Martis and Elko corner-notched and eared projectile points, and large untied side-notched points.

During the early Kings Beach Phase, approximately 1500 to 800 BP, the bow and arrow replaced the atlatl and dart as hunting tools. The arrow points are the Rose Springs and Eastgate series. Chert cores and used flanks replaced the earlier, heavier basalt tools. The Washoe-Lake Kings Beach, approximately 800 BP to historic, is the final phase. During this phase, the Washoe became indefinable as a separate cultural group exhibiting specific cultural traits. Associated artifacts include Desert Side-notched and Cottonwood series arrow points, and chert tools similar to the previous phase.

Ethnography. Third and Incline Creeks fall directly within the Washoe cultural area, which covers a region approximately 120 miles long by 40 miles wide and encompasses the Lake Tahoe area. Information specific to the Washoe in the Third and Incline Creeks areas was researched by Truckee, California, archaeologist Susan Lindstöm, Ph.D. Dr. Lindstöm's report (1997) was prepared in compliance with state, county, and TRPA guidelines to assess potential effects of the Incline Beach Parking Improvement Project on heritage resources.

Tahoe's north shore was primarily used by the Northern Washoe or *Wel me ti* (Freed, 1966). Lake Tahoe and its main tributaries such as Third and Incline Creeks provided the Washoe with important fisheries and resources for native plants (Rucks, 2002). Washoe ethnography suggests a level of social complexity and technical specialization that is non-characteristic of other native groups in the Great Basin. According to Lindstöm, "Higher population densities, concepts of private property, and communal labor and ownership are reported and many have developed in conjunction with their residential and subsistence resource stability" (Lindstöm and Waechter, 1992).

Lindstöm further explains that the ethnographic record suggests an extensive geographic reach for the Washoe. Small groups collected edible and medicinal roots, seeds, and marsh plants from the high mountain valleys during the mild season. In addition, men also hunted large game such as mountain sheep and deer in the higher elevations. Lake Tahoe and its tributaries were important fisheries year-round, and the Washoe have a history of "making long treks across the Sierra passes for the purpose of hunting, trading, and gathering acorns" (Lindstöm and Waechter, 1992).

Archeological evidence of these activities is found in the form of flakes of stone and broken tools in temporary small hunting camps along the mountainsides. More permanent base camps in the high valleys show occupation through stone flakes, tools, grinding implements, and house depressions. The importance of the Incline Village and surrounding area is shown by the presence of several archeological sites.

Project Specific Cultural Resource Field Inventory. A cultural resource inventory of the project site was conducted by Western Cultural Resource Management, Inc. (WCRM, 2009). This report examined areas of previously recorded sites in more detail and looked for additional sites. Three previous sites (26Wa2137, 26Wa4352, and 26Wa6371) were recorded within the vicinity of the project area (Lindstrom 2000 & Reno 2001a:14). The site identified as 26Wa6371 was considered too far away from the proposed project site (130 m west) to be of concern and was identified as having been capped with beach sand and parking lots (Lindstrom 2000 & Reno 2001).

The site identified as 26Wa2137 was first identified by Davis in 1975 (Davis 1975). At the time the site was described as a 400 m² lithic scatter located east of Third Creek and south of Lakeshore Boulevard. Lindstrom unsuccessfully attempted to find the site in 1997 and Reno believes that a portion of the site no longer exists due to improvements in the area (Lindstrom 1997 & Reno 2001). In addition, Charles D Zeier of Harding ESE, Inc. in a correspondence to the Washoe Archives and Cultural Center stated that the site (26Wa2137) has been capped with fill and pavement (Zeier 2001). The WCRM report noted that 26Wa2137 the site is identified as two areas a north and south loci. The southern site as noted by Zeier (2001) has been highly disturbed and northern portion is located approximately 50 meters from the project area boundary (WCRM 2009). WCRM archaeologists attempted to relocate the site (26Wa2137) but were unsuccessful.

The site identified as 26Wa4352 consists of a bedrock mortar, four basalt flakes and sparse historic debris scatter that included glass fragments was first identified by Burke (1989). The bedrock mortar was moved from its original location during construction of the Incline Village Recreation Center (Zeier 2001). WCRM archaeologists were not able to relocate the original site and determined that no cultural resources associated with this site are located within the project area (WCRM 2009).

Sites 26Wa2137 and 26WA4352 are thought to be associated with a Washoe residential summer base camp located in the area (Reno 2001). This information is based on oral sources from the Washoe Tribe (Reno 2001). Other than the bedrock mortar WCRM did not find any evidence of this camp during their field survey.

WCRM did not discover any new archaeological sites within the project area. They did determine that at least part of site 26Wa2137, which is located within the project area could not be relocated. Finally, two isolated historical artifacts IF-01 (a fragment of a brown Clorox jug) and IF-02 (a small aqua glass fragment) were identified within the project area.

Historic Background. Incline Village was officially founded in 1959, although the area history reaches back to the silver mining and timber industry of the 1800's. Incline Village got its name from the steep 4,000-foot-long double track narrow gauge rail tramway that shuttle logs vertically to the V-flume, over the east summit for travel to the water tunnel through the mountains, and on to the silver mines in Virginia City, Nevada (Alpine Realty, 2009).

In 1884, Incline Village was declared an election precinct and a post office, putting the small town on the map for the first time. By 1897, the logging and timber industry had almost completely deforested the area. Incline Village spent the next several decades "recuperating." Multimillion real estate magnate "Captain" George Whittell purchased most of the land previously owned by the lumber companies in the 1930's although the area continued to be solely a summer vacation spot into the early 1950's.

In the late 1950's, Crystal Bay Development Company purchased 9,000 acres of land from Captain Whittell, establishing what is Incline Village today. In the 1960's, the planned community of Incline Village was underway, with roads being cut, and ski areas and a golf course in the design stages. Construction of condominiums, private homes, a country club, a shopping center, post office, and schools soon followed in the next decade of Incline Village's growth. Since the 1970's, there has been renewed interest in a year-round community at Incline Village, and the subjects of incorporation and a new county have been explored by residents (Incline Village, 2009).

3.2.7.1.1 Records and Literature Search

A records and literature search identified at least 22 previous archaeological studies have been conducted within or within approximately one mile of the proposed project site (WCRM 2009). The most recent study was the 2001 Rosewood Creek Restoration Project, which involved a survey of approximately 20 acres along Third Creek (Reno 2001a). The report included a description of the other 21 project that have occurred in the vicinity, and the reader is referred to that document for information on those projects (Reno 2001a).

3.2.7.1.2 Native American Consultation

Native American representatives were consulted to determine the presence of Traditional Cultural Properties (TCP) within the undertaking's Area of Potential Effects (Appendix E). If TCPs are identified, the effects of this undertaking would be evaluated and treated in accordance with the procedures of section 106 of the National Historic Preservation Act of 1966, as amended.

3.2.7.2 Effects

Basis of Significance. An alternative would be considered to have a significant adverse effect on cultural resources or historic properties if it would diminish the integrity of the resource's location, design, setting, materials, workmanship, feeling, or

association on historic properties eligible for listing on the National Register of Historic Places. Types of effects include physical destruction, damage, or alteration; isolation or alteration of the character of the setting; introduction of elements that are out of character; neglect; and transfer, lease or sale.

No Action. This alternative would have no effects on existing cultural resources or historic properties in the project area. Any resources would continue to be at risk from natural processes such as erosion.

Preferred Alternative. Third and Incline Phase II would have no effect on any known cultural resource sites or finds. Ground-disturbing activities could potentially affect buried cultural resources. Through appropriate mitigation measures, all sites and finds would be avoided and/or protected.

3.2.7.3 Mitigation

No project related activities would occur within a minimum of 25 meters of any known cultural resources. Prior to work in the vicinity of any known cultural resource, a qualified archaeologist would flag, and/or identify the resource to the contractor to ensure avoidance. The resource would be monitored during project activities occurring within the vicinity of a known cultural resource. If National Register eligible properties are discovered during construction, all work would be halted until provisions of 36 CFR 800.13(b), “Discoveries without prior planning” are met.

3.2.8 Recreation

3.2.8.1 Existing Conditions

Recreation is one of the main reasons people visit the Lake Tahoe Basin. According to a survey by the Tahoe Center for a Sustainable Future (1997), 42 percent of visitors come to Lake Tahoe for recreation. The two peak tourist seasons in the Lake Tahoe Basin are during the summer between the 4th of July and Labor Day weekend, and during the winter ski season.

Land uses within the project area include recreational use. The primary recreational opportunities along Third and Incline Creeks are hiking, biking, fishing, and nature study. Community events are held at the Aspen Grove Community Center adjacent to the east bank of Third Creek and Sierra College along Incline Creek. The Village Green Park situated between Third and Incline Creeks contains athletic fields used for soccer and other community sports. There is also park and boat ramp situated between Lakeshore Boulevard and Lake Tahoe located along Third and Incline Creeks. This park contains picnic benches, recreational equipment, grassy areas, and a public beach. Due in part to public use of these recreational areas there is erosion along both Third and Incline Creek streambanks and human encroachment is inhibiting vegetation establishment and inducing creek erosion, while reducing riparian vegetation establishment.

3.2.8.2 Effects

Basis of Significance. An alternative would be considered to have a significant effect on recreation if it would cause a substantial loss of recreational area or access to a recreational area.

No Action Alternative. This alternative would have no effects on existing recreation in the area. The area available for recreation and access to recreational areas would be expected to remain the same.

Preferred Alternative. Construction activities for Third and Incline Phase II would result in a temporary effect to recreation during replacement of culverts and construction of streambank stabilization and aquatic habitat improvements. Due to rerouting of vehicles to the recreation center during construction activities, use of the recreation center could decrease during construction. Further within the park located south of Lakeshore Boulevard (between Lakeshore Boulevard and Lake Tahoe), construction activities on Third and Incline Creek could reduce areas available for recreation during the period of construction. In particular recreation activities would be redirected away from the creek corridor during construction. The riparian corridor would be revegetated to limit human encroachment to the SEZ. While this revegetation could represent a minor effect to recreation, human encroachment in the SEZ is contributing to streambank erosion. Revegetation within the riparian corridor would reduce erosion and sedimentation and benefit water quality within Lake Tahoe and recreation in the Tahoe Basin.

Project improvements are expected to enhance local and regional recreational opportunities. Third and Incline Phase II would benefit recreational wildlife viewing opportunities through riparian vegetation enhancement and enhancement of fish spawning habitat. Effects to recreation would be temporary during the period of construction activities (Summer 2010 and 2011). After construction is completed, recreational access would return. There would be no long-term direct or indirect effects to recreation as a result of the Restoration Project.

3.2.8.3 Mitigation

During the period of construction, recreational use would be directed away from the areas of active construction. At common points of access and bridges, signs would be posted notifying the public that there is active construction and access to the construction area would be prohibited. Prior to construction, notice would be posted at IVGID recreational areas identifying alternate routes to the recreation center during the period of culvert construction. Notice would also be posted at the park south of Lakeshore Boulevard notifying Incline Village residents of the proposed construction activities and the timing of work on Third and Incline Creek.

3.2.9 Noise

3.2.9.1 Existing Conditions

Noise can be defined as unwanted sound and noise levels, and effects are interpreted in relationship to noise level objectives for counties and local agencies. TRPA has adopted threshold standards for limiting noise exposure. Both TRPA and Washoe County provide exceptions to noise standards for temporary construction activities (TRPA, 2007; Washoe County, 2004).

The existing sources of noise in the project area are from recreational activities on the adjacent soccer fields, trails, motor vehicles on SR 28, Lakeshore Boulevard, and Incline Way, and ambient natural sounds such as wind and wildlife. There are no noise-sensitive land uses in the project area; potential sensitive receptors include nearby residents, occasional visitors, and wildlife.

3.2.9.2 Effects

Basis of Significance. An alternative would be considered to have a significant effect on noise if it would substantially increase the ambient noise levels for adjoining areas. The significance of temporary noise effects is evaluated with reference to existing noise levels, the duration of the noise, and the number of sensitive receptors affected.

No Action Alternative. This alternative would have no effects on existing noise in the project area. Current noise sources including traffic and recreational activities would be expected to remain the same.

Preferred Alternative. Construction activities using heavy equipment would result in a temporary increase in existing noise levels within the vicinity of the project area during the period of active construction (late summer 2010 and 2011). Potential sources of noise from the proposed construction include both on-site construction noise sources from the use of heavy equipment (bulldozers, excavators, trucks, jackhammers, etc.), noise from pumps used for dewatering, and transportation-related noise sources from construction workers, visitors, and deliveries.

The anticipated construction noises produced by implementation of the Third and Incline Creek Phase II project include short-term noise effects during the period of construction, and there would be no long-term direct or indirect noise effects as a result of the project. Because of the proximity of the project area to residential areas, specifically for culvert replacements on Incline Way and Lakeshore Boulevard, there is the potential for short term noise effects to residents during construction. The mitigation measures specified below would be implemented during construction to reduce potential noise effects to a less than significant level. Based on criteria in Section 23.8 of the TRPA Code of Ordinances, construction activities for the Restoration Project would be exempt from community noise level limitations. There would be no indirect effect to noise as a result of the Restoration Project.

3.2.9.3 Mitigation

There is no practical way to avoid noise associated with construction, and therefore BMPs would be used to minimize the adverse effects. The construction area would be limited to those areas required for the replacement of culverts and specific Third and Incline Creek restoration areas between Lake Tahoe and Lakeshore Boulevard and between Incline Way and SR 28. Because pumping for dewatering would be conducted 24-hours a day throughout the duration of in-channel construction work, noise attenuated pumps would be used to limit noise to neighboring areas. Heavy construction equipment would be operated with appropriate muffling technology. Construction work would be limited to daytime hours, and coordination would be conducted with the neighboring communities prior to construction. The construction contractor would be responsible for providing a phone number to nearby residents for reporting construction noise that exceeds acceptable levels.

4.0 CUMULATIVE EFFECTS

4.1 Background

NEPA requires that an EA discuss project effects, which when combined with the effects of other projects, could result in significant cumulative effects. A review of cumulative effects begins with the TRPA's EIP list established in 1997. The EIP is a cooperative program administered by the TRPA that relies on a partnership of private, local, State, and Federal entities to implement its goals of preserving, restoring, and enhancing the environment of the Lake Tahoe region. The focus of the EIP is to identify restoration and research needs and funding that would meet environmental goals and/or threshold carrying capacities adopted by the TRPA Regional Plan. A number of EIP projects have been completed or are planned within the middle and lower reaches of the Third Creek watershed. This project is an EIP project for SEZ Restoration.

4.2 Cumulative Effects

Cumulative effects are effects of a proposed project when considered with other past, present, and reasonably foreseeable future projects in or near the project area. Past projects that greatly affected the restoration project area include the development of the neighboring Village Green Public Park and recreational facilities, and building and roadway development that occurred prior to the establishment of regulatory controls in the 1970's (Harding ESE, 2001). Previous developmental practices involved the relocation and channelization of waterways and the modification of creek beds, creek banks, and creek flows; features that now effectively impede or prohibit passage of fish populations (Corps, 2004). Several restoration projects have been completed in recent years near the project area. There are no proposed new restoration projects within the project area. These projects are listed below and were considered when conducting the environmental analysis for cumulative effects.

- In 2004, the dual 60-inch diameter CMP culverts at the SR 28 crossing of Third Creek were replaced with a single concrete 12-foot wide box culvert by NDOT to improve fish passage.
- In 2005, five culverts crossing Third Creek within the IVGID Champion Golf Course were removed and a rock drop was modified to provide passage for rainbow trout.
- Restoration of the lower reach of Rosewood Creek (Phase I), adjacent to the restoration project area, began in 1997 by the Natural Resources Conservation Service and involved the installation of structural controls (rock-lined inlets, two detention basins, and an oil separation vault) that ultimately did not satisfy sediment reduction performance criteria. Phase II and III of the project was never constructed, but was to include rock drops, vortex rocks, channel restoration, three wetland lakes, and vegetative planting.
- The Rosewood Creek SEZ Restoration project was implemented in 2003 by IVGID and restored the same portion of Rosewood Creek by creating a new sinuous creek channel and floodplains. This project extended the creek channel 3,000 feet further downstream from its confluence with Third Creek and incorporated five flow-spreading basins. However, restoration activities included the installation of three culverts, two of which are impassable to fish due to the incorporation of vertical standpipes at the upstream end of the culverts.
- The Incline Creek Restoration project was completed in 2004 and involved removal of a parking lot, restoration of the lower reach and floodplain, and treatment of irrigation run-off from the Village Green sports fields.
- In 2008, Incline Lake site grading, stabilization, and interim dam modification was completed by the Incline Lake Corporation. This project included obliteration of an approximately 15 foot long section of irrigation channel that historically diverted water from Third Creek to Incline Lake.
- In 2008, Middle Rosewood Creek Restoration, as described by the US Bureau of Reclamation in the October 2007 Draft EA. This project included restoration of Middle Rosewood Creek, extending from SR27 (adjacent to the IVGID Mountain Golf Course) to SR28. While the initial construction was conducted in 2008, there may be future restoration work in this area.
- In 2009, Third Creek Restoration Project. This project included construction of an inset floodplain, streambed stabilization including grade control structures, and aquatic habitat enhancement between Lakeshore Blvd and Incline Way on Third Creek. This project included fish passage improvements at Lakeshore Boulevard.

Cumulative effects include the limited and temporary loss of riparian vegetation and coniferous trees and shrubs. Vegetation loss would be limited to areas of active earthwork including the three culverts that would be replaced and the select areas of restoration treatments. Vegetation loss would be limited to the maximum extent practicable and woody material would be reused in the streambank stabilization and habitat restoration elements of the project. This woody material would improve fish

habitat and would stabilize streambanks reducing sedimentation to Lake Tahoe. This restoration project has been designed to minimize the removal of riparian vegetation and would cumulatively not effect vegetation or wildlife because the project would not be constructed at the same time as other projects.

There would be no significant cumulative effects from the implementation of the restoration project when considered in combination with these other projects. Most of the projects were implemented for the purpose of stream restoration which provided increased riparian vegetation and provide an environmental benefit to the watershed. In addition, this project would be implemented at a different time than other projects in the watershed, so there would not be multiple projects cleared for construction at the same time. The restoration project would have a cumulative benefit in conjunction with these other Federal, State, and local projects to protect and improve the environment of Third and Incline Creeks and the Lake Tahoe Basin.

5.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

5.1 Federal

Clean Air Act, as amended and recodified (42 U.S.C. 7401 et seq.).

Compliance. Third and Incline Phase II is not expected to violate any Federal or state air quality standards, or hinder the attainment of air quality objectives in the local air basin. Third and Incline Phase II would have no significant adverse effects on the future air quality of the area and is in compliance with this act.

Clean Water Act (33 U.S.C. 1251 et seq.). *Compliance.* The project would comply with guidelines for Sacramento District, General Permit 16. The project sponsor is responsible for receiving 401 Water Quality Certification prior to project implementation.

Best management practices would be used throughout the period of grading/earthwork to prevent sediment, erosion, and turbidity from being released into Lake Tahoe. Permanent BMPs for water quality improvement would be employed as a part of the Project. The project Contractor would be responsible for BMP implementation and maintenance, preparing a Stormwater Pollution Prevention Plan (SWPPP) and complying with National Pollution Discharge Elimination System (NPDES) guidelines.

Endangered Species Act (16 U.S.C. 1531 et seq.). *Compliance.* In accordance with Section 7(c), the USFWS listings and Nevada Natural Heritage Program (NNHP) database were reviewed for potential Federally listed and candidate species likely to occur in the Third and Incline Creek area (Appendix A). No listed species or their habitat would be affected by the restoration project.

Executive Order 11988, Floodplain Management. *Compliance.* This order directs all Federal agencies approving or implementing a project to consider the effects

that project could have on floodplains and flood risks. This project would not raise flood elevations or increase the risk of flooding.

Executive Order 11990, Wetlands Protection. *Compliance.* This order directs all Federal agencies to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. The project would not result in the destruction, loss or degradation of wetlands and could increase wetland habitat through SEZ restoration.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. *Compliance.* The order directs all Federal agencies to identify and address adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. Third and Incline Phase II would benefit all residents by preserving Lake Tahoe water quality and wildlife habitat for all residents.

Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). *Compliance.* The Corps has conducted coordination with the US Fish and Wildlife Service, Reno Office. Project information including a Project Description and design plans were provided to US Fish and Wildlife Service, Reno Office on February 23, 2010. The Service provided a Planning Aid Letter dated April 8, 2010 in compliance with the Act (Appendix A).

Migratory Bird Treaty Act (15 U.S.C 701-18h). *Compliance.* Construction would be timed, as much as feasible, to avoid destruction of active bird nests or young of birds that breed in the area. A pre-construction field survey would be conducted by a qualified biologist to detect any active nests. If active nests are located, a protective buffer would be delineated and the entire area avoided preventing disturbance of nests until they are no longer active.

National Environmental Policy Act (42 U.S.C. 4321 et seq.). *Compliance.* This Final EA is in compliance with this act and includes a FONSI and comments and responses resulting from public review enclosed within Appendix F.

National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.). *Compliance.* A letter dated July 13, 2010, was received from the Nevada SHPO, concurring with the Corps' finding that the project would have no effect on properties determined eligible for the National Register of Historic Places. The letter from SHPO is included in Appendix E. In addition, letters to potentially interested Native Americans were sent on June 7, 2010, informing them of the project and requesting any traditional cultural information or concerns related to the project. No comments were received from Native American representatives in the area.

5.2 State of Nevada

Nevada Division of Environmental Protection (NDEP). A Temporary Working in Waters (WIW) and discharge permit is required for work conducted within waters of the State of Nevada. IVGID is responsible for obtaining a temporary WIW and discharge permit. The Contractor would be responsible for complying with conditions of the permit.

Nevada Division of Wildlife (NDOW). A scientific collection permit would be required for fish capture and relocation prior to dewatering. The project sponsor is responsible for obtaining the required permit prior to project implementation and compliance with provisions of the permit.

5.3 Tahoe Regional Planning Agency

Tahoe Regional Planning Agency (TRPA) Compact, as amended (Public Law 96-551), December 19, 1980, and the TRPA Code of Ordinances. *Compliance.* The project is in compliance with the TRPA Compact, as amended, and the TRPA Code of Ordinances. Avoidance, reduction, and minimization measures would conform to the requirements in TRPA's Handbook of Best Management Practices (TRPA, 1988) for construction in the Tahoe Basin. A TRPA Initial Environmental Checklist has been prepared and is being reviewed concurrent with the review of this EA.

6.0 PUBLIC INVOLVEMENT

Public involvement for this project has included three Technical Advisory Committee (TAC) meetings. The project would be presented before the IVGID Board at a public meeting. In addition, a public meeting is planned prior to final design and construction to discuss the bridge replacement at Lakeshore Boulevard specifically. The public was encouraged to review the Draft EA and provide comments during the public review period. The Draft EA was available for public review for a period of 30 days from June 1 to July 2, 2010.

6.1 List of Agencies, Organizations and Persons Consulted

Agency consultation for Third Creek has been conducted by IVGID, the Corps, and NDSL. Agencies and organizations with an interest in Third Creek were represented on the TAC and were provided the opportunity to comment on the project during early project planning and development. TAC meetings were held on November 4, 2009; December 9, 2009; and February 18, 2010. The agencies and organizations consulted by IVGID, the Corps and NDSL include:

Hyatt Regency Lake Tahoe Resort, Spa and Casino
Nevada Department of Wildlife
Nevada Division of Environmental Protection – Bureau of Water Quality Planning
Nevada Division of Environmental Protection – Bureau of Water Pollution Control

North Tahoe Conservation District
Tahoe Regional Planning Agency
US Fish and Wildlife Service
Washoe County

7.0 COORDINATION AND REVIEW OF THE EA

The draft EA was circulated for 30 days to agencies, organizations, and individuals known to have a special interest in the project. Comments were received from U.S. Federal Emergency Management Agency (FEMA). They are considered, responded to, and incorporated into this final EA, (Appendix F).

If there are significant changes in, or additions to, the existing conditions or design of Third and Incline Phase II, or modification of the project during future design refinements or construction, any additional required environmental documentation would be prepared and submitted to appropriate agencies to ensure compliance with Federal, state, and local laws and regulations.

8.0 CONCLUSIONS

The proposed Third and Incline Creek Restoration Project, Phase II has been designed to achieve the water quality and habitat restoration objectives defined for the project. Project features include culvert replacement at three locations; in channel habitat features; streambank stabilization at specific locations along Third and Incline Creeks; and measures to reduce pedestrian traffic within the SEZ. Approximately 4,700 linear feet of aquatic habitat and 1 acre of riparian habitat would be enhanced and restored as a result of this project. No effects on Federally listed species or cultural resources are expected to result from the proposed project as evidenced by habitat assessments, surveys, and/or literature review. Based on the effects analysis presented in this draft EA, the restoration project would have no significant effects on the environment, and no mitigation beyond avoidance and best management practices would be required. The project would meet the requirements for actions permitted following completion of a FONSI as described in 40 CFR 1508.13. These actions would not have a significant effect on the human environment and do not require preparation of an environmental impact statement. After the 30-day public review period closed on July 2, 2010, the comments were adequately addressed and the conclusion of no significant effects was based on the context of the comments presented during the public review period and the effects analysis. The FONSI is expected to be signed by the Colonel and accompany this Final EA.

9.0 LIST OF PREPARERS

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10.0 REFERENCES

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