Statement by Lori Allessio
TRPA APC Meeting on September 13, 2006
Upper Truckee River Restoration and Golf Course Relocation Project

Thank you for inviting the public to this hearing on the Upper Truckee River Restoration Project. My name is Lori Allessio and I may be one of the few people who have been involved with the state park and state recreation area since acquisition and designation in1985. I'm speaking today as a citizen and am not representing a public agency. My education is as a wildlife biologist and botanist.

I believe we all agree the goal of restoration activities for the Upper Truckee River can be a rallying point that brings together our South Shore community. It is very impressive that many agencies with land management responsibilities in this watershed are looking at river enhancement opportunities together. We are very fortunate to be experiencing a prosperous period for restoration work in the Lake Tahoe Basin with the various sources of available funding. However, with all of the money and effort expended to date on this project, it is disappointing that the result is the proposed action/preferred alternative we have before us today. It appears that under the banner of restoration agencies may have lost sight of their missions as a whole, as this proposal totally "misses the mark."

By focusing on the need to preserve the acreage of the golf course located in the State Recreation Area, our land managers are willing to sacrifice the land classified as Washoe Meadows State Park. As an exercise on paper, it looks good: all the numbers add up and the acreage of the State Parks units stay intact. When you actually look at the area on the ground important resources will be significantly affected in a negative way. It appears that the construction and operation of the new section of the golf course would reduce the total and net benefits of the river restoration project.

On a landscape level, Washoe Meadows State Park provides an intact, continuous and functioning wildlife corridor and this corridor extends beyond the State Park boundaries up to the headwaters of Angora Creek to the Upper Truckee River. This habitat corridor supports a diversity of plant and animal species, some of which have special protection status such as the northern goshawk and some of which the park is the only location the species occurs in the Lake Tahoe Basin, such as the sand lily (the sand lily occurs in other areas of California but to date, Washoe Meadows State Park is the only location it occurs in the Lake Tahoe Basin). By constructing a golf course in the middle of this corridor, wildlife habitat fragmentation would occur and a new level of urbanization would be introduced. Golf courses are similar to city parks where the landscape is simplified to a monoculture. Wildlife and plant diversity would be negatively affected. I also want to add that when we again look at the landscape level but this time in the LTB, recreation uses have been the direct result of loss of wildlife habitat such as bicycle trails constructed through known NOGO territories.

The preferred alternative project's "boundary change" to support golf course relocation could adversely affect a unique wetland plant community. The proposed "substitute" area is a funny shape because it surrounds an uncommon sphagnum-dominated peatland that took hundreds, if not thousands, of years to form. This is a naturally functioning wetland protected in the Tahoe Region by a no degradation standard. Little is known about what is its tolerance for ecosystem change by adding adjacent manicured greens and hardened cart paths to the surface. Construction of the golf course would modify the forests and springs supporting this system

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affecting the current hydrologic regime and water yield. Golf course inputs and irrigation could also cause both physical and chemical changes to this sensitive area.

The park is named Washoe Meadows for the numerous and significant pre-historic sites found. I know for a fact that Tribal resources would be affected by the proposed location of the golf course under the preferred alternative. There is no indication that the Washoe Tribe has been consulted with the drafting of these alternatives. Out of due respect to the Tribe whose ancestors occupied this land it's important that government to Tribal government relations are built in developing the alternatives for river restoration. In addition, since the project alternatives may include National Forest lands and the Bureau of Reclamation is involved, this constitutes a federal action and the local Tribe must be consulted; not just as part of the public scoping process, but as a government to government relation similar to the state working TRPA, Lahontan Water Quality Control Board, etc.

TRPA's recreation threshold talks at length about preservation of natural areas and access to "high quality undeveloped areas for low density recreational use." That is the current recreation experience in Washoe Meadows State Park and this intrinsic value is equally important to protect.

The State Park and Recreation Commission's 2005 California Recreation Policy states: "*Recreation areas should be planned and carefully managed to provide optimum recreation opportunities without damaging significant natural or cultural resources. Management actions should strive to correct problems that have the potential to damage sensitive areas and degrade resources.*" I couldn't agree more and I ask that the agencies stay true to this statement throughout the process for this project.

In closing, I ask that you recommend removal of the current proposed action/preferred alternative that includes relocation of the golf course into the state park area. Instead, the alternative should be modified to develop an 18-hole golf course within the east side of the river while maintaining the river restoration effort. A professional golf course designer could be hired to redesign the golf course in an ecological friendly manner. Finally, in the true spirit of NEPA, there needs to be a full range of alternatives analyzed and an alternative evaluating elimination of the golf course should be included in the EIS/EIR.

Thank you for your time.

To: Tahoe Regional Planning Agency, Attn: Paul Nielsen
From: Luke Marusiak, Owner of Property adjacent to Washoe Meadows State Park

Subject: Input Regarding Upper Truckee River Restoration and Golf Course Relocation Project Notice of Preparation

This letter is split into two parts: personal concerns and community interests. The personal concerns are brief and poignant. The community interest concerns are less brief but just as trenchant.

I have a house on Delaware street. My family and I have come to love the Washoe Meadows State Park, which begins at our back yard. It is one of the reasons we bought this particular house six years ago. It is a place we come to enjoy peace away from the Silicon Valley 'rat race'. Everything from the whispering wind, the coyotes that slink about, and the protruding rocks between the towering trees is a Tahoe area treasure to us. We use this area for thoughtful hikes, biking, and the occasional but always raucous sledding in winter. I took my son fly fishing for the first time after descending the steep grade from our house to the area of the river west of the golf course. In short, the Washoe Meadows State Park defines a good deal of our Tahoe experience. Much or all of what I describe, including the scenic view from our back yard, would be disrupted or eliminated by the proposed action (relocating several holes of golf into this area).

From a community standpoint I certainly understand that there may be need for both investment and sacrifice to restore the Upper Truckee but a number of things are puzzling to me regarding both the goals and the proposed action. As someone who has project managed technical and operational tasks both in the military and Silicon Valley I have questions (or perhaps gaps in my understanding) regarding this project. Additionally, I have a suggestion on how to measure success that should merit consideration. Although eleven goals are enumerated I think there is a priority chain delineated from the 'Upper Truckee River Restoration and Golf Course Relocation Project Notice of Preparation (NOP)'.

The priority chain I see (from the listed goals and proposed action in the NOP):

Highest – Reduce erosion, sediment, and nutrient loading in the Upper Truckee River and Lake Tahoe.
Middle – Preserve the historic gem of a golf course – Lake Tahoe Golf Course.
Lowest – Preserve the local recreation use and natural condition of Washoe Meadows State Park (as the proposed action is to destroy much of it).

The highest priority is one everyone can and must support, as future generations will judge us for our stewardship of Lake Tahoe. This is noble task and a great burden. I feel for Project Manager, Tahoe Regional Planning Agency, Paul Nielsen (to whom this letter is addressed). Balancing priorities on a project requiring significant investment and sacrifice that has multi-generational implications is a tough task. To make this task easier, I suggest that a 'quantified success criteria' on the highest priority be shared. That way we could be sure that the investment of community resources and personal sacrifices gains what it should.

I defer to the experts in hydrology, geomorphology, and geology on what 'restoration' truly means but I do have a suggestion regarding a 'quantified success criteria'. First, list how sediment is measured in physical and chemical components. Next, compare Upper Truckee River to an agreed baseline and link the solution to a reduction in sediment from current levels to the baseline. This would nail the highest priority in a manner all concerned could agree with.

A newspaper article posted on the washoemeadowscommunity.org website (where the NOP is posted) indicates that there are sixty-three tributaries that flow into Lake Tahoe and that the Upper Truckee deposits the most sediment of the sixty-three. There should be one of the tributaries that could be considered pristine and used as the baseline. A simple plot of the sediment deposits on the y-axis and seasons on the x-axis for both the baseline and Upper Truckee would clearly show what the problem is and what success would look like. Is the Upper Truckee worse by 20% or 20 times?

It also is implied (both in the NOP and in the posted newspaper article) that there have been some successes elsewhere in Lake Tahoe in reducing sediment. Perhaps a couple of successes could be held up as 'case studies' that the Upper Truckee Restoration and Golf Course Relocation project could follow. Again, I'll defer to the experts but clear-cutting large portions of trees on a 250 acre site that has shallow topsoil on rocky ground that is higher elevation than the river -- putting sod, irrigation, and fertilization there (to construct the fairways and greens) on that higher elevation -- and expecting the annual tons of snow and melt to ***reduce*** sediment into the Upper Truckee and Lake Tahoe is counterintuitive to me. Perhaps I'm missing something, but I'd like to see what some success stories (in reducing sediment) did look like.

My input then, from both personal and community interest aspects, is threefold. First, remove the proposed action (NOP Alternative 2) from consideration. There has got to be a better way than clear cutting acres of scenic wooded parkland in restoring a river. Second, please establish quantifiable success criteria that we can all rally around and highlight how successes have been achieved past. Alternative 3 (Restoration with 9-Hole Golf Course) is the only one that makes sense from this standpoint and that is my recommendation if no other alternative can be found. Third, find a way to restore the river and keep all 18 holes without disturbing the Washoe Meadows State Park. I would support an alternative like that but one has not been proposed.

I hope that this letter is considered as one of constructive candor for that is how it is intended.

Sincerely,

Luke Marusiak 10-4-2006

Luke Marusiak

September 30, 2006

Paul Nielsen
Project Manager
Tahoe Regional Planning Agency
PO Box 5310
Stateline, NV 89449

Subject: Project Related to Washoe Meadows State Park

Dear Paul,

I am writing this to express my concern that you did not provide notice to us regarding the proposed project related to Washoe Meadows State Park, even though our home at 758 Little Bear Lane is within a short walk of this park. Many other people in the neighborhood within walking distance of the park were also not noticed.

We ask that there be additional public meetings in order to provide more adequate notice to a whole community that borders the park, uses it and cares both about the environment and the proposed plans for the park.

We object to the immediate selection of a preferred alternative (Alternative 2) prior to more detailed understanding of potential environmental impacts and prior to adequate public and property owner involvement.

It is important that the EIR include adequate review of any proposed changes for their potential environmental impact on the park habitat including the meadow.

It is also important that the EIR note the current low impact recreational activities occurring in the park versus any proposed conversion of this natural area to a golf course.

The Socioeconomics section should not focus on the money to be generated by an expanded golf course, but instead should specifically include an evaluation of any proposed changes to the park versus the Sept 2005 new State Recreation Policy that calls for:

"Accessibility to all Californians"- Californians should have safe access to a park or other recreation area within walking distance of where they live, regardless of income level. In addition, physical barriers and administrative obstacles should

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be eliminated whenever possible so that California's park and recreational lands, waters, facilities, activities and programs are accessible to all who want to enjoy a healthier lifestyle."

The South Lake Tahoe population needs access to Washoe Meadows State Park for low impact recreational activities that are affordable to all in the community.

Very truly yours,

Lynne Paulson

Lynne Paulson
Email Indiajane@sbcglobal.net
Work phone 650 855 2960
Cell phone 408 823 6585

Local address: 758 Little Bear Lane, South Lake Tahoe, CA (no mail delivery)
Mailing address: 6331 Contessa Ct., San Jose, CA 95123

cc: TRPA Governing Board
California State Park & Recreation Commission

Unknown

Sent: Wednesday, November 01, 2006 3:07 PM

From: Indiajane [mailto:Indiajane@sbcglobal.net]
Sent: Sunday, September 24, 2006 10:13 PM
To: UT Project
Subject: Question on Washoe Meadows

To: Paul Nielsen, TRPA

We have heard that there is a plan to expand the golf course into Washoe Meadows State Park. Can you please provide additional information on this?

As frequent users of the park, we are very concerned about this possibility.

We will be out of town until Friday and would like to make sure we are informed.

Thanks,

Lynne Paulson

Email Indiajane@sbcglobal.net

Tahoe Daily Tribune
and THE LAKE TAHOE NEWS

Letters to the editor

Upset over proposed changes for golf course

October 2, 2006

Print Email

As frequent hikers in Washoe Meadows State Park, we are upset that there is a plan to expand the golf course into this park's beautiful meadows. The agencies involved did not provide notice to the nearby community, except to those within 300 feet or, in some cases 500 feet. The result was that many of us did not find out about the public meetings in time to attend.

Something that impacts a whole neighborhood and with potential to impact the environment should not be pushed through without adequate public review and input.

Lynne Paulson

San Jose, Calif.

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From: maroabbot@aol.com [mailto:maroabbot@aol.com]
Sent: Tuesday, October 17, 2006 7:28 PM
To: Project, Upper Truckee
Cc: RonCRettus@aol.com
Subject: Upper Truckee Restoration -- ATT'N Cyndie Walk

Cyndie,

I too am in favor of Alt/2 or Alt/4.

Sincerely,

Maro Abbot

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Unknown

Sent: Monday, October 23, 2006 9:08 AM

To whom it may concern:

The golf course has been there a long time. Why all of a sudden this plan? The golf course is not effecting clarity of Lake Tahoe. If it is, why isn't the amount of sediment and such quantified? Where are the comparisons that quantify its impact from 25 years ago to today taking into consideration all the other development that has occurred? What about all the homes that have been built along the river? What about the 300 hundred trees that were felled on the hillside by the airport, down the river from the golf course, now practically a bare hillside?

This golf course is beautiful. American Golf has done a great job exercising stewardship over this land.

Do not relocate the back 9. Don't develop a meadow. Keep the golf course as is.

Don't create problems where none exist and at considerable expense to many, many people who would be impacted.

Thank you.

Maureen Hughes
Walnut Creek CA.

Second homeowner in South Lake Tahoe.

From: Michael M. Chandler [mailto:TwoBears@TwoBearsDen.com]
Sent: Friday, October 20, 2006 6:06 AM
To: Paul Nielsen
Subject: State Park River Restoration Project

Paul,

I would like to take this opportunity to express a few concerns regarding the proposed project on the Upper Truckee River within the boundaries of the Washoe Meadows State Park.

1. If the goal of the project is to ultimately protect the lake, then the river restoration should be encouraged and designed to the highest standards possible. I don't believe that tying the golf course relocation to the project prior to design of the revamped river makes sense. The river project should be designed to the highest standards that are currently understood. The location of the golf course, if it is to remain, should be driven by the river restoration.
2. If the golf course is to be moved, I would like to suggest that State Parks check with other agencies to see if there isn't a more appropriate piece of land available. This is not a minor project being developed in a vacuum.
3. If the golf course is to be moved to the location designated in Alternative 2, then I would like to suggest that a much larger corridor be left open along the river. This would provide needed habitat for wildlife which freely moves along this area now, as well as for many of the park users which frequent this portion of the park.

I appreciate all of the work that is taking place to protect this valuable asset. Thank you for your time.

Michael M. Chandler
(530) 577-7895

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From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 2:46 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: Upper Truckee River Restoration Plan

From: Michael Clark [mailto:annandmichaelclark@sbcglobal.net]
Sent: Thursday, October 19, 2006 4:45 PM
To: UT Project
Subject: Upper Truckee River Restoration Plan

Dear Mr. Nielsen,

I am a long-time director on the Board at Tahoe Paradise Resort Improvement District and noticed the article in the Tribune regarding the project. I believe that we (the District) share a border with some of the property discussed in the article. We are very interested in any river restoration project and would very much like to be involved. I read some of the letters to the editor and noticed that some say that this has been carried on in private while others say that they have heard about this for years. I really don't believe either. However, being a neighbor, we would like to know more and would like to be part of any restoration project, especially along the riverbank that joins our property. We were supporters of the CRIMP project several years ago but all the work that was done has fallen into disrepair. If it is not too much trouble, please let me know the best way for us to become involved. I realize that this is very short notice and wish that we had known earlier. Perhaps we weren't paying enough attention or missed the notification. Possibly, we were overlooked. In any case, we do want to be involved in the project. I would greatly appreciate any steering information you can provide. I can usually be reached on my cell phone 530 318 4811 or at my home in the evenings at 530 577 4811. Thanks.

Michael B. Clark

From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 2:47 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: Upper Truckee Restoration Plan

From: Mike D [mailto:mtcajun@etahoe.com]
Sent: Thursday, October 19, 2006 7:41 AM
To: UT Project
Subject: Upper Truckee Restoration Plan

To: Project Manager Nielson,

I remember when Washoe State Park was created many years ago. I was notified about via mail and read visible notices throughout the neighborhood. I live on View Circle which borders the Washoe State Park. This time around, what I heard was scuttlebutt and rumors. No mail, no notices...nothing! Even though the area within the park slated for "restoration"is not in close proximity to my home, it still is about the park as a whole. At the time of the park's creation, one of the major concerns was that future development would be allowed and created. We were informed that the entire nature of Washoe State Park was to maintain its wild nature. There would be no new development,etc.create. Now many years later, in the hope that most of the reasons why the park was created were forgotten, an attempt is being made to annex a portion of it.

This would create a park that only a select group of people (golfers) could enjoy its wild nature. It would come at the expense of the park itself. All neighbors and neighborhoods should have been notified in a much broader range than the "meet the notification criteria" way it was handled this time. Tahoe is about open spaces and the fact that I am able to live here and am able to enjoy this particular area close to where I live is a wonderful thing. Granted, there may be a loss of revenue if the golf course was reduced to 9 holes, but we all have made sacrifices in living in Lake Tahoe. Maybe its about time that the small person's voice was heard and said enough is enough. Its time business concerns are nor fed off the public silver platter while overlooking local citizens' thoughts and concerns.

I appreciate the meadow restoration work that has been completed along Angora creek and I feel the river restoration project in Washoe State Park has good merit. But the golf course move into Washoe State Park would be a bad move for the environment, all of the adjoining neighborhoods, Lake Tahoe and to the average "local" Tahoe person who is quickly becoming an endangered species.

I hope you will find a way to preserve the park without the infringement of the golf course. Perhaps public comment should be opened to the **entire public** with adequate response time.

Please consider the value of the limited park land use remaining!

Thank you!

Mike Domas

DR. MICHAEL LIPKIN
2877 Lake Tahoe Blvd.
So. Lake Tahoe, CA 96150
(530) 544-8495

SEP 2 0 2006

Paul Nielsen, Project Manager

RE: Upper Truckee River Restoration

I have reviewed the project description/purpose for the Washoe Meadows State Park, Lake Valley State Recreation Area with Golf Course Hole Relocation Alternatives.

After review of the outlined alteratives:

I favor Alternative 4
bank protection, bioengineering to stablize the river and no change to the Golf course

Please mail me updates on this environmental project

Thank you M. Lipkin

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From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 3:00 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: upper Truckee/golf course

-----Original Message-----
From: Rhoades, Michael [mailto:Michael.Rhoades@sanjoseca.gov]
Sent: Tuesday, October 17, 2006 8:55 AM
To: 'swood@tahoedailytribune.com'
Cc: UT Project
Subject: upper Truckee/golf course

Ms. Wood,

Please note the following shortcomings with today's Tribune story on this project;

The Notice of Preparation (TRPA document asking for comments on the environmental study) comment period was to close Oct. 6. This wasn't mentioned in your Sept. 28 article, nor is the extended Oct. 20 comment deadline mentioned in today's story;

The pdf. of the project map provided by the online Tribune is too small to be of any use to the reader;

The Major Projects page on the TRPA website should be referenced as an information source;

And please note that the url http://www.restoreuppertruckee.net/
dead-ends
to a photograph index;

As the only local daily, the Tribune plays an critical role in providing information on issues relating to the Lake Tahoe Basin's environment, and the work of the various resource agencies. I hope these comments are helpful towards fulfilling that role.

Sincerely,

> Michael Rhoades
> Senior Planner, Environmental Review Team Department of Planning
> Building and Code Enforcement City of San Jose 200 East Santa Clara
> Street San Jose, CA 95113-1905
> (408) 535-3555
> fax (408) 292-6055
>
>
>
>
>

Michele R Chouinard
747 Seneca Drive
South Lake Tahoe CA 96150

Dear Tahoe Regional Planning Agency Governing Board Members:

I am writing this letter in reference to the Washoe Meadows State Park and the **Upper Truckee River Restoration Project.**

Last weekend I was walking through the park and noticed the many meadow or wild life habitat restoration projects in progress. I heartily commend the restoration projects that have been implemented already.

What I find at direct opposition to the restoration projects is the proposed move of nine holes of the golf course to a wetlands area that is wet for at least nine months of the year and currently shows amazing recovery after suffering from years of abuse.

How can moving nine holes of the golf course to the south side of the North Upper Truckee River restore the environment? The water flows directly through the meadow and into the river from the uplands every spring and long into the summer.

I understand that the golf course, the driving range and restaurant and other concessions provide funding for the park. But, why not consider a nine hole course, a driving range and the related concessions? A Master Plan that considers a planned recreational use area with bike trails and hiking paths in conjunction with the golf course would more effectively meet the recreational thresholds of the Basin and still maintain the integrity, beauty and more important, the functionality of the entire meadow as a natural filter.

I am very interested in this issue. Please include me on your mailing list.

Very truly yours,

Michele R. Chouinard

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From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 2:45 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: Proposed extension of golf course

From: mickie freeman [mailto:mickiefree@yahoo.com]
Sent: Thursday, October 19, 2006 9:40 PM
To: UT Project
Subject: Proposed extension of golf course

Dear Mr. Neilsen,

I am writing to you as Project Manager to register my vote of NO for the proposed extension. I understand this will come within 100 feet of my property at 1711
Delaware. The reason we purchased that property was for the beautiful forest and the river. The closness of the course will be unsafe for anyone in the back yard or on the deck.

The idea of having a park is to preserve the trees. It is also for the Public to enjoy. It preserves a wonderful place for children to play and a place to walk dogs.

I have been told that the property owners in the area also disapprove of this project for many and various reasons. I do hope the committee will consider all the opposition
that has been expressed.

Sincerely,
Mildred Freeman

From: MolaMolaDesigns@aol.com [mailto:MolaMolaDesigns@aol.com]
Sent: Tuesday, October 17, 2006 7:47 PM
To: Paul Nielsen
Subject: Washoe Meadows

To Whom it concerns,

I live next to the Washoe Meadows State Park and use the park on a daily basis. I support restoring the river but not at the expense of the meadow. I oppose the plan to move the golf course to the west side of the river and will do everything within my power to prevent this from happening.

I live where I live for the recreation I have out my back door. I am not willing to give up or alter my lifestyle for the greed of the State.

I would like to remind the State why it bought the 777 acres that is now the park. TO PROTECT AN INVIROMENTALLY SENSITIVE AREA! Come out and see for yourself. The park is loaded with wetlands all of which flow into the Truckee river. You'll also see an abundance of wildlife and rare plant species. Diverting any of these would cause irreparable damage.

I will not allow My State Park to be destroyed.

Monica Kohs
1601 Estate Ct.
South Lake Tahoe

From: nathan [mailto:nathan@tahoesnow.com]
Sent: Thursday, October 19, 2006 9:17 PM
To: UT Project
Subject: OPPOSED to expanding L T Golf Course !!!

Paul Nielsen,

My name is Nathan Rouse. I have lived in Tahoe Valley since 1971. I strongly oppose the "preferred" alternative for the Upper Truckee River Restoration Plan. Please do not expand and relocate the golf course west of the river!

POINT 1:
Restoration of the river and the sand pit are projects that should have been done decades ago. Repair and protection of this sensitive and important river and stream zone is the responsibility of the state, as steward of this special land. Income from golf should not be a criteria of this River Restoration Plan. Disturbing additional acres of Washoe Meadows State Park for golf course development does nothing to restore the river. Environmental improvement projects do not have to make mitigations to commercial interests. (It's the other way around.) California State Parks should not be in the business of making money.

POINT 2:

I also want to enter my protest to the inadequate public notice and call for public input. I'm told notices were mailed to home owners in close proximity (500 feet?), and there have been some articles in the Tribune. It was not enough! I did not understand the implications of this plan until the Tribune article of Tuesday, Oct. 17. (Three days before the end of public comment!) And that article was not enough! The map printed with the article was nearly useless. The map boundaries were unclear, and the Legend is completely illegible! It is not enough! Any plans having to do with golf courses in the Tahoe Basin deserve intense public review! Plans to expand golf courses on PUBLIC land at Tahoe demand even more scrutiny! I call for an extension of the comment period, and more effective notification / explanation.

As if to underscore the lack of public notice... The Tribune article (10/17) states that supportive documents can be accessed at the State Parks website: www.restoreuppertruckee.net
THERE IS NO WEB PAGE AT THAT ADDRESS! There is only a link to some images. THAT IS NOT ENOUGH! The only source for official public information has be removed from the internet. I suppose there may be good reason for this, but i find it suspicious.

Public notice and call for public input on this restoration plan has been grossly (criminally?) inadequate.

I am vehemently opposed to the "preferred" alternative, and to the project review process. I hope to get the opportunity to express my position more thoughtfully and clearly.

Thank you ..Nathan Rouse

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From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 2:54 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: Washoe Meadows State Park, Lake Valley State Recreation Area with Lake Tahoe Golf

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From: Patricia Ardavany [mailto:ski.dette@yahoo.com]
Sent: Wednesday, October 18, 2006 6:25 PM
To: UT Project
Subject: Washoe Meadows State Park, Lake Valley State Recreation Area with Lake Tahoe Golf

Dear Mr. Nielsen: I was discusted by the latest plan to carve up Washoe Meadows to accommodate the relocation of nine holes at the golf course in order to restore the Upper Truckee River to its natural course. The Truckee is one of 23 tributaries that fill Lake Tahoe with snow melt yearly. As a result, sediment, carried down to the lake via rivers and streams, has filled in ten miles of shoreline over millions of years. Changing the course of the river in the meadow will not change this natural process.

The environment seems to be doing just fine within the Washoe Meadows. A number of native wildlife species are thriving there. The enevitable clear cutting of the trees to make way for the golf course will drive away all of the birds and wild animals that those of us that use the meadow enjoy seeing there.

The Amacker ranch still operates an equestrian facility on the north edge of the park off of Sawmill road where approximately 50 equestrians, myself included, access numerous mountain trails in and around the park each summer. Over the years, historic equestrian trails have been blocked by overdevelopment, and paved over for public use. Now we can look forward to the remaining trails being sodded over for yet another golf course.

It appears that the state parks department would sacrifice the interests of wildlife, area residents, and other recreational users of our park in order to serve those of American Golf Corporation who reportedly pays the department a mere $800,000 for the use of our public land while the public pays for the restoration of the river.

In addition, although there is concern about sediment going into the lake, why is it that there seems to be very little concern and study regarding just how much fertilizer and nutrients really end up in our lake as a result of golf courses being located along our river banks and shoreline?

Unknown

Sent: Friday, October 20, 2006 1:15 PM

Good day,
Although I do not live near the proposed 'project' area, I consider all of Tahoe to be my backyard so include me in those OUTRAGED at this proposal.
What is the meaning of "public lands"?? How could this proposal have gotten so far along without more 'public' input. Because the TRPA is only required to notify residents within 300 ft? A sorry situation!

I absolutely vehemently oppose this "sell out" by our California State Parks to relocate a limited operation golf course in a STATE PARK. It's commendable that the State Parks finally wishes to step up to reduce the largest sediment producer in the basin, and the golf course reach have long been identified as a major supplier. As far as the golf course, they are only going along because they are losing so much turf every year.

But to allow the relocation of the golf course to a pristine area of natural forest, a STATE PARK (not a STATE RECREATION AREA like the golf course) is not only undesirable, but must be against the very standards of the California State Parks system. There MUST be alternative locations to lands that are more disturbed or more developed, rather than take away our open land!

I do not request, but demand there be some reasonable explanation for this proposal. The economic intrest of a private enterprise should never out-way public input and public lands!!

Sincerely,
Pat Kelley, a long time local resident in Christmas Valley

September 26, 2006
To whom it concerns,

I oppose the idea of re-locating the golf course for several reasons.

This forest/meadow/river area called the Washoe Meadows State Park has a pristine beauty that is difficult to match and areas like this seem to more and more difficult to find.
There are many uses that are unusual and precious in this area.
There are lot of different and neat environments to see and enjoy in a relatively small area; including forests, meadows, streams, underground water/springs, swamps, and more. All this can be seen on a short hike - within an hour.
There are all kinds of wildlife from bears and coyotes, to owls and red tails, to lizard and snakes.
Many more that I can't begin to mention.
Uses include hiking, running, snow shoeing, skiing, rope swinging into the river.
Walking the dogs, fishing, horse back riding.
Bird watching and spring flowers.
The most pristine and quiet winter days imaginable.
I have seen days and taken some of the most beautiful pictures I have ever seen in this area.

Now, imagine a golf course here.

The feeling that I get when I leave the forest and enter the golf course located within the State Park is difficult to describe. It feels like I have left a serene, secluded, friendly, and comfortable environment, and entered onto- well - a golf course.
It feels like I have or trespassed or invaded some one's private property.

I have seen children at the rope swing who told me that while they were coming across the golf course to get to the river, they were harassed by golf course marshals.

The idea of a golf course is so contrary to what has been protected and managed to be what it is now. I have wondered how the idea of moving the golf course would ever be taken seriously, or even be considered.
The answer is money. The golf course makes money for the State Park.

I believe that when money is involved in decision making, that the outcome of the decision is contaminated and corrupted.
I fear that makes opposition from the public and people like me useless.
But, I strongly believe that it would be a terrible and irreversible mistake (much like Tahoe Keys) to put the golf course in place of what is now Washoe Meadows State Park.

Pat Snyder
1849 Normuk Street
S. Lake Tahoe, CA 96150
(530)577- 16867

47

Hello Im writting you about the Golf course relocation. I live off of north upper truckie Road. every morning my Roommates and I take Runs & walks. to the location that the golf course wants to go. I think that you can not rebuild buitiful wilderness Just for a few hundred People golfing every summer. People Should not come to tahoe to Plow over ~~it~~ it for recreation. If you keep allowing things like this there will be no more wild in wilderness. Just a rich persons Play Ground. So please think about the future of wilderness.

Thank you for Posting the Sign for comments

Patrick (916) 798-9943 ☺

RECEIVED
OCT ... 2005
TAHOE REGIONAL
PLANNING AGENCY

DEAR MR. NIELSEN,

I WOULD LIKE TO COMMENT ON THE UPPER TRUCKEE RIVE RELOCATION & GOLF COURSE PROJECT. NEARLY EVERYONE AGREES ON RETURING THE RIVER TO IT'S NATURAL COURSE, BUT THERE ARE MANY DIFFERING VIEWS ON THE LOCATION OF THE PROPOSED GOLF COURSE & THE LANDS USE.

MY PROPOSIAL IS TO;

1) RESTORE THE RIVER TO IT'S NATURAL COURSE
2) BUILD A "NATURAL GOLF COURSE" (LIKE THE AWARD WINNING GOLF COURSES IN AZ.)
3) ALLOW ALL THE RECREATIONIAL ACTIVIES & USES TO TAKE ADVANTAGE OF THE NATURAL RESOURSES.
4) HAVE A WILD ZONE TO BORDER THE RIVER & RESTORE ANIMAL HABITAT.

I THINK THAT COMMERCE & CONSERVATION CAN WORK TOGETHER AS AN EXAMPLE TO THE REST OF THE COUNTRY, THAT TAHOE CAN DEVELOP WITHOUT DESTROYING NATURE'S BOUNTY, THAT'S WHY I MOVED HERE.

SINCERELY,

Patrick M Kennedy

1680 Grizzly Mtn.
So. Lake Tahoe, CA
96150

48

From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 3:06 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: lake tahoe golf course restoration

From: Peter Illing [mailto:peterilling@sbcglobal.net]
Sent: Thursday, September 28, 2006 10:20 AM
To: UT Project
Subject: lake tahoe golf course restoration

September 28, 2006

Mr. Paul Nielson,

This correspondence is to voice my opinion of the pending options presented by the governmental agencies to rehabilitate the river that flows through the Lake Tahoe Golf Course. I've been a permanent resident of Lake Tahoe for the past seven years and own my home which is in close proximity to the golf course. I golf there at least 100 days a year as so many of my friends do. in addition I entertain guests at the course which contributes to the economic benefit of all concerned.

With regards to the various solutions to the issue of erosion at the golf course and it's effect on lake clarity, I would support a plan to improve the river banks by whatever means necessary. I WOULD NOT CHANGE THE CONFIGURATION OF THE COURSE. Moving golf holes or reducing the size of the course (9 holes),is tantamount to reinventing the wheel.

Not only is this a magnificent setting for the people visiting the course for recreation, weddings and get together, but it is a beautiful setting for the homeowners in the area.

I consider myself an environmentalist, (tree hugger), and when I see the hard work performed by golf course employee's as well as nature conservancy staff I'm encouraged that the golf course area is in good hands.

Should you wish to contact me I'm available at tel: 530-577-6205, day or evening.

Thank You

Peter Illing
1451 glen eagles road
South Lake Tahoe, CA. 96150

From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 2:56 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: River Restoration

From: richard alexander [mailto:alex1956@sbcglobal.net]
Sent: Tuesday, October 17, 2006 9:04 PM
To: UT Project
Subject: River Restoration

Attention Project Managers:

I am appalled by the preferred alternate put forward by the consortium of agencies in the Notice of Preparation recently sent to my home.
I purchased my home adjacent to Washoe Meadows State Park fifteen years ago and since 1991 I have shared this wonderful resource with countless friends and family members. We have enjoyed hiking, running, cross country skiing, snow-shoeing, horseback riding and cycling in this diverse natural environment. Every summer we enjoy swimming and water play in the clear refreshing waters of the Upper Truckee River.
I fully support the idea of restoring the watershed of the Upper Truckee River and reducing the sediment that runs toward Lake Tahoe. However, this cause should not be used as a reason to relocate a golf course into an undeveloped state park. Nowhere in the state parks mission statement do we find justification for this suggested move.
California State Parks-Performance Management Report 2004:

> "California State Parks is the steward of some of the most diverse ecosystems in the world. With the role of stewardship comes the responsibility to preserve, and when necessary restore, these natural systems of state and national significance. "
>
> **Current Status**
>
> "Natural resources within the State Park System and throughout California face a variety of risks. Continuous urban expansion sequesters native plant and animal species into protected sanctuaries with hostile boundaries. The introduction of non-native or exotic species of plants and animals threatens natives. This has resulted in many species of flora and fauna being classified as threatened or endangered, risking extinction without intervention and protective measures. Additionally, natural processes lead to a buildup of fuels and prohibit natural propagation of certain species that depend upon the natural fire cycle for renewal or survival.
>
> **Lands Contributing to Sustainable Ecosystems**
>
> The Department is committed to increasing sustainability of parklands by securing lands that will bridge or link parks to other protected areas. These linkages will buffer the impact of urban residential use and provide meaningful watershed protection. They may also contribute to partnerships with other agencies by meeting regional conservation planning goals."

I call on my State Park representatives to enforce these concepts and protect Washoe Meadows Park from further development.

Obviously the Golf Course business is a great revenue generator for the state parks system at Lake Tahoe, perhaps one of the top few in the state I hear. Great. Keep it confined to the area it covers now and keep the great revenues.

Restore the river while conserving the wonderful wildlife corridor along Angora Creek and the meadows of Washoe Meadows Park.

The State Park and Recreation Commission's 2005 California Recreation Policy states:
"*Recreation areas should be planned and carefully managed to provide optimum recreation opportunities without damaging significant natural or cultural resources. Management actions should strive to correct problems that have the potential to damage sensitive areas and degrade resources.*"

Moving 8-10 holes, or any more holes of the golf course to the West side of the river would require significant clear cutting of our recovering forest areas... areas which the state parks foresters have been working hard to restore.

It makes no sense to clear tens of thousands of square feet of fairways to expand the golf course when there is adequate area for 18 holes on the East side of the river.

I ask that you

- Extend the public comment period for an additional 30 days to give time for the full community of interest to respond to your proposals.
- Establish a citizen advisory committee to represent all users of the park
- Revise the project goals with a primary focus on river restoration and remove goals related to improving or maintaining golf course revenues.
- Invite the public and the media to walk through the proposal area with representatives from all local conservation and restoration agencies present.
- Maintain the existing park area boundaries without changes.
- Avoid expanding mono-culture fertilized turf areas. This will only degrade lake clarity.

Please preserve our state park, maintaining its boundaries to protect its wildlife and biological diversity while providing recreational opportunities in a balanced way for all sorts of recreation. There are plenty of golf areas in Tahoe, and enough holes. Let's preserve the natural ones for the gophers and swimmers.

Sincerely,

Richard Alexander
927 Mountain Trout Drive
PO Box 10646 South Lake Tahoe, CA 96158-3646

Paul Nielsen
Project Manager
Tahoe Regional Planning Agency
P.O. Box 5310
Stateline, NV 89448

October 13, 2006

Comments on the proposed Upper Truckee River Restoration and Golf Course Relocation Project in Washoe Meadows State Park

Dear Paul,

Thank you for the opportunity to comment on the proposed Upper Truckee River Restoration and Golf Course Relocation Project in Washoe Meadows State Park. I strongly support the restoration of the riparian corridor along the Upper Truckee. I do <u>not</u> support relocating several holes of the golf course in Washoe Meadows.

I attended a public meeting at the golf course two years ago. At that meeting, the public was informed that Upper Truckee River restoration would likely require relocating "one or two" holes of the golf course. I discover in the Notice of Preparation that the preferred alternative would result in substantially greater impact to undeveloped land.

I suspect some of the technical features of the proposal are not in compliance with appropriate EIR/EIS protocol. However, I will not address this concern in my letter; instead, I want to point out the importance of the current recreational use of Washoe Meadows State Park for visitors and residents.

When I host out of town visitors, I always take them for a walk in Washoe Meadows. We do not stay on one defined trail, but amble in the inviting the natural setting. We experience uplands features, meadows, and river corridor in moderate terrain that is accessible to most. Washoe Meadows is one of the few places in the Lake Tahoe Basin that visitors can enjoy without being exceptionally physical fit.

A hike or snowshoe in Washoe Meadows is a mini-adventure for these folks. These activities in such an accessible and varied setting are rare in and around the Basin and are the essence of the stated recreational purpose of a California state park.

Thank you for considering my comments.

Richard Booth
RBooth1334@msn.com

Richard Booth
1769 Delaware St.
South Lake Tahoe, CA 96150

cc: California Department of Parks and Recreation, Cyndie Walck
US Department of the Interior, Bureau of Reclamation, Myrnie Mayville

50

From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 2:57 PM
To: Walck, Cyndi; Mike Elam
Subject: FW:

From: materago@juno.com [mailto:materago@juno.com]
Sent: Tuesday, October 17, 2006 7:59 PM
To: UT Project
Subject:

Well, where do I start?

I do not live near Washoe Meadows State Park. I AM an avid golfer. However, it seems this project does not look at all 3 areas of the "Triple Bottom Line" concept. Environmental: Yes, you are working to protect the river by moving the course away from the river. However, to make the holes on the other side of the river you will need to cut down perhaps hundreds of trees and will have new drainage problems. Economic: This seems to be the only area you are concerned with: how much revenue the state parks system will bring in with the golf course being moved onto State Park lands. The course as it is now is a fine course, very enjoyable to play though it does cost a lot. I certainly don't want the price to go up which I assume would happen under this plan. That would affect the economics of the Bottom Line. Locals can hardly afford to play the course now. Social: this plan is most detrimental to the social aspect of the Triple Bottom Line. Washoe Meadows is used by bikers, hikers, horseback riding, cross country skiing, you name it. Washoe is a magnet for people to enjoy the outdoors. This plan would destroy much of that.

So as you can see I do not support this plan. Leave the park the way it has been for years. It is well used by all citizens of this area and deserves to remain that way. Thanks for your time.

Richard Matera

530-544-3814

California Regional Water Quality Control Board
Lahontan Region

Linda S. Adams
Secretary for Environmental Protection

2501 Lake Tahoe Boulevard, South Lake Tahoe, California 96150
(530) 542-5400 • Fax (530) 544-2271
http://www.waterboards.ca.gov/lahontan

Arnold Schwarzenegger
Governor

RECEIVED

September 29, 2006

Paul Nielsen
Tahoe Regional Planning Agency
P.O. Box 5310
Stateline, NV 89448

COMMENTS ON THE NOTICE OF PREPARATION OF THE DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT (EIR/EIS) FOR THE UPPER TRUCKEE RIVER RESTORATION AND GOLF COURSE RELOCATION PROJECT

California Water Quality Control Board, Lahontan Region (Water Board) staff have reviewed the subject document. We understand the California Department of Parks and Recreation, in cooperation with the Tahoe Regional Planning Agency and the United States Bureau of Reclamation, propose to restore eroding portions of the Upper Truckee River within the Lake Valley State Recreation Area and relocate the existing golf course to accommodate more natural geomorphic processes and floodplain function.

The Regional Board is a responsible agency pursuant to the California Environmental Quality Act (CEQA) for this plan. We have reviewed all information submitted with respect to water quality and have the following comments:

<u>Water Quality Impact - Construction</u>

The EIR/EIS must include a detailed analysis of potential short term water quality impacts. Specifically, the document must describe construction related water quality issues and discuss proposed mitigation measures to reduce potential impacts to less than significant levels. If possible, the EIR/EIS should include a numeric estimate of pollutant loading (sediment, nitrogen, and phosphorus) expected from temporary construction and compare the short term impacts with expected long-term load reductions.

The EIR/EIS should also include information regarding construction methodologies, special equipment, temporary best management practices, design considerations, and other details to demonstrate the project can be constructed without discharging sediment or other pollutants to the Upper Truckee River. If your analysis concludes temporary construction activities will violate water quality objectives and standards

8

contained in the *Water Quality Control Plan for the Lahontan Region* (http://www.swrcb.ca.gov/rwqcb6/BPlan/BPlan_Index.htm), then the EIR/EIS must include a statement of overriding consideration that weighs the long term water quality effects against temporary construction impacts.

Water Quality Impact – Long Term

One of the stated project goals is to reduce erosion and improve water quality by reducing the river reach's suspended sediment and nutrient contributions to the Upper Truckee River and Lake Tahoe. The EIR/EIS must discuss the potential for the proposed alternatives to achieve this goal. Consideration should be given to each alternative's ability to reduce total suspended sediment and nutrient concentrations and address identified channel erosion problems. If possible, the EIR/EIS should include a quantitative pollutant load reduction estimate for each of the evaluated alternatives and compare the estimate with loading estimates from existing conditions. In general, the draft EIR/EIS must include adequate information to identify which alternative has the greatest water quality benefit.

The document should also consider the river restoration project in the context of other stream restoration work in the Upper Truckee watershed. Specifically, the EIR/EIS should evaluate existing sediment load and address how expected load changes might affect other Upper Truckee restoration efforts.

Golf Course Relocation

The Notice of Preparation includes project goals related to the Lake Tahoe Golf Course including maintaining quality of play at a championship level and maintaining revenue levels. These goals are seemingly unrelated to the proposed river restoration project and may not be consistent with other project objectives. The EIR/EIS should discuss the rational behind the golf course related project objectives in the context of the river restoration effort.

The project proponent should also be aware that operational requirements for the proposed golf course re-alignment may be different than for the existing Lake Tahoe Golf Course. Consistent with other recent golf course construction projects in our region, the operator of the relocated course will be required to conduct extensive surface and ground water monitoring (see enclosed monitoring requirements for Siller Ranch for sample monitoring requirements). The golf course operator will also be required to develop and implement detailed irrigation and fertilizer management programs.

The EIR/EIS must also describe potential impacts to the existing Washoe Meadows State Park associated with golf course relocation, including project effects on vegetation and runoff. Proposed mitigation measures must be described to reduce or eliminate identified impacts. The document should also describe how golf course relocation is consistent with established goals, objectives, and plans established for Washoe Meadows State Park.

Thank you for the opportunity to comment on the Notice of Preparation. If you have any questions or comments regarding this matter please contact me at (530) 542-5439 or Doug Smith, Tahoe TMDL Unit Chief at (530) 542-5453.

Sincerely,

Robert Larsen
Environmental Scientist

Enclosure: Siller Ranch Monitoring and Reporting Program

t:km/UTR.golf.ceqacomments.doc

Unknown

Sent: Friday, October 20, 2006 1:02 PM

To Whom it May Concern,
I am resident of Meyers and moved here to be able to enjoy the open space and river, as well as the forest of this area, and particularly the Washoe Meadow. I cannot believe that the proposal to move 9 holes over to another very eologically sensitive part of our area is being considered. Hasn't the lesson been learned from the first golf course? Why can't they do 9 holes, and go around twice? There are other golf courses in the immediate area...

Isn't this area a natural habitat for many of our wildlife?
Don't animals migrate annually through these meadows?
Wouldn't this affect the quality of the river?

I say NO!
Robin Rogers Rudikoff
1114 Modoc Way
Meyers, CA
577-5362

Oct. 12th 2006
Paul Nielson, Project Manager, TRPA

Dear Paul,

This letter is in response to the Alternative 2 project Washoe Meadows State Park.

We all agree the restoration project on the Upper Truckee River is a very important project and that it should go forward.

As homeowners at 843 Chilicothe St. for 20 years we have utilized the park in many ways, such as hiking, bird watching and enjoying the wild life. Just looking at the Natural Park from our back deck has given us great pleasure over the years.

We are very alarmed after learning of the preferred Alternative 2. Our property is located immediately adjacent to the proposed reconstruction project.

The draft EIR should provide more detailed map of the proposed golf course layout. Maybe that would answer many of our concerns that the NOP currently raises, such as

TRAFFIC-The main entrance gate is at the end of Chilicothe St., How will this impact us?

NOISE- One of the benefits of living adjacent to the park is the peacefulness, will the noise from the Golf Course infringe on our peace and quiet?

BUFFER- What design and size of buffer will there be between the course and adjacent properties (if any).

We are concerned that placing the Golf Course in a highly sensitive area that is designated 1b would be detrimental to the area, and also deny the public the use of a large part of Washoe Meadow State Park.

Sincerely,

Roger and Barbara Copeland
Email tex4ark@sbcglobal.net
Mail-2074 Via Rancho San Lorenzo, CA. 94580

Unknown

Sent: Tuesday, October 31, 2006 10:42 AM

Mike,

Please e-mail me a copy of the 22 Page Notice of Preparation of the Draft EIR for the Upper Truckee River & Marsh Restoration (10/03/06). I leave within 300 feet of the sailing lagoon @ Tahoe Keys.

Should you have any questions, please give me a call.

Ron Hoffman

Phone (916) 286-5981
Fax (916) 646-3996
e-mail ronhoffman@paula.com

From: RonCRettus@aol.com [mailto:RonCRettus@aol.com]
Sent: Monday, October 16, 2006 12:46 PM
To: Project, Upper Truckee
Cc: GM@LakeTahoeGC.com; super@laketahoegc.com
Subject: Comment on UT Project - I am in Favor of Alt 2 / Alt 4 - ATTN: Cyndie Walk

October 20, 2006 is the extended date for comments of the UT Project.

My name is Ron Rettus, I am a long term resident of South Lake Tahoe and frequent user of the Lake Tahoe Golf Course. I have attended the meeting regarding the Upper Truckee Restoration, inspected the Web Sites and appreciate each of the points of view of the interested parties.

I will not dispute the claims of some of the groups that "hundred's of people" use the park area each week, walking and enjoying the wilderness. But it is important to remember the facts versus claims. It is a fact that over 30,000 rounds of golf are played at the golf course each May to October season. This equates to many hundreds of local citizens and thousands of visitors, the majority from California.

The golfers are enjoying the scenery, recreation and contributing to a geographically expanded Lake Tahoe Basin economy with taxes, lodging, meals and shopping. We will experience significantly reduced visitors and locals at the golf course and therefore at Lake Tahoe if the course is removed or reduced to a 9 hole golf course. A 9 hole golf course will force both local and visiting golfers to seek an alternative regulation golf experience "off the hill".

The other golf courses in the area: Bijou (a 9 hole course); Paradise (not a regulation 18 hole course); and Edgewood (Green Fees in excess of $200) do not meet the requirements of the golfers that currently use the Lake Tahoe Golf Course facilities.

Any decision other than Alt 2 (Partial movement and re-establishment of a full 18 hole golf course) or Alt 4 (Addressing the river while not disturbing the current golf course) would have a negative impact to the recreation facilities available to the local population and in addition would impact revenues available to Lake Tahoe business' and government.

Let us remember that "Recreation" in the Parks and Recreation Mission is not defined as walking and enjoying the scenery only. The golfers living in the Lake Tahoe Basin as well as the many visiting golfers should be allowed to enjoy the recreation facilities currently provided by California Parks and Recreation.

Sincerely

Ron C Rettus
803 Michael Drive
South Lake Tahoe, Ca 96150
530-545-3167
roncrettus@aol.com

From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 3:05 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: upper truckee restoration

Attachments: IMG_0396.JPG

-----Original Message-----
From: ron robbins [mailto:jorobbins@MauiMail.com]
Sent: Tuesday, October 03, 2006 5:50 PM
To: UT Project
Subject: upper truckee restoration

Mr. Nielson,

I would like to express my views concerning this project as an interested party. Washoe Meadows State park backs my home on Delaware Street. I have golfed on the golf course and use the park extensively.

First, restoration of the river is an excellent project and long over due.

Within the area under alternative 2 which part of the golf course would be located if adopted reside spectacular wild gardens, which are the best I have seen in the entire basin. I have hiked the entire basin for 30 years. Within these gardens are the most spectacular displays of orchids I have seen in extensive hiking of the western United States. We both know that if the golf course goes in here, no matter what the signage and fencing these areas will be destroyed and this will be a tragedy. I have attached a photograph from this past spring.

The impact on life style under alternative 2 will also be severe. The local neighborhood, which is now quiet, will be negatively impacted.
The residents use the park in an open informal way, which will disappear. It is a mistake to eliminate one recreational use in favor of another recreational use for the sole purpose of revenue flow. This becomes a net decrease in recreational opportunity. The informal recreation is open to everyone no matter what his or her economic status.

It is difficult for me to reconcile certain things and when this happens the TRPA loses credibility. We built our home in the mid 90's and took TRPA guidelines to heart. We went natural. All vegetation was saved that was possible. Along Delaware, both the Conservancy and the Forest service have purchased lots to save sensitive habitat, yet I am told that destruction of upland habitat for the golf course is OK since there is so much in the basin.

I would also like some statements from TRPA documents considered.

A. Plan area statement 133: "The area should remain residential, maintaining the existing character of the neighborhood.

B Plan area statement 119: "The area offers excellent potential for wildlife use due to the presence of natural wildlife movement corridors and an abundant and diverse assemblage of plant communities."

C Plan area statement 119: "The bog communities should be evaluated for designation as "Uncommon Plant Communities.""

D TRPA code of ordinances 75.2 B: Projects and activities that significantly adversely impact uncommon plant communities, such that normal ecological functions of natural qualities of the community are impaired, shall not be approved."

E Chapter 5 TRPA 2001 Threshold evaluation: The two primary results of the large amount of public ownership within the Region are that forestland is managed for noneconomic goals, and uncommon plant communities and sensitive plants are afforded greater protection."

You and I met once several years ago for a rather insignificant project and I don't expect you to remember. I came away with the impression that you had no interest in seeing informal usage of land in the urban areas be restricted as long as that usage is pedestrian. I hope people will see that this project destroys that type of usage for a large
number of people in the affected neighborhoods.

Thank you for your attention,

Ron Robbins

From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 3:00 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: Upper Truckee River RestorationProject

From: Sally Loomis [mailto:mountainpride@sbcglobal.net]
Sent: Monday, October 16, 2006 4:53 PM
To: UT Project
Subject: Upper Truckee River RestorationProject

To: Paul Nielson

I think we are all in agreement that we want a clean, clear Lake Tahoe, and we all want to do what is necessary to keep it clean and clear. I have read the web page at www.parks.ca.gov/pages/980/files, and have done what I can to understand the problem. It sounds like the straitening of the river, and the deepening of the channel has caused erosion problems affecting lake clarity.

What I'm not reading about is how the golf course adds nutrients to the lake. Surely there is fertilizer added regularly in order to keep the grass so green and healthy. I live close by and can often smell the fertilizer after it has been applied. Then there are the geese who congregate on the grass, adding even more fertilizer (there have been articles in the Tribune about geese and dogs adding to the nutrient problem of the lake as well). So, it seems to me, since this project is meant to increase clarity of the lake, that adding area of grass to be fertilized (the maps make it appear that the relocation option to keep it an 18 hole course actually will be and increase in area) can only be the wrong choice.

In addition to that, I live on the corner of Bakerfield and Country Club, and I see how many people park on the corner to take a walk along the river to enjoy the peace and quiet. It is important to get the feeling of nature and space that we all live here becuase we enjoy. Many people take their dogs for a walk in the proposed relocation area, and others ride bikes or horses. I see many kids out in the area as well. By relocating the golf course to the proposed spot, you will be taking away for the solitude and unmarked beauty we all want. Golf courses may be nice for those who use them, but they are not natural.

I opt for either Alternative 3 (having a 9 hole course), or alternative 4 (leaving the golf course as is and stabalizing the river). Much can be done below the Elks Club Lodge near the airport to help the sediments settle. What would be BEST for the health of the lake is to get rid of the whole golf course completely, but I know that that is not really an option.

Sally Loomis
1635 Bakersfield St.
SLT, CA 96150

From: scott valentine [valentinescott@hotmail.com]
Sent: Saturday, October 21, 2006 8:12 PM
To: UT Project
Subject: UT River Restoration

Paul Nielsen,

I read through the Notice of Preparation for the Restoration of the Upper Truckee. I strongly support the restoration of the river but the Public Notice did not address several important issues. The issue of snowmobile use/noise and general golf course use/noise along Delaware St. was inadequately addressed. But more importantly, the size of the land swap was not mentioned in the Notice. From the map, one can only infer that the golf course will be relocated to and area much larger than the one where it currently sits. I can understand if the trade is for equal area parcels, but if the new golf course area is to be larger....this is unacceptable. A larger buffer near homes and park meadow areas could reduce the size so that parcels are of equal acreage. Please extend the open period for comments until these issues are clarified. I'd hate to see the State Park lose revenue, but until then I support alternative #3.

Scott Valentine
2314 Utah Ave.
South Lake Tahoe, CA 96150
(530) 544-7718

Tahoe Daily Tribune
and THE LAKE TAHOE NEWS

Letters to the editor

October 20, 2006

Proposed golf course placement 'lunacy'

I am a 20-year home owner in the Mountain View Estates subdevelopment. All development in this area was stopped over 30 years ago due to its environmental sensitivity. It is directly uphill of a large natural filtration area which slowly treats all runoff between Angora Ridge and the Upper Truckee River. This area is known today as Washoe Meadow Wildlife Refuge. State and county agencies continue to work to perfect the drainage systems in the area to ensure little or no potential pollutants reach the Upper Truckee and its direct flow into Lake Tahoe.

Enter a new project: The Upper Truckee River Restoration and Golf Course Relocation Project. I doubt that anyone objects to the river restoration portion of this project. But seriously, how can any competent agency consider relocating a golf course directly uphill of the Truckee River. This would be an unbelievable insult to thousands of local residents forced to comply to BMP requirements, even those living miles from any direct flow into Lake Tahoe. I'm sure all Californians would be thrilled to learn that their tax dollars are building golf courses in Lake Tahoe, while prisons, schools, social programs and real environmental restorations are shorted funds yet again. Golf courses provide recreation for those who can afford it. I have no problem with that. But even a well-planned golf course is not environmentally friendly.

To intentionally position a course to straddle the most important water shed in the Lake Tahoe Basin is environmental lunacy.

Steve Szekely

South Lake Tahoe

53

Golfing is part of recreation, too

I am a long-term resident of South Lake Tahoe and frequent user of the Lake Tahoe Golf Course. I have attended the meeting regarding the Upper Truckee Restoration, inspected the Web sites and appreciate each of the points of view of the interested parties.

I will not dispute the claims of some of the groups that "hundreds of people" use the park area each week, walking and enjoying the wilderness. But it is important to remember the facts versus claims. It is a fact that over 30,000 rounds of golf are played at the golf course each May to October season. This equates to many hundreds of local citizens and thousands of visitors, the majority from California.

The golfers are enjoying the scenery, recreation and contributing to a geographically expanded Lake Tahoe Basin economy with taxes, lodging, meals and shopping. We will experience significantly reduced visitors and locals at the golf course and therefore at Lake Tahoe if the course is removed or reduced to a nine-hole golf course. A nine-hole golf course will force both local and visiting golfers to seek an alternative regulation golf experience "off the hill."

The other golf courses in the area: Bijou (a nine-hole course); Paradise (not a regulation 18-hole course); and Edgewood (green fees in excess of $200) do not meet the requirements of the golfers who use the Lake Tahoe Golf Course facilities.

Any decision other than (1) partial movement and re-establishment of a full 18-hole golf course; or (2) addressing the river restoration while not disturbing the current golf course would have a negative impact to the recreation facilities available to the local population and, in addition, would impact revenues available to Lake Tahoe businesses and government.

Let us remember the "recreation" in the Parks and Recreation mission is not defined as walking and enjoying the scenery only. The golfers living in the Lake Tahoe Basin as well as the many visiting golfers should be allowed to enjoy the recreation facilities currently provided by California Parks and Recreation.

Ron Rettus

South Lake Tahoe

54

From: MolaMolaDesigns@aol.com [mailto:MolaMolaDesigns@aol.com]
Sent: Tuesday, October 17, 2006 8:50 AM
To: Paul Nielsen
Subject: Fwd: Washoe Meadows Golf Project...

In a message dated 10/11/2006 8:50:30 P.M. Hawaiian Standard Time, SueatTahoe writes:
To whomever is concerned,

I have been a local resident in Meyers, South Lake Tahoe for over twenty years. I recently learned of the proposal to put in a golf course on the West Side of the South Upper Truckee river. I strongly OPPOSE this idea!!! Why can't we ever seem to keep our commitments to preserve these beautiful wilderness areas that we all love and cherish. There are more than enough golf courses in the Tahoe basin, many that appear to get little use as it is!! Why add another one! Please continue to do your part with regard to the conservation of this pristine mountain wilderness. After all, isn't that why most of us choose to live here??!

Thank you for listening,

Best regards,

Sue McPherson
P.O. Box 550065, SLT
CA 96155

From: SueatTahoe@aol.com [mailto:SueatTahoe@aol.com]
Sent: Wednesday, October 11, 2006 11:51 PM
To: Paul Nielsen
Cc: MolaMolaDesigns@aol.com
Subject: re: Washoe Meadows Golf Project...

To whomever is concerned,

I have been a local resident in Meyers, South Lake Tahoe for over twenty years. I recently learned of the proposal to put in a golf course on the West Side of the South Upper Truckee river. I strongly OPPOSE this idea!!! Why can't we ever seem to keep our commitments to preserve these beautiful wilderness areas that we all love and cherish. There are more than enough golf courses in the Tahoe basin, many that appear to get little use as it is!! Why add another one! Please continue to do your part with regard to the conservation of this pristine mountain wilderness. Afterall, isn't that why most of us choose to live here??!

Thank you for listening,

Best regards,

Sue McPherson
P.O. Box 550065, SLT
CA 96155

52

From: tmazzoni@co.el-dorado.ca.us [mailto:tmazzoni@co.el-dorado.ca.us]
Sent: Monday, October 16, 2006 4:19 PM
To: Project, Upper Truckee
Subject: LTGC project

I have an active user of the Lake Tahoe golf course for the past 10 years. Considering the choices available to local golfers, LTGC is certainly the best bargain in town. Most golfers prefer an 18 hole course that is not only beautiful, but challenging. LTGC certainly has both qualities. Many locals play LTGC on a regular basis because of its qualities. Other courses in the area such as Bijou or Tahoe Paradise or decent courses, but both lack the size, character, and challenge provided by LTGC. Edgewood is a very nice course, but its cost over $200.00 for one round...which is far more than most Tahoe locals can afford.

Reducing LTGC to a 9 hole course would have dramatic effects on local golfers and the tourist industries. Most proficient golfers want to play a 18 hole course that is not only beautiful, but challenging. Reducing the size would cause reduce the amount of revenue allotted to State Parks coffers, cause locals to go to Carson Valley, reduce job opportunities for locals and especially summer jobs for high schoolers, eliminate a home course & practice facility for South Tahoe High School.

I have seen the damage to the golf course and many other parts of the river due to the huge snow packs in the past two years. The land along the river can repaired will erosion control projects and future environmental planning. The golf course did not cause the erosion problems and I have seen previous plans to improve the course including water management.

LTGC is one of prized possessions. If there is need to move some of the holes to accommodate the environmental necessities, I would have no problem supporting that effort. I would hope that improvements to the river structure would curtail any drastic measures and that course remain as is. The golf course personnel fully support environmental causes including the numerous additions to securing wildlife, wetlands and fisheries. Should have any questions, please feel free to contact me.

Tim Mazzoni
573-3339

42

From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 2:57 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: Upper Truckee Project

From: Tom Gavigan [mailto:grabaman@yahoo.com]
Sent: Tuesday, October 17, 2006 4:17 PM
To: UT Project
Subject: Upper Truckee Project

October 17, 2006

Paul Nielsen, Project Manager
Tahoe Regional Planning Agency
P.O. Box 5310
Stateline, NV

Sent via email: utproject@trpa.org

I have the following comment regarding the Notice of Preparation for the project titled "Upper Truckee River Restoration and Golf course Relocation Project."

Alternative number 3, the "nine hole option", is nothing more than lip service to the public. The stated goals and objectives include maintaining golf course revenue and quality of play at a championship level. These objectives effectively make alternative number 3 something that will be immediately dismissed.

- Either Alternative number 3 needs to be removed or the key objectives need to be changed (preferably the latter).

If protecting the environment and Lake Tahoe are REALLY the goals of this project, then it's clear that a 9-hole course (alternative 3) is the BEST course of action and should be strongly considered. This alternative "would not alter the area west of the river, and would not include the proposed bridge crossing near the existing Hole 6 Bridge."

Thank you for the opportunity to comment.

Tom Gavigan
1881 Hunkpapa Street
South Lake Tahoe, CA 96150
grabaman@yahoo.com

Letters to the editor TDT

October 18, 2006

Support for moving the golf course

I support the proposed relocation of the Washoe State Park golf course, commonly known as "The Country Club." I live on property next to the Upper Truckee River and the golf course. The habitat in and around the river is in very poor shape and supports little wild and fish life. Few can argue the channelized river is an environmental benefit to the lake, while this section of river is the worst of Lake Tahoe's watersheds.

Relocation of nine holes from the sensitive stream zone along the river, removal of all but one of the bridges, and restoration of the old meander channels will improve habitat and water clarity. The proposed site for the new nine holes is an area that is forest land, not sensitive meadow as some claim. This area is covered with old roads, sewer lines and a semi restored sand pit.

Though Ms. Russell indicated that this proposal is new and the public has not been notified, I have attended public meetings, received information from the State, read Tribune articles regarding same for several years.

Thomas Yant

South Lake Tahoe

59

From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 3:01 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: Upper Truckee River Restoration and Golf Course Relocation

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From: Thomas Yant [mailto:thomasyant@sbcglobal.net]
Sent: Monday, October 16, 2006 8:35 AM
To: UT Project
Subject: Upper Truckee River Restoration and Golf Course Relocation

I have lived at 1728 Sawmill Rd for 17 years, and at South Lake Tahoe for 45 years. My property is located on the Upper Truckee River, next to the golf course. In these years, I have seen a tremendous amount of erosion of the banks and stream bed, in spite of several projects designed to stop these events. The golf course has implemented various schemes along the banks to no avail, and in some instances made matters worse. The stream-side vegetation and habitat is degraded, and the fishery is almost non-existent. Most people believe some thing should be done about the tons of material that are washed into the lake every year.

I support the relocation of the golf course holes which are along the river to the land across and away from the river, and the restoration of the old meander channels in the area. As you know the river was straightened out in the past by those interested in draining the wet land adjacent to the river, to facilitate cattle grazing. The meadows along the river are now very dry and flood only occasionally. The river is fixing itself, by creating new meanders and flood plains. However this causes nutrient rich material to be swept into the lake. Hopefully, restoration of the old channels and creation of some new ones will help improve the water quality.

I think the other options, such as doing nothing, confining the river to a concrete trench, or removing the golf course in its entirety, will not be beneficial and or may not be politically feasible. I support the "preferred solution" as outlined in proposed plans.

Thank you,
Tom Yant

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX

Cross Media Division (CMD-2)
Federal Activities Office - 75 Hawthorne St., San Francisco, CA 94105

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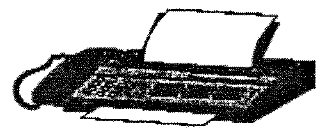

TO: Paul Nielsen

Organization: Project Manager, Tahoe Regional Planning Agency

Subject: Region 9 EPA scoping comments Upper Truckee River Restoration and Golf Course Relocation Project

Ph #: 775-588-4547 x 249

Fax #: 775-588-4527

FROM: Laura Fujii, Environmental Review Office, Region 9 US EPA

Ph #: 415-972-3852

Fax #: 415-947-8026

E-Mail Address: Fujii.laura@epa.gov

Date Sent: October 20, 2006

Number of pages including cover sheet: 10

Comments: The original signed letter is in the mail to Paul Nielsen, TRPA, P.O. Box 5310, Stateline, NV 89449

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

October 20, 2006

Mr. Paul Nielsen
Project Manager
Tahoe Regional Planning Agency
P.O. Box 5310
Stateline, NV 89449

Subject: Upper Truckee River Restoration and Golf Course Relocation Project, Lake Valley State Recreation Area and Washoe Meadows State Park, El Dorado County, California

The U.S. Environmental Protection Agency (EPA) has reviewed the Notice of Intent dated September 5, 2006, requesting comments on the California Department of Parks and Recreation, Bureau of Reclamation, and Tahoe Regional Planning Agency's decision to prepare a Draft Environmental Impact Statement/Environmental Impact Report (DEIS/DEIR) for the above action. Our review is pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act. Our detailed comments are enclosed.

Restoration of the Upper Truckee River is important to the health of the river and Lake Tahoe. The Upper Truckee River is the largest source of sediment to Lake Tahoe which adversely affects the clarity of the lake and its ecosystem. The proposed project purpose and need is to restore the natural geomorphic and ecological processes along the Upper Truckee River within Washoe Meadows State Park and the Lake Valley Recreation Area. One goal is to reduce the contribution of this reach to the river's nutrient and suspended sediment discharge to Lake Tahoe. The proposed restoration project would require certain sections of the Lake Valley Golf Course be relocated in order to recreate the natural geomorphology and floodplain of the river and to provide a buffer zone between the river and the golf course.

The proposed alternatives include: 1) No Action; 2) Geomorphic Restoration with a 18-hole Golf Course; 3) Geomorphic Restoration with a 9-hole Golf Course; and 4) Engineered Stabilization (In Place). Given the stated purpose and need for this project to restore natural conditions in this river reach, we believe it is reasonable for the DEIS/DEIR to evaluate an alternative to remove the golf course so that impacts associated with 18-hole, 9-hole, and golf course removal alternatives can be compared.

The DEIS/DEIR should evaluate the direct, indirect, and cumulative impacts of the proposed alternatives. Protection and enhancement of the Upper Truckee River water quality and beneficial uses should be a primary planning objective. Special attention should be given to third party impacts such as effects to Tribal sacred sites and sensitive species and their habitats.

We appreciate the opportunity to review this Notice of Intent and are available to discuss our comments. Please send one hard copy of the DEIS/DEIR and two CD ROM copies to this office at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please contact Laura Fujii, the lead reviewer for this project, at (415) 972-3852 or at fujii.laura@epa.gov

Sincerely,

Laura Fujii

Laura Fujii
Environmental Review Office
Communities and Ecosystems Division

Enclosure:
Detailed Comments
Tribal Consultation Executive Order

cc: Cyndie Walck, Department of Parks and Recreation
Mymie Mayville, Bureau of Reclamation
Bobby Shriver, Chair, State Parks and Recreation Commission

EPA DETAILED SCOPING COMMENTS ON UPPER TRUCKEE RIVER RESTORATION AND GOLF COURSE RELOCATION PROJECT, LAKE VALLEY STATE RECREATION AREA AND WASHOE MEADOWS STATE PARK, EL DORADO COUNTY, CA, OCTOBER 20, 2006

Environmental Impact Analysis

The Upper Truckee River is the largest source of sediment entering Lake Tahoe. In addition, recreation and fisheries habitat are key beneficial uses of the river and it is a significant part of the historical and cultural resources of the region.

Recommendation:

The draft environmental impact statement/environmental impact report (DEIS/DEIR) should evaluate the direct, indirect, and cumulative impacts of the proposed restoration and golf course relocation project. Special attention should be given to third party impacts such as potential effects on cultural or sacred sites of the Washoe Tribe; effects on beneficial uses; and effects on sensitive species and their habitat. The analysis should include a description and evaluation of the following potential project effects:

Water Quality and Wetlands

- Effects of nutrient and sediment inputs on groundwater and surface water quality. Of specific concern are potential impacts of golf course relocation, construction, and management.
- Effects on wetlands including unique wetland systems (bogs, fens) and associated wildlife (e.g., species of special concern such as the Mountain Yellow-legged Frog (*Rana muscosa*)).
- Effects on the hydrologic regime and geomorphology of the Upper Truckee River, especially down slope of the proposed golf course relocation site.

Other Issues

- Effects on tribal sacred sites and trust assets
- Effects on fisheries and threatened and endangered species
- Effects of noise on residential communities adjacent to the proposed golf course relocation site.

Consultation and Coordination with Tribal Governments

The proposed golf course relocation study area may include tribal cultural or sacred sites.

Recommendation:

The Washoe Tribe should be consulted on a government-to-government basis pursuant to the Executive Order on Consultation and Coordination with Indian Tribal Governments (enclosed).

THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release November 6, 200
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EXECUTIVE ORDER

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CONSULTATION AND COORDINATION
WITH INDIAN TRIBAL GOVERNMENTS

By the authority vested in me as President by the Constitution and the laws of the United States of America, and in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes; it is hereby ordered as follows:

Section 1. Definitions. For purposes of this order:

(a) "Policies that have tribal implications" refers to regulations
,
legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes.

(b) "Indian tribe" means an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interio
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acknowledges to exist as an Indian tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a.

(c) "Agency" means any authority of the United States that is an "agency" under 44 U.S.C. 3502(1), other than those considered to be independent regulatory agencies, as defined in 44 U.S.C. 3502(5).

(d) "Tribal officials" means elected or duly appointed officials o
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Indian tribal governments or authorized intertribal organizations.

Sec. 2. Fundamental Principles. In formulating or implementing policies that have tribal implications, agencies shall be guided by the following fundamental principles:

(a) The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. The Federal Government has enacted numerous statutes and promulgated numerous regulations that establish and define a trust relationship wit
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Indian tribes.

(b) Our Nation, under the law of the United States, in accordance with treaties, statutes, Executive Orders, and judicial decisions, has recognized the right of Indian tribes to self-government. As domestic dependent nations, Indian tribes exercise inherent sovereign powers ove
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their members and territory. The United States continues to work with Indian tribes on a government-to-government basis to address issues concerning Indian tribal self-government, tribal trust resources, and Indian tribal treaty and other rights.

(c) The United States recognizes the right of Indian tribes to self-government and supports tribal sovereignty and self-determination.

Sec. 3. Policymaking Criteria. In addition to adhering to the fundamental principles set forth in section 2, agencies shall adhere, t
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the extent permitted by law, to the following criteria when formulating and implementing policies that have tribal implications:

(a) Agencies shall respect Indian tribal self-government and sovereignty, honor tribal treaty and other rights, and strive to meet the responsibilities that arise from the unique legal relationship between the Federal Government and Indian tribal governments.

(b) With respect to Federal statutes and regulations administered by Indian tribal governments, the Federal Government shall grant Indian tribal governments the maximum administrative discretion possible.

(c) When undertaking to formulate and implement policies that have tribal implications, agencies shall:

(1) encourage Indian tribes to develop their own policies to achieve
program objectives;

(2) where possible, defer to Indian tribes to establish standards
;
and

(3) in determining whether to establish Federal standards, consul
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with tribal officials as to the need for Federal standards an

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any alternatives that would limit the scope of Federal
standards or otherwise preserve the prerogatives and authorit

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of Indian tribes.

Sec. 4. Special Requirements for Legislative Proposals. Agencies shall not submit to the Congress legislation that would be inconsistent with the policymaking criteria in Section 3.

Sec. 5. Consultation. (a) Each agency shall have an accountable process to ensure meaningful and timely input by tribal officials in th
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development of regulatory policies that have tribal implications. Within 30 days after the effective date of this order, the head of each agency shall designate an official with principal responsibility for th
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agency's implementation of this order. Within 60 days of the effective date of this order, the designated official shall submit to the Office of Management and Budget (OMB) a description of the agency's consultation process.

(b) To the extent practicable and permitted by law, no agency shal
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promulgate any regulation that has tribal implications, that imposes substantial direct compliance costs on Indian tribal governments, and that is not required by statute, unless:

(1) funds necessary to pay the direct costs incurred by the India

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tribal government or the tribe in complying with the regulation are provided by the Federal Government; or

(2) the agency, prior to the formal promulgation of the regulation

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(A) consulted with tribal officials early in the process of developing the proposed regulation;

(B) in a separately identified portion of the preamble to th

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regulation as it is to be issued in the Federal Register

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provides to the Director of OMB a tribal summary impact statement, which consists of a description of the extent of the agency's prior consultation with tribal officials

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a summary of the nature of their concerns and the agency's position supporting the need to issue the regulation, and a statement of the extent to which the concerns of tribal officials have been met; and

(C) makes available to the Director of OMB any written communications submitted to the agency by tribal officials.

(c) To the extent practicable and permitted by law, no agency shal
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promulgate any regulation that has tribal implications and that preempts tribal law unless the agency, prior to the formal promulgation of the regulation,

(1) consulted with tribal officials early in the process of developing the proposed regulation;

(2) in a separately identified portion of the preamble to the regulation as it is to be issued in the Federal Register, provides to the Director of OMB a tribal summary impact statement, which consists of a description of the extent of the agency's prior consultation with tribal officials, a summary of the nature of their concerns and the agency's position supporting the need to issue the regulation, and a statement of the extent to which the concerns of tribal officials have been met; and

(3) makes available to the Director of OMB any written communications submitted to the agency by tribal officials.

(d) On issues relating to tribal self-government, tribal trust resources, or Indian tribal treaty and other rights, each agency should explore and, where appropriate, use consensual mechanisms for developin
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regulations, including negotiated rulemaking.

Sec. 6. Increasing Flexibility for Indian Tribal Waivers.

(a) Agencies shall review the processes under which Indian tribes apply for waivers of statutory and regulatory requirements and take appropriate steps to streamline those processes.

(b) Each agency shall, to the extent practicable and permitted by law, consider any application by an Indian tribe for a waiver of statutory or regulatory requirements in connection with any program administered by the agency with a general view toward increasing opportunities for utilizing flexible policy approaches at the Indian tribal level in cases in which the proposed waiver is consistent with the applicable Federal policy objectives and is otherwise appropriate.

(c) Each agency shall, to the extent practicable and permitted by law, render a decision upon a complete application for a waiver within 120 days of receipt of such application by the agency, or as otherwise provided by law or regulation. If the application for waiver is not granted, the agency shall provide the applicant with timely written notice of the decision and the reasons therefor.

(d) This section applies only to statutory or regulatory requirements that are discretionary and subject to waiver by the agency
.

Sec. 7. Accountability.

(a) In transmitting any draft final regulation that has tribal implications to OMB pursuant to Executive Order 12866 of September 30, 1993, each agency shall include a certification from the official designated to ensure compliance with this order stating that the requirements of this order have been met in a meaningful and timely manner.

(b) In transmitting proposed legislation that has tribal implications to OMB, each agency shall include a certification from the official designated to ensure compliance with this order that all relevant requirements of this order have been met.

(c) Within 180 days after the effective date of this order the Director of OMB and the Assistant to the President for Intergovernmenta
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Affairs shall confer with tribal officials to ensure that this order is being properly and effectively implemented.

Sec. 8. Independent Agencies. Independent regulatory agencies ar
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encouraged to comply with the provisions of this order.

Sec. 9. General Provisions. (a) This order shall supplement but not supersede the requirements contained in Executive Order 12866 (Regulatory Planning and Review), Executive Order 12988 (Civil Justice Reform), OMB Circular A-19, and the Executive Memorandum of April 29, 1994, on Government-to-Government Relations with Native American Tribal Governments.

(b) This order shall complement the consultation and waiver provisions in sections 6 and 7 of Executive Order 13132 (Federalism).

(c) Executive Order 13084 (Consultation and Coordination with Indian Tribal Governments) is revoked at the time this order takes effect.

(d) This order shall be effective 60 days after the date of this order.

Sec. 10. Judicial Review. This order is intended only to improve the internal management of the executive branch, and is not intended to create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law by a party against the United States, it
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agencies, or any person.

WILLIAM J. CLINTON

THE WHITE HOUSE,
November 6, 2000.

# # #

Unknown

Sent: Friday, October 20, 2006 11:56 AM

Oct 20, 2006

Mr.Paul Nielsen et al,
The neighborhood that I live in is adjacent to the river and golf course that this project affects. I have spoken to many neighbors who feel the same way that I do.
In general, we feel as if there was **minimal** information given to the public from the start of this project, which must have been long ago, therefore we feel railroaded by the last minute signs now posted on river trails. Most of us feel that the clarity of the lake is of great importance, yet also feel that there are alternatives to what this project is proposing. There has to be a point at which the environment as it exists, with it's diversity of animal and plant populations, trumps the wishes of the tourist/golfing population and the states desire for more revenue. There are many golf courses imprinted on the landscape of the basin. There is no need to ruin any more existing lands for the sole purpose of extending a golf course. There must be an alternative, and there must be greater discussion. We as local citizens (who pay taxes to support government agencies) deserve the right to have (more than one) widely publicized forums to discuss the crucial and unjust decisions that affect us where we live and play every day. I urge you to put progress of this project on hold until the public can be thoroughly informed and have the chance to voice their opinion and cast their vote.
Thank you for your fair consideration, Vali Dees

From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 3:04 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: Relocation of Lake Tahoe Golf Course In Washoe Meadows

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From: K Vincent [mailto:kvtahoe@sbcglobal.net]
Sent: Tuesday, October 03, 2006 8:16 PM
To: UT Project
Subject: Relocation of Lake Tahoe Golf Course In Washoe Meadows

October 3, 2006

Paul Nielsen, Project Manager,
Tahoe Regional Planning Agency

Dear Mr. Nielsen,

As 32 year residence of the Lake Tahoe Basin and long time residences of South Shore & Meyers areas we felt we should let you know that we are totally against the relocation of the Lake Tahoe Golf Course in the Washoe Meadows area. Even though we do love the beauty of the golf course, either reduce the size of the current golf course to 9 holes and restore the needed areas or not move it at all. To encroach on a new area would only harm the land and the wild life that lives there. We use that land to walk on a regular basis and know that moving part of the golf course would totally ruin that peaceful area. Not only that, common sense tells us that the run off from the golf course would only harm the river. Many people use and enjoy that area all year long and to replace it with a golf course is just wrong. Not to mention all of the wild life that live in that area. As it is, anymore, the wild life has a hard enough time living up here (except the coyotes). Moving the golf course would only threaten their lives even more. We didn't move here to live by a golf course. We moved here because we love the natural surroundings and the wild life.

Please do not allow the relocation of the golf course in Washoe Meadows.

Sincerely
Mr. & Mrs. Vincent

Romans 8:28 And we know that in all things God works for the good of those who love him, who have been called according to his purpose.

RECEIVED
OCT 0 6 2006
TAHOE REGIONAL
PLANNING AGENCY

October 6, 2006

Tahoe Regional Planning Agency
P.O. Box 5310
Stateline, NV 89448
Attention: Paul Nielsen, TRPA Project Manager

State of California
Department of Parks and Recreation
Sierra District
P.O. Box 16
Tahoe City, CA 96145
Attention: Cyndie Walck, CEQA Coordinator

United States Department of the Interior
Bureau of Reclamation
2800 Cottage Way, Room E-2606
Sacramento, CA 95825-1898
Attention: Myrnie Mayville, NEPA Coordinator

We, the approximately 200 undersigned members of the Washoe Meadows Community, support the comments filed today and summarized below.

We express our commitment and unconditional support for expeditious, effective and complete restoration of the Upper Truckee River. We completely support the NOP statement of Purpose and Need in its entirety and expressly request it not be changed.

The conclusions we draw are summarized as follows:

1. The NOP describes a project that is defined incorrectly and reflects a flawed project approach that will needlessly delay restoration of the River with consequent effects on the clarity of Lake Tahoe (Lake).

2. Unless the scope (including the goals/objectives and alternatives) of the EIR/EIS/EIS is significantly revised prior to initiation of the review, the results will be biased and the project subject to legal challenge.

3. Unless important new commitments to an open public dialogue are included in the lead agency processes it is unlikely that any project reflecting community and stakeholder consensus will reach implementation in a timely manner.

4. Completion of the project as described in the Preferred Alternative would have significant, irreversible impacts on Park and Ri

60

- California Parks and Recreation Department (CDPR) planning, regulation and statutes; and

- the mandate of the Tahoe Regional Planning Agency (TRPA) contained in statute and adopted goals, plans and thresholds.

Our substantive concerns are:

The NOP embodies an approach that is unlikely to achieve the expeditious, effective and complete restoration of the River. This is because the NOP has:

1) defined the project incorrectly and probably illegally;

2) stated improper and arbitrary goals and objectives;

3) scoped the project alternatives too narrowly;

4) prematurely selected and recommended a "preferred alternative;"

5) not defined the roles of the participating agencies;

6) not shown a necessary objectivity of the analysis;

7) proposed *de facto* planning and boundary adjustment for the Park; and

8) proposed a "preferred alternative" that is inconsistent with the enabling statutes, TRPA Recreation Threshold, State Park Guidelines, and the General Plan for the LVSRA.

The remedies we request as a result of this scoping process are:

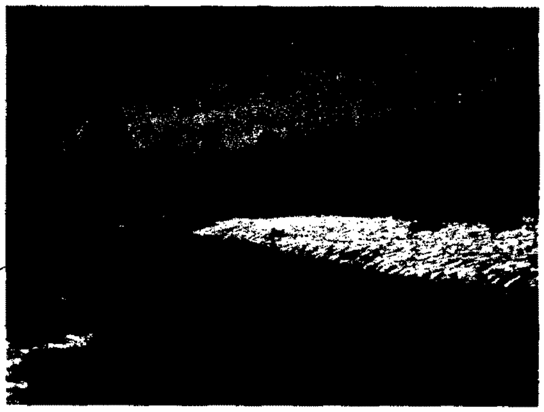
- revision of the project description to be *Upper Truckee River Restoration*;

- revision of the project goals and objectives to eliminate ones related to championship golf and golf course revenues;

- redefinition of the alternatives to address the full potential for restoration and for multiple configurations of the golf course within the boundaries of the Lake Valley State Recreation Area (LVSRA);

- addition of an alternative that would evaluate relocation of the entire golf course;

!!!Alert!!!



To: Washoe Meadows State Park Community

If you have a relationship with Washoe Meadows State Park, you should know there's a proposal to drastically change it.

They want to turn it into a golf course!

If you cherish the Park for its open space and have other ideas for ways it should be developed (or not), you should tune in to the

Upper Truckee River Restoration and Golf Course Relocation Project

⇨ What you can do.
Go online to **http://www.washoemeadowscommunity.org**. There you can find the 12-page proposal (NOP), which tells the story and announces important meetings. You can also find comments already filed by members of our Community.

We're all for restoring the river, but the park shouldn't be held hostage to a golf course to accomplish that!

Caring park users will need to mobilize to challenge this proposal and support one that will enhance the watershed while preserving the "wild side."

⇨**There's an October 6, 2006 deadline for comments on the "scope" of the Environmental Statement.**

This message brought to you by Bob and Grace. 577-2000 bob-a@sbcglobal.net

9/25/06

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From: Paul Nielsen [pnielsen@trpa.org]
Sent: Wednesday, November 01, 2006 2:46 PM
To: Walck, Cyndi; Mike Elam
Subject: FW: Truckee River Restoration & Golf Course Relocation project, My Concerns

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From: MADEinTAHOE@aol.com [mailto:MADEinTAHOE@aol.com]
Sent: Thursday, October 19, 2006 9:01 PM
To: UT Project; pnielson@trpa.org
Subject: Truckee River Restoration & Golf Course Relocation project, My Concerns

Dear Paul:

I am writing you today in regards to the Upper Truckee River Restoration and Golf Course Relocation Project, which sits on public land owned by all California Tax Payers. My husband and myself live in Meyers, and have for 19 years & we live within walking distance of the Washoe Meadows State Park. I would like to express to you our feelings & concerns we have in regards to the part of the new relocation of the Golf Course. It's bad enough that the Tahoe Basin was even developed and homes built here & then to put up a golf course and not only one golf course, but four!! Just on the South Shore alone. So when we heard there was a plan to take more sacred land away and add even more to the now existing golf course, was quite upsetting & we could not understand the thinking of some wanting to do such a horrible thing!

Have these people forgotten that the Tahoe Basin borders a Wilderness Area, is right in the middle of a living forest & where we have mountains all around us, beautiful wildlife & plant life that also make there home here? The poor animals that live here are just trying to survive & then to take more land away from them is not right. We are extremely concerned about the Bear & coyote dening sites in this area..to disturb and take those sites away from these animals is a crime & the people who are even thinking of this should be ashamed of themselves!

We have walked in the park for many years & we do not want to be walking along and have to look at a manicured pesticide filled golf course & worry about being hit by a flying golf ball! We are not against golf course's, if they are built in a proper area, not in a beautiful pristine plant & wildlife filled area! There is so much damage that will be done to the environment if this happens, animals, plants, trees, streams, meadows, and the Truckee River, also what this will do to homeowners quality of life which homes border the park!

We need to start preserving the lands that are left in the Tahoe Basin, and STOP developing them. We feel the people for this do not want to compromise, a compromise would be to not take more land away & just leave the now existing golf course where it is & if the river restoration disturbs the holes, then to make the golf course a nine hole. This way the river goes back to how it once was, no land has to be used & the golfers still have a golf course
Im sure as you are reading this, that we are totally against this land being used to relocate part of the golf course, it is yet another raping of the land!

How very sad a park named after the Washoe Indian Tribe, people that respected the land and did not destroy it, taking only what they needed to survive. We do not need this golf course to survive, but the animals, trees & plants do need it to survive.
We hope & pray that this new land will not be turned into a golf course, but instead left untouched how it should be! We would like to see the River restored to how it once was & the now existing golf course restored back to meadow lands. How ever on the alternatives mentioned, we like Alternative 3 the best " Geomorphic Restoration with 9-hole Golf Course" be done.

Thank you for taking the time to read our concerns

Wayne & Anita Chittenden
Meyers, Ca.

APPENDIX B

Proposed River and Floodplain Treatments by Alternative

Upper Truckee River Restoration and Golf Course Reconfiguration Project Appendix B

Proposed River and Floodplain Treatments by Alternative

Prepared by

Valley & Mountain Consulting

South Lake Tahoe, CA

October 2009

Introduction

The following text descriptions and tables of information identify the proposed river and floodplain treatment activities and features for each of the alternatives carried forward for environmental analysis. These descriptions have been developed through an iterative conceptual design process between State Parks and their consultants over the last few years. Most of the treatment types and locations were originally recommended in prior assessment and preliminary design information (SH+G January 2004, March 2004, October 2004; River Run 2006). However, the following proposed treatments by reach and sub-reach reflects integration of prior recommendations with updated information by State Parks, River Run, and Valley & Mountain Consulting as of spring 2009. These descriptions are intended to be consistent with and at greater detail than the descriptions provided within the body of Chapter 2, "Project Alternatives" of the draft EIR/EIS/EIS. Additional information about each treatment type is included in Appendix C "Conceptual Treatment Descriptions and Typical Sketches".

River Reaches and Sub-Reaches

Approximately 12,000 feet of the Upper Truckee River main channel is within the study area. This reach of the river has been broken into river stations (RS) that extend from just upstream of U.S. 50, where it intersects with Sawmill Road and Elks Club Road (RS 00), to just downstream of Lake Baron at the southern end (RS 12000). To help organize information about existing conditions within the study area and expected future conditions under each alternative, three major river reaches and several subreaches were identified (Table 1a). Major reaches are based on geologic history, valley topography, geomorphic features, sedimentary materials, and associated plant communities (SH+G 2004a, River Run 2006). Sub-reaches were identified to reflect some of the property ownership, land uses, and infrastructure locations that may be major factors to consider for project alternatives within the river reaches.

River stationing has also been developed along the proposed channel alignment under Alternatives 2, 3, and 5.

Table 1
Upper Truckee River Reaches and Subreaches in the Study Area

Reach	Subreac h	General Characteristics	Downstream River Station* (feet)	Upstream River Station* (feet)	Channel Length (feet)	Percent of Total
1	1A	Meadow	160	1,000	840	7.1
1	1B	Meadow	1,000	1,400	400	3.4
1	1C	Meadow	1,400	1,800	400	3.4
1	1D	Meadow	1,800	2,400	600	5.1
1	1E	Meadow	2,400	4,200	1,800	15.2
2	2	Transition	4,200	6,200	2,000	16.9
3	3A	Forest	6,200	7,500	1,300	11.0
3	3B	Forest	7,500	8,600	1,100	9.3
3	3C	Forest	8,600	9,000	400	3.4
3	3D	Forest	9,000	12,000	3,000	25.3
Total					11,840	100.0

* River station is the distance (in feet) up river from arbitrary zero point downstream and east of the U.S. 50 bridge over the Upper Truckee River. River stations are those used in hydraulic models of the project area (SH+G 2004b, 2004c).

Source: Data prepared by EDAW, Inc. and Valley & Mountain Consulting, 2008.

Treatments by Alternative

A comprehensive listing of the river and floodplain conditions and proposed actions, by Alternative, is provided in Table 2 in a layout that allows comparisons at the reach and sub-reach scale. The information in this matrix format can be cross-referenced to the following text and detailed tables for each Alternative and to the exhibits summarizing each Alternative in the body of Chapter 2, “Alternatives”.

REACH	Sub Reach	River Station(s)	Affected Environment/Setting Notes Existing Conditions	Alternative # 1 (Future 'baseline') Existing River and 18-Hole Regulation Golf Course/ No Action	Alternative # 4 River Stabilization /Existing 18-Hole Regulation Golf Course
1 Meadow	**1A**	**160 to 1000**		**No Planned Treatments/Activities**	**No Planned Treatments/Activities**
Valley			Moderate Valley width and Hwy 50 backwater		
Geology			High Lake-stand backwater deposits (older lake sediments)		
Vegetation			Meadows		
Channel			Incised; past straightening	River planform and profile will adjust by natural processes	
Banks/levees			n/a	Bank treatments and repairs by other parties, as needed	Bank treatments and repairs by other parties, as needed
Floodplain/Terrace			Left bank and right bank have small 2-year overbank areas Left and right bank have moderate 5-year overbank areas		
LandUse			No Golf Course; Private Residences within FP on Left/West	No Golf Course; Private Residences within FP on Left/West Sawmill Bike Trail Project will have installed new bridge (~RS 200)	No Golf Course; Private Residences within FP on Left/West Sawmill Bike Trail Project will have installed new bridge (~RS 200)
1 Meadow	**1B**	**1000 to 1400**		**No Planned Treatments/Activities**	
Valley			Broad Valley--Hwy 50 backwater		
Geology			High Lake-stand backwater deposits		
Vegetation			Meadows		
Channel			Incised; past straightening	River planform and profile will adjust by natural processes	River planform and profile will adjust by natural processes
Banks/levees			RB RipRap HWY ~RS 250; LB RipRap ~RS 920	Bank treatments and repairs by other parties, as needed	**Install bio-technical bank treatments ds of sewer line**
Floodplain/Terrace			Left bank has small 2-year overbank area; none on RB Left bank has moderate 5-year overbank area Right bank has small 5-year overbank area		
LandUse			Golf Course west/left side of UTR only, ~150-200 ft buffer	Golf Course west/left side of UTR only, ~150-200 ft buffer	Golf Course west/left side of UTR only, ~150-200 ft buffer
1 Meadow	**1C**	**1400 to 1800**		No Planned Treatments/Activities	
Valley			Broad Valley--Hwy 50 backwater		
Geology			High Lake-stand backwater deposits (older lake sediments)		
Vegetation			Meadows		
Channel			Incised; past straightening Sewer line crossing at ~1400 has boulder step Historic and restored Angora creek confluence ~RS 1800	River planform will adjust by natural processes; Profile control (boulder GC) at sewer line ~1400	Existing river planform and profile will be maintained **Install Armored Riffle GC over sewer crossing** **Install Boulder Step GC ~1425 US of sewer crossing** **Install Boulder Step GC ~1775 DS of Angora Creek**
Banks/levees			n/a	Spot bank treatments and repairs, if needed	**Install rock armor RB bank treatments 1400-1800** **Install biotech LB bank treatments, 1400-1800**
Floodplain/Terrace			Left bank has small 2-year overbank areas Left bank has moderate 5-year overbank area Right bank has small 5-year overbank area		
LandUse			Golf Course west/left of UTR only, ~150-200 ft buffer	Golf Course west/left of UTR only, ~150-200 ft buffer	Golf Course west/left of UTR only, ~150-200 ft buffer
1 Meadow	**1D**	**1800 to 2400**		No Planned Treatments/Activities	
Valley			Broad Valley--Hwy 50 backwater		
Geology			High Lake-stand backwater deposits (older lake sediments)		
Vegetation			Meadows ds of RS 2100, Landscaping us of RS 2100		
Channel			Incised Historic and restored Angora creek LB confluence ~RS 1800 GC bridge ~ RS 2150 GC surface water diversion ~RS 2300 Inlet to old meander ~RS 2400	River planform will adjust by natural processes; Profile control (boulder GC) at water diversion ~2300	Existing river planform and profile will be maintained **Install Boulder Step GC ds of bridge ~2100** **Install Boulder Step GC at surface diversion ~2300**
Banks/levees			Gravel berms/evees on LB and RB RB Rip Rap RS 2100 to 2400 LB RootWad ~RS 2300	Gravel berms/evees on LB and RB Spot bank treatments and repairs, if needed	**Remove berms/levees/ recontour and revegetate upper banks (to)** **Install rock armor RB bank treatments 1800-2400** **Install biotech LB bank treatments 1800-2400** **Remove or integrate existing bank treatment materials**

Table 2

			Affected Environment/Setting Notes	Alternative # 1 (Future 'baseline')	Alternative # 4
REACH	**Sub Reach**	**River Station(s)**	**Existing Conditions**	**Existing River and 18-Hole Regulation Golf Course/ No Action**	**River Stabilization /Existing 18-Hole Regulation Golf Course**
Floodplain/Terrace			Left bank has small 2-year overbank area; none on RB Left bank has moderate 5-year overbank area; none on RB		
LandUse			Golf Course on both sides of UTR us of 2000, no buffer	Golf Course on both sides of UTR us of 2000, no buffer	Golf Course on both sides of UTR us of 2000, no buffer
1 Meadow	**1E**	**2400 to 4200**		No Planned Treatments/Activities	
Valley			Broad Valley--Hwy 50 backwater		
Geology			High Lake-stand backwater deposits (older lake sediments)		
Vegetation			Landscaped and Meadows		
Channel			Incised past straightening Unnamed creek RB confluence ~RS 3000 Angora "ditch" (and old meander scar) LB confluence ~RS 4100 GC bridge ~RS 4100	River planform and profile will adjust by natural processes	Existing river planform and profile will be maintained **Install Boulder Step GC ds of unnamed creek (~2850)** **Install Boulder Step GC at ~3500** **Install Boulder Step GC at ~4025**
Banks/levees			Gravel berms/levees on LB and RB LB Root wad ~ RS 3200; RB RipRap ~RS 3700 LB RipRap ~RS 4090	Gravel berms/levees on LB and RB Spot bank treatments and repairs, if needed	**Remove berms/levees/ recontour and revegetate upper banks (to)** **Install rock armor RB bank treatments 2400-2800** **Install rock armor LB bank treatments 2800-3600** **Install rock armor RB bank treatments 3800-4000** **Install rock armor LB bank treatments 4000-4200** **Install biotech LB bank treatments 2400-2800** **Install biotech RB bank treatments 2800-3800** **Install biotech LB bank treatments 3600-4000** **Install biotech RB bank treatments 4000-4200** **Remove or integrate existing bank treatment materials**
Floodplain/Terrace			No 2-year overbank area along either bank (aside from trib mouths) Left bank and right bank have moderate 5-year overbank areas		
LandUse			Golf course on both sides of UTR, with 25 to 75 ft buffer	Golf course on both sides of UTR, with 25 to 75 ft buffer	Golf course on both sides of UTR, with 25 to 75 ft buffer
2 Transition	**2**	**4200 to 6200**		No Planned Treatments/Activities	
Valley			Transition from narrow upstream to broad downstream		
Geology			Transition from glacial outwash to "older lake sediments"		
Vegetation			Mixed meadow and forest vegetation		
Channel			Incised Minor woody debris role in channel GC bridge ~RS 4850	River planform and profile will adjust by natural processes	Existing river planform and profile will be maintained **Install Boulder Step GC at ~4525** **Install Boulder Step GC at ~4775** **Install Boulder Step GC at ~5225** **Install Boulder Step GC at ~5700** **Install Boulder Step GC at ~6100**

Table 2 cont.

REACH	Sub Reach	River Station(s)	Affected Environment/Setting Notes Existing Conditions	Alternative # 1 (Future 'baseline') Existing River and 18-Hole Regulation Golf Course/ No Action	Alternative # 4 River Stabilization /Existing 18-Hole Regulation Golf Course
Banks/Levees			Gravel berms/levees on LB and RB (? Check stations) RB Log (brush box behind) ~ RS 4800; RB Willow/soil wrap ~RS 5150; RB RipRap ~RS 5700	Gravel berms/levees on LB and RB (? Check stations) Spot bank treatments and repairs, if needed	**Remove berms/levees/ recontour and revegetate upper banks (to)** **Install rock armor LB bank treatments 4200-4700** **Install rock armor RB bank treatments 4200-4900** **Install rock armor LB bank treatments 5400-5700** **Install rock armor LB bank treatments 5900-6200** **Install biotech RB bank treatments 4200-4800** **Install biotech LB bank treatments 4700-5400** **Install biotech LB bank treatments 5700-5900** **Install biotech RB bank treatments 5400-6200** **Remove or integrate existing bank treatment materials**
Floodplain/Terrace			No 2-year overbank area along either bank Left bank and right bank have small 5-year overbank areas		
LandUse			Golf course on left/north bank of UTR at RS 4700 and 5100, with no buffer Golf course on right/south bank of UTR with 0 to 125 ft buffer	Golf course on left/north bank of UTR at 4700 and 5100, with no buffer Golf course on right/south bank of UTR with 0 to 125 ft buffer	Golf course on left/north bank of UTR at 4700 and 5100, with no buffer Golf course on right/south bank of UTR with 0 to 125 ft buffer
3 Forest	**3A**	**6200 to 7500**		No Planned Treatments/Activities	
Valley			Moderate width		
Geology			Glacial outwash and moraine material		
Vegetation			Forest		
Channel			Deeply Incised Low sinuosity Substantial woody debris role in channel	River planform and profile will adjust by natural processes	Existing river planform and profile will be maintained **Install Boulder Step GC at ~6550** **Install Boulder Step GC at ~6950** **Install Boulder Step GC at ~7550**
Banks/Levees			LB Root Wad ~RS 7450	Spot bank treatments and repairs, if needed	**Install rock armor LB bank treatments 6200-6900** **Install rock armor RB bank treatments 6900-7300** **Install rock armor LB bank treatments 6300-7500** **Install biotech RB bank treatments 6200-6900** **Install biotech LB bank treatments 6900-7300** **Install biotech RB bank treatments 7300-7500** **Remove or integrate existing bank treatment materials**
Floodplain/Terrace			No 2-year overbank area along either bank No left bank 5-year overbank area (aside from old meander mouth) Right bank has small 5-year overbank area, only ds of RS 6500	No 2-year overbank area along either bank No left bank 5-year overbank area (aside from old meander mouth) Right bank has small 5-year overbank area, only ds of RS 6500	**Excavate inset floodplain LB 7300-7500**
LandUse			Golf course only on east/right side of UTR with 150 to 200 ft buffer	Golf course only on east/right side of UTR with 150 to 200 ft buffer	Golf course only on east/right side of UTR with 150 to 200 ft buffer

Table 2 cont.

			Affected Environment/Setting Notes	Alternative # 1 (Future 'baseline')	Alternative # 4
REACH	**Sub Reach**	**River Station(s)**	**Existing Conditions**	**Existing River and 18-Hole Regulation Golf Course/ No Action**	**River Stabilization /Existing 18-Hole Regulation Golf Course**
3 Forest	**3B**	**7500 to 8600**		No Planned Treatments/Activities	
Valley			Moderate		
Geology			Glacial outwash and moraine material		
Vegetation			Forest		
Channel			Deeply incised; Substantial woody debris role in channel 2 undersized golf course bridges affect velocities/erosion Numerous bank failures/treatments GC bridge ~RS 7575 GC bridge ~RS 8200	River planform and profile will adjust by natural processes	Existing river planform and profile will be maintained **Install Boulder Step GC at ~7800** **Install new, ~100 to 120 ft span bridge between RS 7800 and 8100** **Remove existing bridge ~7575** **Remove existing bridge ~8200** **Install Boulder Step(s) GC 8200-8400**
Banks/Levees			RB smooth log ~RS 7600 LB RipRap RS 7690 RB Brush Box RS 7910 LB&RB RipRap RS 8180 LB RipRap RS 8320	Spot bank treatments and repairs, if needed	**Install rock armor LB bank treatments 7500-7900** **Install rock armor RB bank treatments 7900-8600** **Install rock armor LB bank treatments 8200-8600** **Install biotech RB bank treatments 7500-7900** **Install biotech LB bank treatments 7900-8200** **Remove or integrate existing bank treatment materials**
Floodplain/Terrace			No 2-year overbank area along either bank No 5-year overbank area along either bank Left overbank topography lower than right, with possible flow routes		**Excavate inset floodplain LB and RB 7800-8100**
LandUse			Golf course on both banks of UTR, no buffer on left, 0 to 200 ft on right	Golf course on both banks of UTR, no buffer on left, 0 to 200 ft on right	Golf course on both banks of UTR, no buffer on left, 0 to 200 ft on right
3 Forest	**3C**	**8600 to 9000**		No Planned Treatments/Activities	
Valley			Narrow, confined by moraines and outwash terraces		
Geology			Glacial outwash and moraine material		
Vegetation			Forest		
Channel			Slightly Incised Substantial woody debris role in channel Sewer line crossing at ~RS 8800	River planform and profile will adjust by natural processes Substantial woody debris role in channel Sewer line crossing at ~RS 8800	Existing river planform and profile will be maintained Substantial woody debris role in channel **Install Boulder Step over sewer crossing (~8800)**
Banks/Levees			RB Rootwad RS 8710	Spot bank treatments and repairs, if needed	**Install rock armor RB bank treatments 8600-8900** **Install rock amor LB bank treatments 8600-8900** **Remove or integrate existing bank treatment materials**
Floodplain/Terrace			Overflow channel inlet on west/left bank ~RS 8800 (active 5 to 10 year events) informal trails and stpud access	Overflow channel inlet on west/left bank ~RS 8800 (active 5 to 10 year events) informal trails and stpud access	Overflow channel inlet on west/left bank ~8800 (active 5 to 10 year events) informal trails and stpud access
LandUse			No golf course on either side of UTR	No golf course on either side of UTR	No golf course on either side of UTR
3 Forest	**3D**	**9000 to 12000**		No Planned Treatments/Activities	**No Planned Treatments/Activities**
Valley			Narrow, confined by moraines and outwash terraces		River planform and profile will adjust by natural processes
Geology			Glacial outwash and moraine material		
Vegetation			Forest (with pocket willow sedge meadows)		
Channel			Slighltly Incised Substantial woody debris role in channel	Slighltly Incised Substantial woody debris role in channel	Slighltly Incised Substantial woody debris role in channel
Banks/Levees			LB Rootwad RS 9780	Spot bank treatments and repairs, if needed	spot bank treatments and repairs, if needed
Floodplain/Terrace			Overflow along east/right bank at approximately the 1.5-year flow 11.48 acre spring/seep within uplands west of channel ~RS 11500 informal trails and stpud access west of river	Overflow along east/right bank at approximately the 1.5-year flow 11.48 acre spring/seep within uplands west of channel ~RS 11500 informal trails and stpud access west of river	Overflow along east/right bank at approximately the 1.5-year flow 11.48 acre spring/seep within uplands west of channel ~RS 11500 informal trails and stpud access west of river

Table 2 cont.

REACH	Sub Reach	River Station(s)	Alternative # 2 River Ecosystem Restoration / Reconfigured 18-Hole Regulation Golf Course	Alternative # 3 River Ecosystem Restoration /Reduced Play Golf Coursse	Alternative # 5 River and Meadow Ecosystem Restoration / Decommissioned Golf Course
1 Meadow	**1A**	**160 to 1000**	**No Planned Treatments/Activities**	**No Planned Treatments/Activities**	**No Planned Treatments/Activities**
Valley					
Geology					
Vegetation					
Channel					
Banks/levees			Bank treatments and repairs by other parties, as needed	Bank treatments and repairs by other parties, as needed	Bank treatments and repairs by other parties, as needed
Floodplain/Terrace					
LandUse			No Golf Course; Private Residences within FP on Left/West Sawmill Bike Trail Project will have installed new bridge (~RS 200)	No Golf Course; Private Residences within FP on Left/West Sawmill Bike Trail Project will have installed new bridge (~RS 200)	No Golf Course; Private Residences within FP on Left/West Sawmill Bike Trail Project will have installed new bridge (~RS 200)
1 Meadow	**1B**	**1000 to 1400**			
Valley					
Geology					
Vegetation					
Channel			River planform and profile will adjust by natural processes	River planform and profile will adjust by natural processes	River planform and profile will adjust by natural processes
Banks/levees			**Install bio-technical bank treatments ds of sewer line**	**Install bio-technical bank treatments ds of sewer line**	**Install bio-technical bank treatments ds of sewer line**
Floodplain/Terrace					
LandUse			No Golf Course on either side of UTR	No golf course on either side of UTR	No golf course on either side of UTR
1 Meadow	**1C**	**1400 to 1800**			
Valley					
Geology					
Vegetation					
Channel			Existing river planform will be maintained; profile raised **Install Armored Riffle GC over sewer crossing** **Install Boulder Step GC series from 1400 to 1600** **Install Boulder Step GC ~1775 DS of Angora Creek** **Install Armored Riffle GC/transition 1600-1700**	Existing river planform will be maintained; profile raised **Install Armored Riffle GC over sewer crossing** Install Boulder Step GC series from 1400 to 1600 Install Boulder Step GC ~1775 DS of Angora Creek **Install Armored Riffle GC/transition 1600-1700**	Existing river planform will be maintained; profile raised **Install Armored Riffle GC over sewer crossing** Install Boulder Step GC series from 1400 to 1600 Install Boulder Step GC ~1775 DS of Angora Creek **Install Armored Riffle GC/transition 1600-1700**
Banks/levees			**Install bio-tech RB bank treatments 1400-1800**	**Install bio-tech RB bank treatments 1400-1800**	**Install bio-tech RB bank treatments 1400-1800**
Floodplain/Terrace					
LandUse			No Golf Course on either side of UTR	No golf course on either side of UTR	No golf course on either side of UTR
1 Meadow	**1D**	**1800 to 2400**			
Valley					
Geology					
Vegetation					
Channel			New planform and raised profile will adjust by natural processes **Re-contour, re-vegetate, and re-connect LB meander, ~1800-2300** **Remove bridge at ~2150 on UTR** **Install Boulder Step GC at surface diversion ~2300** **Install Armored Riffle GC/transition 2300-2400** **Install Armored Riffle GC/transition 2400-2600**	New planform and raised profile will adjust by natural processes Re-contour, re-vegetate, and re-connect LB meander, ~1800-2300 Remove bridge at ~2150 on UTR Install Boulder Step GC at surface diversion ~2300 **Install Armored Riffle GC/transition 2300-2400** **Install Armored Riffle GC/transition 2400-2600**	New planform and raised profile will adjust by natural processes Re-contour, re-vegetate, and re-connect LB meander, ~1800-2300 Remove bridge at ~2150 on UTR Remove/decomission surface diversion ~2300 **Install Armored Riffle GC/transition 2300-2400** **Install Armored Riffle GC/transition 2400-2600**
Banks/levees			**Remove berms/levees/ recontour and revegetate upper banks (to)** **Install bio-tech RB bank treatments 1800 -2400** **Remove or integrate existing bank treatment materials**	**Remove berms/levees/ recontour and revegetate upper banks (to)** **Install bio-tech RB bank treatments 1800 -2400** **Remove or integrate existing bank treatment materials**	**Remove berms/levees/ recontour and revegetate upper banks (to)** **Install bio-tech RB bank treatments 1800 -2400** **Remove or integrate existing bank treatment materials**

Table 2 cont.

			Alternative # 2	Alternative # 3	Alternative # 5
REACH	**Sub Reach**	**River Station(s)**	**River Ecosystem Restoration / Reconfigured 18-Hole Regulation Golf Course**	**River Ecosystem Restoration /Reduced Play Golf Coursse**	**River and Meadow Ecosystem Restoration / Decommissioned Golf Course**
Floodplain/Terrace			**Partially backfill existing channel(s) 1800-2300**	Partially backfill existing channel(s) 1800-2300	Partially backfill existing channel(s) 1800-2300
			Remove bridges on Angora Creek	Remove bridges on Angora Creek	Remove bridges on Angora Creek
			Remove all GC infrastructure north of UTR	Remove all GC infrastructure north of UTR	Remove all GC infrastructure north of UTR
			Remove areas of GC infrastructure south of UTR	Remove____ area/locations of GC infrastructure south of UTR	Remove GC infrastructure except Clubhouse/Maintenance south of UTR
			Recontour floodplain no longer in GC	Recontour floodplain no longer in GC	Recontour floodplain no longer in GC
			Revegetate floodplain no longer in GC	Revegetate floodplain no longer in GC	Revegetate floodplain no longer in GC
LandUse			No golf course on north side of UTR	No golf course on north side of UTR	No golf course on either side of UTR
			Golf Course on south side of UTR us of 2000 with 175- 250 ft buffer	Golf Course on south side of UTR us of 2000 with 175- 250 ft buffer	
1 Meadow	**1E**	**2400 to 4200**			
Valley					
Geology					
Vegetation					
Channel			New planform and raised profile will adjust by natural processes	New planform and raised profile will adjust by natural processes	New planform and raised profile will adjust by natural processes
			Construct new RB meander 2400 to 3000	Construct new RB meander 2400 to 3000	Construct new RB meander 2400 to 3000
			Install Armored Riffle GC/transition 2850-3000	**Install Armored Riffle GC/transition 2850-3000**	**Install Armored Riffle GC/transition 2850-3000**
			Reconfigure creek confluence ~3000	Reconfigure creek confluence ~3000	Reconfigure creek confluence ~3000
			Install Armored Riffle GC/transition 3000-3250	**Install Armored Riffle GC/transition 3000-3250**	**Install Armored Riffle GC/transition 3000-3250**
			Construct new LB meander 3200 to 4100	Construct new LB meander 3200 to 4100	Construct new LB meander 3200 to 4100
			Remove bridge at ~4100 on UTR	Remove bridge at ~4100 on UTR	Remove bridge at ~4100 on UTR
Banks/levees			**Remove berms/levees/ recontour and revegetate upper banks of active channel**		
			Remove or integrate existing bank treatment materials	**Remove or integrate existing bank treatment materials**	**Remove or integrate existing bank treatment materials**
Floodplain/Terrace			**Partially backfill existing channel 2400-2900**	Partially backfill existing channel 2400-2900	Partially backfill existing channel 2400-2900
			Partially backfill existing channel 3200-4200	Partially backfill existing channel 3200-4200	Partially backfill existing channel 3200-4200
			Remove all GC infrastructure north of UTR	Remove all GC infrastructure north of UTR	Remove all GC infrastructure north of UTR
			Remove areas of GC infrastructure south of UTR	Remove ___area/locations of GC infrastructure south of UTR	Remove all GC infrastructure south of UTR
			Recontour floodplain no longer in GC	Recontour floodplain no longer in GC	Recontour floodplain no longer in GC
			Revegetate floodplain no longer in GC	Revegetate floodplain no longer in GC	Revegetate floodplain and meadows no longer in GC
			Convert piped portions of unnamed creek to open channel	Convert piped portions of unnamed creek to open channel	Convert piped portions of unnamed creek to open channel
			Convert piped portions of unnamed creek to open channel	Convert piped portions of unnamed creek to open channel	Convert piped portions of unnamed creek to open channel
					Remove GC bridges on unnamed creek
			Install recreation access trail/convert GC paths south of UTR	**Install recreation access trail/convert GC paths south of UTR**	
LandUse			No golf course on north side of UTR	No golf course on north side of UTR	No golf course on either side of UTR
			Golf Course on south side of UTR with 200-400 ft buffer	Golf Course on south side of UTR with 200-400 ft buffer	
2 Transition	**2**	**4200 to 6200**			
Valley					
Geology					
Vegetation					
Channel			New planform and raised profile will adjust by natural processes	New planform and raised profile will adjust by natural processes	New planform and raised profile will adjust by natural processes
			Re-contour, re-vegetate, and re-connect LB meander, ~4200-4600	**Re-contour, re-vegetate, and re-connect LB meander, ~4200-4600**	**Re-contour, re-vegetate, and re-connect LB meander, ~4200-4600**
			Install Armored Riffle GC/transition 4525-4700	**Install Armored Riffle GC/transition 4525-4700**	**Install Armored Riffle GC/transition 4525-4700**
			Remove GC bridge ~4850	**Remove GC bridge ~4850**	**Remove GC bridge ~4850**
			Install Armored Riffle GC/transition 5700-5950	**Install Armored Riffle GC/transition 5700-5950**	**Install Armored Riffle GC/transition 5700-5950**
			Re-contour, re-vegetate, and re-connect RB meander, ~5900-6200	**Re-contour, re-vegetate, and re-connect RB meander, ~5900-6200**	**Re-contour, re-vegetate, and re-connect RB meander, ~5900-6200**

Table 2 cont.

REACH	Sub Reach	River Station(s)	Alternative # 2 River Ecosystem Restoration / Reconfigured 18-Hole Regulation Golf Course	Alternative # 3 River Ecosystem Restoration /Reduced Play Golf Coursse	Alternative # 5 River and Meadow Ecosystem Restoration / Decommissioned Golf Course
Banks/Levees			Remove berms/levees/ recontour and revegetate upper banks (to)	Remove berms/levees/ recontour and revegetate upper banks (to)	Remove berms/levees/ recontour and revegetate upper banks (to)
			Install biotech RB bank treatments 4200-5500	Install biotech RB bank treatments 4200-5500	Install biotech RB bank treatments 4200-5500
			Install biotech LB bank treatments 4800-4900	Install biotech LB bank treatments 4800-4900	Install biotech LB bank treatments 4800-4900
			Install biotech RB bank treatments 4800-4900	Install biotech RB bank treatments 4800-4900	Install biotech RB bank treatments 4800-4900
			Install biotech LB bank treatments 5400-5700	Install biotech LB bank treatments 5400-5700	Install biotech LB bank treatments 5400-5700
			Remove or integrate existing bank treatment materials	Remove or integrate existing bank treatment materials	Remove or integrate existing bank treatment materials
Floodplain/Terrace			Partially backfill existing channel 4200-4550	Partially backfill existing channel 4200-4550	Partially backfill existing channel 4200-4550
			Partially backfill existing channel 5850-6200	Partially backfill existing channel 5850-6200	Partially backfill existing channel 5850-6200
			Remove all GC infrastructure north side;	Remove all GC infrastructure north side;	Remove all GC infrastructure north of UTR
			Remove potions of GC infrastructure south of river	Remove ___area/locations of GC infrastructure south of UTR	Remove all GC infrastructure south of UTR
			Recontour floodplain and former GC pond	Recontour floodplain and former GC pond	Recontour floodplain and former GC ponds no longer in GC
			Revegetate former manicured landscape	Revegetate former manicured landscape	Revegetate floodplain and meadows no longer in GC
			Install recreation access trail/convert GC paths south of UTR	Install recreation access trail/convert GC paths south of UTR	
LandUse			No golf course on north side of UTR	No golf course on north side of UTR	No golf course on either side of UTR
			Golf Course on south side of UTR with ~200 ft buffer	Golf Course on south side of UTR with ~200 ft buffer	
3 Forest	3A	6200 to 7500			
Valley					
Geology					
Vegetation					
Channel			New planform and raised profile will adjust by natural processes	New planform and raised profile will adjust by natural processes	New planform and raised profile will adjust by natural processes
			Re-contour, re-vegetate, and re-connect RB meander, ~6200-6500	Re-contour, re-vegetate, and re-connect RB meander, ~6200-6500	Re-contour, re-vegetate, and re-connect RB meander, ~6200-6500
			Install Armored Riffle GC/transition 6500-6600	Install Armored Riffle GC/transition 6500-6600	Install Armored Riffle GC/transition 6500-6600
			Install new long, single span bridge (between RS 6600-6900)		
			Install Armored Riffle GC/transition 7300-7400	Install Armored Riffle GC/transition 7300-7400	Install Armored Riffle GC/transition 7300-7400
			Re-contour, re-vegetate, and re-connect LB meander, ~7300 -7400	Re-contour, re-vegetate, and re-connect LB meander, ~7300 -7400	Re-contour, re-vegetate, and re-connect LB meander, ~7300 -7400
			Construct new LB meander connection 7400-7500	Construct new LB meander connection 7400-7500	Construct new LB meander connection 7400-7500
Banks/Levees			Install biotech LB bank treatments 6600-7300	Install biotech LB bank treatments 6600-7300	Install biotech LB bank treatments 6600-7300
			Install rock-toe/launchable LB and RB bank treatments at new bridge		
			Remove or integrate existing bank treatment materials	Remove or integrate existing bank treatment materials	Remove or integrate existing bank treatment materials
Floodplain/Terrace			Excavate inset floodplain RB ~ 6600-7300	Excavate inset floodplain RB ~ 6600-7300	Excavate inset floodplain RB ~ 6600-7300
			Partially backfill existing channel 6200-6525	Partially backfill existing channel 6200-6525	Partially backfill existing channel 6200-6525
			Partially backfill existing channel(s) 7400-7500	Partially backfill existing channel(s) 7400-7500	Partially backfill existing channel(s) 7400-7500
			Construct new GC bridge approaches		
			Install new GC infrastructure in ~125 ft wide upland corridor		
			Install recreation access trail/convert STPUD/trails west of UTR	Install recreation access trail/convert STPUD/trails west of UTR	
LandUse			Golf course on both sides of UTR with 0 to 500 ft buffer	Golf course only on west side of UTR, with 500 to 800 ft buffer	No golf course on either side of UTR

Table 2 cont.

REACH	Sub Reach	River Station(s)	Alternative # 2 River Ecosystem Restoration / Reconfigured 18-Hole Regulation Golf Course	Alternative # 3 River Ecosystem Restoration /Reduced Play Golf Coursse	Alternative # 5 River and Meadow Ecosystem Restoration / Decommissioned Golf Course
3 Forest	3B	7500 to 8600			
Valley					
Geology					
Vegetation					
Channel			New planform and raised profile will adjust by natural processes	New planform and raised profile will adjust by natural processes	New planform and raised profile will adjust by natural processes
			Construct new LB meander connection 7500-7600	**Construct new LB meander connection 7500-7600**	**Construct new LB meander connection 7500-7600**
			Install Armored Riffle GC/transition 7600-7800	**Install Armored Riffle GC/transition 7600-7800**	**Install Armored Riffle GC/transition 7600-7800**
			Remove existing bridge ~7575	**Remove existing bridge ~7575**	**Remove existing bridge ~7575**
			Remove existing bridge ~8200	**Remove existing bridge ~8200**	**Remove existing bridge ~8200**
			Install Boulder Step GC ~8300	**Install Boulder Step GC ~8300**	**Install Boulder Step GC ~8300**
			Install Boulder Step GC ~8600	**Install Boulder Step GC ~8600**	**Install Boulder Step GC ~8600**
Banks/Levees			**Install biotech RB bank treatments 7700 -8300**	**Install biotech RB bank treatments 7700 -8300**	**Install biotech RB bank treatments 7700 -8300**
			Install biotech LB bank treatments 7700-8300	**Install biotech LB bank treatments 7700-8300**	**Install biotech LB bank treatments 7700-8300**
			Remove or integrate existing bank treatment materials	**Remove or integrate existing bank treatment materials**	**Remove or integrate existing bank treatment materials**
Floodplain/Terrace			**Excavate inset floodplain RB 7700-8300**	**Excavate inset floodplain RB 7700-8300**	**Excavate inset floodplain RB 7700-8300**
			Excavate inset floodplain LB 7700-8300	**Excavate inset floodplain LB 7700-8300**	**Excavate inset floodplain LB 7700-8300**
			Partially backfill existing channel 7500-7700	**Partially backfill existing channel 7500-7700**	**Partially backfill existing channel 7500-7700**
			Remove all GC infrastructure from former west/east banks	**Remove all GC infrastructure from former west/east banks**	**Remove all GC infrastructure from former west/east banks**
			Recontour floodplain no longer in GC	**Recontour floodplain no longer in GC**	**Recontour floodplain no longer in GC**
			Revegetate floodplain no longer in GC	**Revegetate floodplain no longer in GC**	**Revegetate floodplain no longer in GC**
LandUse			Golf course on both banks, with 250 ft buffers	Golf course only on west side of UTR, with 200 to 500 ft buffer	No golf course on either side of UTR
3 Forest	3C	8600 to 9000			
Valley					
Geology					
Vegetation					
Channel			Existing planform and raised profile will adjust by natural processes	Existing planform and raised profile will adjust by natural processes	Existing planform and raised profile will adjust by natural processes
			Substantial woody debris role in channel	Substantial woody debris role in channel	Substantial woody debris role in channel
			Install +.5 ft Boulder Step over sewer crossing (~8800)	**Install +.5 ft Boulder Step over sewer crossing (~8800)**	**Install +.5 ft Boulder Step over sewer crossing (~8800)**
Banks/Levees			**Install biotech RB bank treatments 8600-8900**		
			Install biotech LB bank treatments 8600-8900		
			Remove or integrate existing bank treatment materials	**Remove or integrate existing bank treatment materials**	**Remove or integrate existing bank treatment materials**
Floodplain/Terrace					
			Overflow channel inlet on west/left bank ~8800 (active ___ year events)	Overflow channel inlet on west/left bank ~8800 (active ___ year events)	Overflow channel inlet on west/left bank ~8800 (active ___ year events)
			Improve/modify existing trail east of UTR	informal trails and stpud access	informal trails and stpud access
LandUse			Golf Course on left (west) side, with 300-450 ft buffer	No golf course on either side of UTR	No golf course on either side of UTR
3 Forest	3D	9000 to 12000	**No Planned Treatments/Activities**	**No Planned Treatments/Activities**	**No Planned Treatments/Activities**
Valley			**River planform and profile will adjust by natural processes**	**River planform and profile will adjust by natural processes**	**River planform and profile will adjust by natural processes**
Geology					
Vegetation					
Channel			Slighltly Incised	Slighltly Incised	Slighltly Incised
			Substantial woody debris role in channel	Substantial woody debris role in channel	Substantial woody debris role in channel
Banks/Levees			spot bank treatments and repairs, if needed		
Floodplain/Terrace			***Any HECRas info; or CSP stage-Q relations infO?***		
			Overflow along east/right bank at approximately the 1.5-year flow	Overflow along east/right bank at approximately the 1.5-year flow	Overflow along east/right bank at approximately the 1.5-year flow
			Integrate 11.48 acre spring/seep in uplands west of channel ~RS 11500 into naturalized GC	11.48 acre spring/seep within uplands west of channel ~RS 11500	11.48 acre spring/seep within uplands west of channel ~RS 11500
			informal trails and stpud access west of river	informal trails and stpud access west of river	informal trails and stpud access west of river
LandUse			Golf Course on left (west) side, with 300-450 ft buffer	No golf course on either side of UTR	No golf course on either side of UTR
			Integrate ~3.0 acres existing soft coverage into GC; Integrate ~0.6 acres into naturalized GC		

Table 2 cont.

Alternative 1: No Project/No Action: Existing River and 18-Hole Regulation Golf Course

Under Alternative 1, no engineering features or restoration would be implemented in the study area. The channel and riparian corridor of the Upper Truckee River, the unnamed creek and Angora Creek flowing through the golf course would remain similar to present conditions, and all golf cart bridges over the creek and river would remain in place. The proposed Upper Truckee River channel would be the existing (unmodified) channel in all subreaches (Table 3).

Table 3
Proposed River Channel Types for Alternative 1

Subreach	Length of Proposed Channel Type (feet)				Total by Subreach
	Existing (Unmodified)	Modified Existing	Reconnected Historic	Constructed	
1A	840	0	0	0	840
1B	400	0	0	0	400
1C	400	0	0	0	400
1D	600	0	0	0	600
1E	1,800	0	0	0	1,800
2	2,000	0	0	0	2,000
3A	1,300	0	0	0	1,300
3B	1,100	0	0	0	1,100
3C	400	0	0	0	400
3D	3,000	0	0	0	3,000
Length totals	11,840	0	0	0	11,840
Percent totals	100.0%	0.0%	0.0%	0.0%	100.0%

*Calculations are estimates based on conceptual design and would be modified, as appropriate, during final design.
Source: Data prepared by EDAW, Inc. and Valley & Mountain Consulting, 2008.

Under Alternative 1, existing streambank protection features (Table 4) would not be modified. However, repairs to streambanks and/or streambank treatments would continue on an as-needed basis. Spot treatments and repairs would occur primarily in response to major flood events and would be limited to locations with vulnerable public or golf infrastructure, or private property.

Table 4
Existing Bank Stabilization Treatments

Subreach	Length of Existing Bank Treatments (feet)	Percent of Bank Length* Treated	Length of Intact Treatments (feet)	Percent of Treatments Intact
1A	151	9.0	34	22.7
1B	0	0.0	NA	NA
1C	0	0.0	NA	NA
1D	244	20.3	174	71.3
1E	594	16.5	32	5.4
2	268	6.7	33	12.3
3A	0	0.0	NA	NA
3B	576	26.2	285	49.5
3C	33	4.1	33	100
3D	33	0.6	33	100
Total/Average Percent	1,900	7.9%	625	32.9%

Notes: As of 2008 field survey by State Parks staff (mapped/measured with GPS).
NA = not applicable.
* Bank length (24,000 feet) is double the channel length, to include both left and right banks.
Source: Data prepared by EDAW, Inc. and Valley & Mountain Consulting, 2008.

Alternative 2: River Ecosystem Restoration with Reconfigured 18-hole Regulation Golf Course

Under Alternative 2, the new channel would incorporate sections of the existing channel, reactivate historic meanders, and construct new sections of channel. Approximately 4,240 feet of the existing channel would be used without modification, 5,000 feet of the existing channel would be modified, 2,490 feet of historic channel remnants would be reconnected, and 1,700 feet of new channel would be constructed (Table 5). The numeric estimates of length, area, and volume in this section are based on conceptual design and would be modified during final design.

Table 5 Proposed River Channel Types for Alternative 2					
Subreach	Length of Proposed Channel Type (feet)				Total by Subreach
	Existing (Unmodified)	Modified Existing	Reconnected Historic	Constructed	
1A	840	0	0	0	840
1B	400	0	0	0	400
1C	0	400	0	0	400
1D	0	0	755	0	755
1E	0	900	150	1,085	2,135
2	0	1,600	650	0	2,250
3A	0	800	735	500	2,035
3B	0	900	200	115	1,215
3C	0	400	0	0	400
3D	3,000	0	0	0	3,000
Length totals	4,240	5,000	2,490	1,700	13,430
Percent totals	31.6%	37.2%	18.5%	12.7%	100.0%

*Calculations are estimates based on conceptual design and would be modified, as appropriate, during final design.
Source: Data prepared by EDAW, Inc. and Valley & Mountain Consulting, 2008.

Proposed grade controls would provide stabilization at the connections between the most downstream and upstream treated subreaches of the main treated channel section (Subreaches 1C through 3C), the existing unmodified channel (e.g., Subreach 1B and Subreach 3D), and at infrastructure crossings (Table 6). A combination of about three boulder steps and integrated cobble riffles that form Anchored High Gradient Riffles would be installed at the upstream and downstream extents of the project (sub reaches 1C and 3C).

Table 6 Alternative 2: Proposed Boulder Step Streambed Stabilization				
Location		**Proposed Boulder Steps: Alternative 2**		
Subreach	**Subreach Proposed Channel Length (feet)**	**Location Existing River Station(s) (feet)**	**Number of Boulder Steps**	**Bed Elevation Increase (feet)**
1A	840	NA	0	NA
1B	400	NA	0	NA
1C	400	1,400 1,600 1,750	3	0.3 0.6 1.3
1D	755	2,300	1	1.1
1E	2,135	NA	0	NA
2	2,250	NA	0	NA
3A	2,035	NA	0	NA
3B	1,215	8,300	1	0.8 to 1.0
3C	400	8,600 8,800	2	0.6 0.3
3D	3,000	NA	0	NA
Total	13,430		7	

*Calculations are estimates based on conceptual design and would be modified, as appropriate, during final design.
Note: NA = not applicable.
Source: Data prepared by EDAW, Inc. and Valley & Mountain Consulting, 2008.

Alternative 2 involves modifying and protecting selective stream banks of the proposed channel using primarily biotechnical bank treatments designed and implemented in conjunction with the overall channel treatments to modify existing channel sections, reconnect historic channel sections, and/or construct new channel sections (Table 7). Biotechnical bank treatments would be installed on a total of approximately 2,700 feet of existing banks (approximately 1,350 feet of channel) along portions of the 9,240 feet of existing channel that would be retained as active channel. The primary type of bank treatment along the entire 1,700 feet of proposed constructed channel sections would be a combination of transplanting salvaged materials and the addition of biotechnical materials. Assuming that alternating sides of the reconnected meanders must be disturbed for access to the channel or to be reshaped, it is possible that bank vegetation protection in some portions of abandoned meanders could be around 50% if access could occur in the channel and its dimensions and materials are appropriate. The resulting length of disturbed banks along the reconnected meanders may vary from approximately 1,250 feet up to 2,490 feet and would be treated with vegetation transplants and biotechnical measures.

Table 7
Alternatives 2, 3, and 5 Proposed Bank Stabilization Treatments

Subreach	Rock Armor Bank Treatments (feet)	Biotechnical Bank Treatments (feet)	Total Treatment Length (feet)	Percent of Bank Length * Treated
1A	0	0	0	0.0
1B	0	100	100	12.5
1C	0	350	350	50.0
1D	0	0	0	0.0
1E	0	0	0	0.0
2	0	900	900	20.0
3A	100	600	700	17.2
3B	0	250	250	10.3
3C	0	200	200	50.0
3D	0	0	0	0.0
Total	100	2,400	2,500	9.3

* Bank length is double the proposed (Alternative 2) channel length, to include both left and right banks.
Source: Data prepared by EDAW, Inc. and Valley & Mountain Consulting, 2008.

Transitions between existing, reconnected, or constructed channel segments that would be in the proposed active channel would generally be at riffle crossovers. Specific transition treatments that combine both streambed and stream bank measures would be installed to provide stability and to smooth the hydraulic connection between segment types (Table 8).

Table 8 Alternatives 2, 3, and 5 Proposed Transition Treatments			
Subreach	**Number of Transitions**	**Length of Transition Treatment* (feet)**	**Percent of Bank Length ** Treated**
1A	0	0	0.0%
1B	0	0	0.0%
1C	1	400	50.0%
1D	1	400	26.5%
1E	3	1,200	28.1%
2	2	800	17.8%
3A	1	400	9.8%
3B	1	400	16.5%
3C	1	400	50.0%
3D	0	0	0.0%
Total	10	4,000	14.9%

*Calculations are estimates based on conceptual design and would be modified, as appropriate, during final design.
* Assumes approximately 100 feet upstream and downstream extent per transition, and both banks treated.
** Bank length is double the proposed (Alternative 2) channel length, to include both left and right banks.
Source: Data prepared by EDAW, Inc. and Valley & Mountain Consulting, 2008.

The active floodplain would be enlarged by excavating inset floodplain from the existing terrace banks in a couple of subreaches (Table 9). In the downstream portion of the study area (i.e., Subreaches 1D/1E), approximately 2 feet of excavation would meet design elevations in the reconnected meanders. Further upstream (i.e., Subreaches 3A/3B), the reconnected meanders may require about 3 feet of excavation to meet design grade. In all cases, the upper 1 foot of material would generally include salvaged soil and vegetation to be reused on bank treatments. Inset floodplain would be excavated in Subreach 3A in the vicinity of the new bridge (along the right bank between RS 6600 and RS 7300). The other area of inset floodplain would be in Subreach 3B, which has experienced hydraulic confinement from the golf course bridges (between RS 7700 and RS 8300).

Table 9
Alternative 2 Proposed Inset Floodplain Excavation

Location		Proposed Inset Floodplain: Alternative 2		
Subreach	**River Station(s) (feet)**	**Length (feet)**	**Typical Width (feet)**	**Total Area (acres)**
1A	NA	0	NA	0
1B	NA	0	NA	0
1C	NA	0	NA	0
1D	NA	0	NA	0
1E	NA	0	NA	0
2	NA	0	NA	0
3A	6,600–7,300	700	50	0.8
3B	7,700–8,300	600	60*	0.9
3C	NA	0	NA	0
3D	NA	0	NA	0
Total		1,300		1.7

Note: NA = not applicable.
*Calculations are estimates based on conceptual design and would be modified, as appropriate, during final design.
* Inset floodplain is proposed on both sides of the channel in Subreach 3B.
Source: Data prepared by EDAW, Inc. and Valley & Mountain Consulting, 2008.

The approximately 2,600 feet of the existing channel to be abandoned would be converted into about 4.5 acres of functional floodplain by complete or partial backfilling (Table 10).

Table 8
Alternative 2 Proposed Backfilled Channels

Location		Proposed Backfilled Channel Floodplain: Alternative 2			
Subreach	**Length (feet)**	**Typical Channel Width (feet)**	**Total Area (acres)**	**Typical Channel Depth (feet)***	**Approximate Fill Volume (cubic yards)**
1A	0	NA	0.0	NA	NA
1B	0	NA	0.0	NA	NA
1C	0	NA	0.0	NA	NA
1D	600	75	1.0	6	10,000
1E	900	75	1.5	6	15,000
2	400	75	0.7	8	8,889
3A	500	75	0.9	8	11,111
3B	200	75	0.3	10	5,556
3C	0	NA	0.0	NA	NA
3D	0		0.0		
Total	2,600	75	4.5	8	50,556

Note: NA = not applicable.
* Assumes complete backfill of entire abandoned channels: not adjusted up for compaction needs or down for partial fill areas, therefore, this could fluctuate plus or minus 25%.
Calculations are estimates based on conceptual design and would be modified, as appropriate, during final design.
Source: Data prepared by EDAW, Inc. and Valley & Mountain Consulting, 2008.

Reconfigured Unnamed Creek

Along the unnamed creek, golf course turf would be removed within an enlarged buffer. As feasible, the low flow channel of the creek would be modified by excavation and local grading to add more channel length and increase the potential for small active floodplain areas within the buffer. The mouth of the unnamed creek would be modified to adjust its orientation relative to the Upper Truckee River alignment and streambed elevation. Some of the existing creek would be relocated, replaced with a new constructed channel that curves to meet the new river position and a series of step grade control features and biotechnical bank stabilization treatments would be installed. The final unnamed creek design channel length, width and profile would be determined by iterative hydraulic and geomorphic analysis of the selected alternative.

Alternative 3: River Ecosystem Restoration with Reduced-Play Golf Course

The treatment for the Upper Truckee River in Alternative 3 is the same as the treatment in Alternative 2. Some differences exist between these two alternatives, primarily in that Alternative 3 does not include any bridges over the river. The proposed river alignment under Alternative 3 would be the same as that for Alternative 2 (Table 5). The proposed streambed treatments and profile conditions under Alternative 3 would be the same as those for Alternative 2 (Table 6). The proposed bank treatments under Alternative 3 would be the same as those for Alternative 2 (Table 7). The proposed excavation of inset floodplain, and the backfilled channel treatments under Alternative 3 would be the same as under Alternative 2 (Tables 9, 10). Enhancements to the unnamed creek and reconfiguration of the creek mouth under Alternative 3 would be the same as under Alternative 2.

Alternative 4: River Stabilization with Existing 18-Hole Regulation Golf Course

The Alternative 4 design features river stabilization measures to protect the streambed and stream banks from erosion, keeping the river in its present location and elevation, and preventing natural or accelerated channel migration. The two bridges at golf course holes 6 and 7 would be replaced with a single, longer span bridge between the two existing bridges. Under Alternative 4, approximately4,440 feet of the existing channel would not be modified and about 7,400 feet of the channel would be modified.

Although Alternative 4 would not change the current elevation of the channel bed, it would directly modify the future streambed elevation of the Upper Truckee River through prevention of continued bed erosion and upstream knickpoint migration. Protective engineered streambed stabilization would be installed at approximately 18 sites, limiting the potential for future erosion(Table 11). Armored riffles, consisting of cobble and gravel could be placed in the existing channel between boulder steps.

Table 11 Alternative 4 - Proposed Boulder Step Streambed Stabilization				
Location		**Proposed Boulder Steps: Alternative 4**		
Subreach	**Subreach Channel Length (feet)**	**Location Existing River Station (feet)**	**Number of Boulder Steps**	**Bed Elevation Increase (feet)**
1A	840	None	0	NA
1B	400	None	0	NA
1C	400	1,400 1,600 1,750	2-3	0.3 0.6 1.3
1D	600	2,100 2,300	2	1.1
1E	1,800	2,850 3,500 4,025	3	0.5 to 1.0
2	2,000	4,525 4,775 5,225 5,700 6,100	5	0.5 to 1.0
3A	1,300	6,550 6,950 7,550	3	0.5 to 1.0
3B	1,100	7,800 8,200–8,400	2–3	0.8 to 1.0
3C	400	8,600 8,800	2	0.6 0.3
3D	3,000	NA	0	NA
Total	11,840		18-21	
Note: NA = not applicable. Source: Data prepared by EDAW, Inc. and Valley & Mountain Consulting, 2008.				

Alternative 4 would modify and protect existing stream banks by installing bank stabilization treatments throughout the treated reach between RS 13+00 and RS 89+00 (Table 12). Treatment types alternate along each side of the channel, with rock- armor treatments generally on outer cut banks and biotechnical types on the inside of bends or lower bank height sections.

Table 12 Alternative 4 – Proposed Bank Stabilization Treatments				
Subreach	**Rock Armor Bank Treatments (feet)**	**Biotechnical Bank Treatments (feet)**	**Total Treatment Length (feet)**	**Percent of Bank Length* Treated**
1A	0	0	0	0.0
1B	0	100	100	12.5
1C	400	400	800	100.0
1D	600	600	1,200	100.0
1E	1,600	2,000	3,600	100.0
2	1,800	2,100	4,000	100.0
3A	1,300	1,300	2,600	100.0
3B	1,500	700	2,200	100.0
3C	300	300	600	75.0
3D	0	0	0	0.0
Total	7,500	7,400	15,100	63.8

* Bank length is double the channel length, to include both left and right banks.
Source: Data prepared by EDAW, Inc. and Valley & Mountain Consulting, 2008.

Under Alternative 4, the active floodplain would not be directly modified, except for a 500-foot long section of inset floodplain to be excavated in the vicinity of the replacement bridge between holes 6 and 7. The inset floodplain would create about 0.4 acres of active floodplain.

The mouth of the unnamed creek would be not be modified under Alternative 4. No changes to Angora Creek would occur under Alternative 4.

Alternative 5: River Ecosystem Restoration/ Decommissioned Golf Course

The treatment for the Upper Truckee River in Alternative 5 is the same as the treatments in Alternatives 2 and 3. Some differences exist among these three alternatives, primarily in that Alternatives 3 and 5 would not include any bridges over the river and Alternative 5 includes additional SEZ and floodplain restoration beyond that proposed in Alternatives 2 and 3. The proposed river alignment under Alternative 5 would be the same as that for Alternatives 2 and 3 (Table 5). The proposed streambed treatments and profile conditions under Alternative 5 would be the same as those for Alternatives 2 and 3 (Table 6), except that the water intake and boulder step at RS 2300 would not be needed. The proposed bank treatments under Alternative 5 would be the same as those for

Alternatives 2 and 3 (Table 7). The proposed excavation of inset floodplain, and the backfilled channel treatments under Alternative 5 would be the same as under Alternatives 2 and 3 (Tables 9, 10). Alternatives 2, 3, and 5 all treat the mouth of the unnamed creek and remove the four pedestrian/cart path bridges on Angora Creek.

References

River Run 2006. Upper Truckee River Restoration Project California Department of Parks and Recreation Reach Riparian Ecosystem Restoration Feasibility Report. Prepared for California Department of Parks and Recreation.

Swanson Hydrology + Geomorphology March 2004. (Final) Upper Truckee River, upper reach environmental assessment. Report prepared for the Bureau of Reclamation, Tahoe Resource Conservation District, and Regional Water Quality Control Board-Lahontan Region.

Swanson Hydrology + Geomorphology. October 2004. (Final) Amendment Report. Upper Truckee River Upper Reach Reclamation Project. Prepared for Tahoe Resource Conservation District and U.S. Bureau of Reclamation.

Swanson Hydrology + Geomorphology January 2004. Upper Truckee River Lake Tahoe Golf Course Hole 6 Design Report (Draft). Prepared for the California Department of Parks and Recreation and the American Golf Corporation.

APPENDIX C

Conceptual Treatment Descriptions and Typical Sketches

Upper Truckee River Restoration and Golf Course Reconfiguration Project
Appendix C

Conceptual Treatment Descriptions and Typical Sketches

Compiled by

Valley & Mountain Consulting

South Lake Tahoe, CA

July 2009

Introduction

The following text and figures provide conceptual descriptions of the proposed treatment activities and features of the alternatives carried forward for analysis in the EIR/EIS/EIS. These descriptions have been developed through an iterative conceptual design process between State Parks and their consultants over the last few years. Most of the specific descriptions included here are cited from assessment and preliminary design information provided by prior studies (SH+G January 2004, March 2004, October 2004; River Run 2006). For some topics, State Parks and Valley & Mountain Consulting have incorporated information from recent designs and implementation experience on other similar river and wetlands restoration projects in the Lake Tahoe Basin. Information regarding the location of proposed treatment activities by alternative is included in the body of Chapter 2 “Project Alternatives” of the draft EIR/EIS/EIS and in Appendix B “Proposed River and Floodplain Treatments by Alternative”.

River Channel

Modified Existing River Channel

The Modified Existing River Channel treatment would include installation of multiple specific bed stabilization and/or bank protection measures, along with aquatic habitat enhancements (bed topography and materials; LWD features), making only minor changes to the channel location, elevation, or dimension.

To the degree feasible, modifications to the existing channel will be designed to reduce the channel width and depth (and at a minimum, the treatments would prevent channel enlargement).

In the locations with armored riffles, the final grade would be an average of two feet higher (positive grade) than the existing channel bed and final bank treatments at armored riffle locations would include additional roughness and resistance to help narrow the channel. The restoration concept relies on natural geomorphic processes (e.g., sediment deposition and bar formation, vegetation colonization, woody debris recruitment) in the existing channel to adjust the channel shape and size between the modified segments .

Final configuration of the channel bed and the bed materials may include measures to increase pool sizes, cover, and suitable substrate for aquatic habitat. Additional/supplemental aquatic habitat enhancements may be incorporated, if hydraulic analysis indicates they will not produce adverse local effects on the channel stability.

The design assumption is that natural processes of erosion and deposition will establish appropriate channel dimensions over time in areas of existing channel where the stream is not fully reconstructed (River Run 2006).

Reconnected Historic River Meanders

The Reconnected Historic River Meanders treatment would make topographic, vegetative, and substrate changes within abandoned meanders still present on the terrace surface(s) (Exhibit 1).

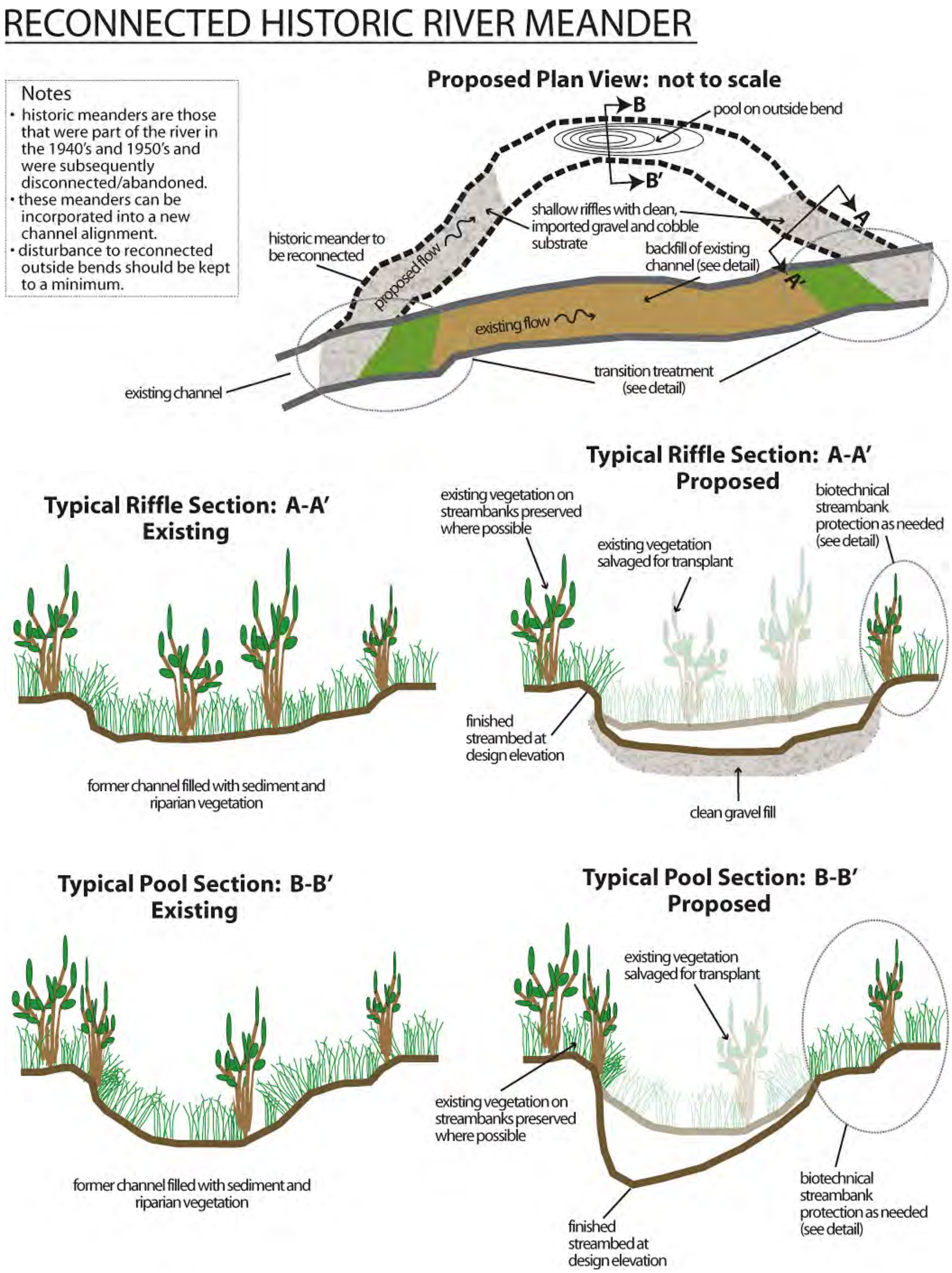
The conceptual design of the proposed target channel uses a design discharge of 550 cfs, with a top width of about 70 ft, bottom width of about 50 ft, and a maximum depth of about 3.5 feet (River Run 2006). Varied amounts of excavation and reshaping would be needed to meet design elevations and dimensions. Excavation and shaping of the channel bottom, modifications to streambank heights and angles (at least on the inside of bends), would be required as part of the reconnection.

In the downstream portion of the project area (i.e., sub reaches 1D/1E), one to two feet of excavation would be anticipated to meet design elevations in the reconnected meanders. Further upstream (i.e., sub reaches 3A/3B), the reconnected meanders may require an average of three feet of excavation to meet design grade. In all cases, the upper one foot of material would generally include salvaged soil and vegetation to be reused.

Final alignment location decisions will prioritize locations where robust existing woody vegetation is along the remnant channel banks. Existing vegetation on the proposed streambanks would be preserved to the maximum degree possible. The vegetation protection is expected to be about half of the total bank length (assuming alternating sides of the reconnected channel must be disturbed to allow access to the channel and opposite bank, or to be reconfigured). It is possible that bank vegetation protection in some portions of abandoned meanders could be greater than 50 percent if access can occur within the channel and its dimensions and materials are appropriate.

Existing vegetation in the bottom of the channel will need to be removed (it would be salvaged for re-vegetation in other parts of the project).

Final configuration of the channel bed and the bed materials may include measures to increase pool sizes, cover, and suitable substrate for aquatic habitat. Additional/supplemental aquatic habitat enhancements may be incorporated, if hydraulic analysis indicates they will not produce adverse local effects on the channel stability.



Source: River Run Consulting and State Parks 2009

Exhibit 1. Conceptual Treatment Sketch: Reconnected Historic River Meander

Constructed New River Channel

The Constructed New River Channel treatment would excavate a channel with desired length, width and depth into the existing terrace surface(s) (Exhibit 2).

The conceptual design of the proposed target channel uses a design discharge of 550 cfs, with a top width of about 70 ft, bottom width of about 50 ft, and a maximum depth of about 3.5 feet (River Run 2006). Additional local cut and fill grading (as needed) would occur to adjust for consistent and appropriate (e.g. outer banks versus point bars) bank heights and angles for the stacked sod and/or other re-vegetation treatments. In all cases, the upper one foot of material would generally include salvaged soil and vegetation to be reused on bank treatments

The new constructed channel final alignment decisions would prioritize locations where robust existing vegetation can be incorporated into proposed bank positions. However, the proposed constructed channel sections are in areas where vegetation has historically been modified for golf course management and there are limited opportunities to incorporate existing woody vegetation into the bank treatments.

The primary type of bank treatment would be transplanted salvaged vegetation and biotechnical: stacked native sod revetments to stabilize outside bends and native sod blankets in straighter portions. Sod materials could be obtained from within the footprint of the new channels, salvaged from the bottom of reconnected meanders, or from adjacent meadows (aside from landscaped areas with non-native sod).

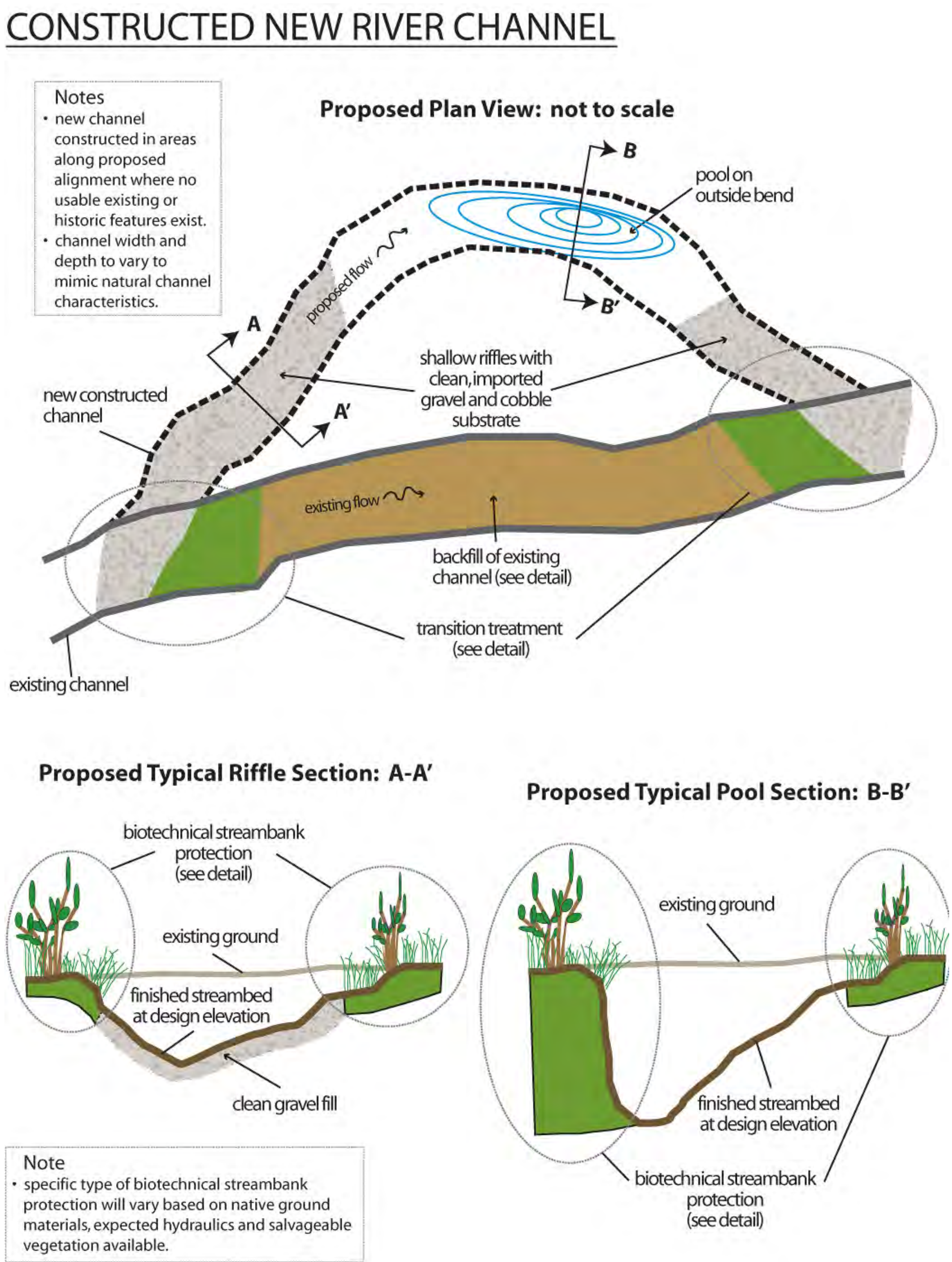
The bed topography would be somewhat varied to range from riffle and pool features where appropriate. The bed material would be comprised of a combination of native material and placed clean cobbles, gravel, and sand.

Final configuration of the channel bed and the bed materials may include measures to increase pool sizes, cover, and suitable substrate for aquatic habitat. Additional/supplemental aquatic habitat enhancements may be incorporated, if hydraulic analysis indicates they will not produce adverse local effects on the channel stability.

Streambed Stabilization

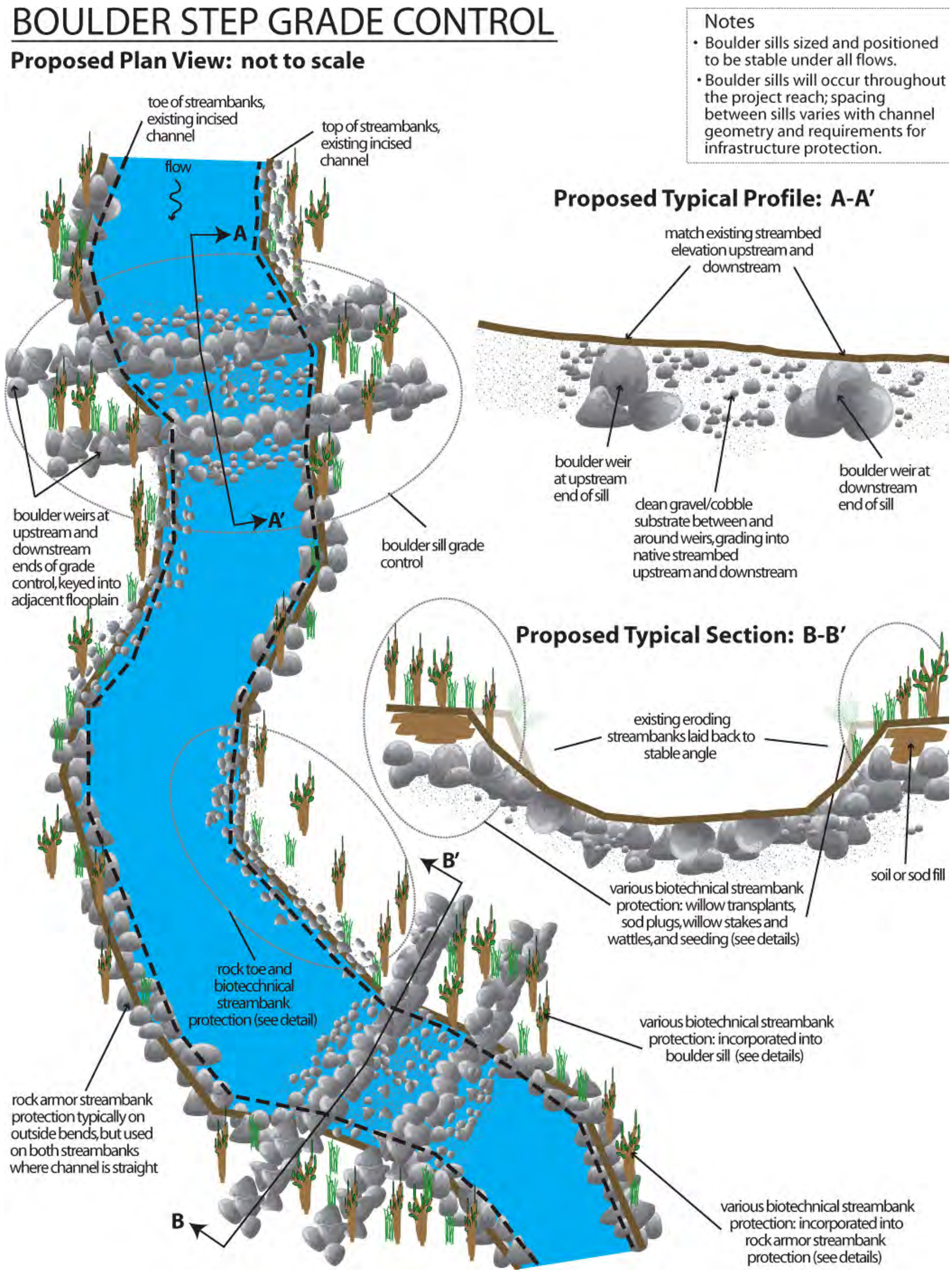
Boulder Step Grade Control

Boulder Step Grade Control treatments could both raise and stabilize the streambed (Exhibit 3). The boulder steps would be ‘hard’ grade control structures, comprised of boulders sized and installed to remain immobile even during large flood flows (e.g., >100-year peak flow) (River Run 2006). The configuration of the keyed boulders and cobble/gravel fill would be designed to mimic natural step-pool channels, providing functional aquatic habitat.



Source: River Run Consulting and State Parks 2009

Exhibit 2. Conceptual Treatment Sketch: Constructed New River Channel



Source: River Run Consulting and State Parks 2009

Exhibit 3. Conceptual Treatment Sketch: Boulder Step Grade Control

In some cases, the vertical grade control would be designed to promote net deposition (aggradation) of bed material (e.g., in modified existing channel reaches), while in other cases they would be designed to just prevent net erosion (degradation) of the bed (e.g., at infrastructure crossings). The average thickness of 4 feet would provide buried foundation, but total thickness would depend on desired positive grade.

To ensure vertical and lateral stability, the boulder steps would have buried (keyed) boulders below the 100-year scour depth and extending at least one-half the channel width into each bank. A typical boulder step would span about 100 ft of channel length, and be about 1.5 times the width of the desired 60 feet active channel (to include buried sections). The structures would be keyed into streambanks to prevent end-run erosion and the disturbed streambanks would be re-vegetated densely and with woody species to enhance roughness and naturalize the finished feature.

Final design would include measures to prevent underflow destabilization (such as sheet pile, compacted fines or similar measures on the upstream side) and/or scour undermining (such as poorly sorted launch stone on the downstream side).

Anchored High Gradient Riffle Grade Control

Anchored High Gradient Riffle Grade Control treatments could both raise and stabilize the streambed (Exhibit 4). The anchored high gradient riffles would be a combination of 'hard' and 'soft' grade control elements, made with some keyed-in large diameter material sized to remain immobile under large flood flows (e.g., 100- year peak flows), with intervening coarse riffle material sized to become mobile occasionally, under moderate flood flows (e.g., 10-year peak flow).

The high gradient riffle configuration and materials would mimic steep natural riffles, with buried substrate sized to be resistant to movement during the target high flows. Pool bed morphology may also be integrated as appropriate. For the conceptual design, the anchored high gradient riffles would be applied at the reach scale, and are assumed to be around 300 feet long. The AHGR would be installed in the existing channel alignment at the upstream and downstream extents of the project reach to connect to adjacent untreated reaches and provide grade contraol for all action alternatives.

Armored Riffle Grade Control

Armored Riffle Grade Control treatments could both raise and stabilize the streambed. The armored riffles would be 'soft' grade control structures, made of a range of gravel and cobble, with a surface layer of material designed to remain immobile up to moderate flood flows (e.g., 10-year peak flow) (River Run 2006).

The existing riffles are naturally armored with a coarser surface layer. The riffle configuration and materials would mimic natural riffles, but with substrate sized to be resistant to movement during the target flows. They would be similar in shape and design to the riffle portions of the anchored high gradient riffle (Exhibit 4), but smaller scale.

For the conceptual design, the riffles are assumed to average 60 feet in width and 3 feet in thickness. The dimensions will need to be larger in some areas of the existing channel areas. The conceptual riffle slopes would be about 0.15 percent, but the length, slope, cross-sectional geometry, substrate composition, and specific locations of armored riffles could be modified during detailed design based on analysis of hydraulics and substrate movement, along with other design factors (e.g., aquatic habitat, infrastructure locations).

To prevent lateral channel movement from destabilizing the armored riffles, buried coarse substrate (e.g., cobble) might also be extended at least one-third the channel width or to the edge of the active (~5-year) floodplain in trenches capped with native sod.

Armored riffle substrates used in grade control can also provide spawning substrate, and habitat for aquatic macroinvertebrates.

Streambank Protection

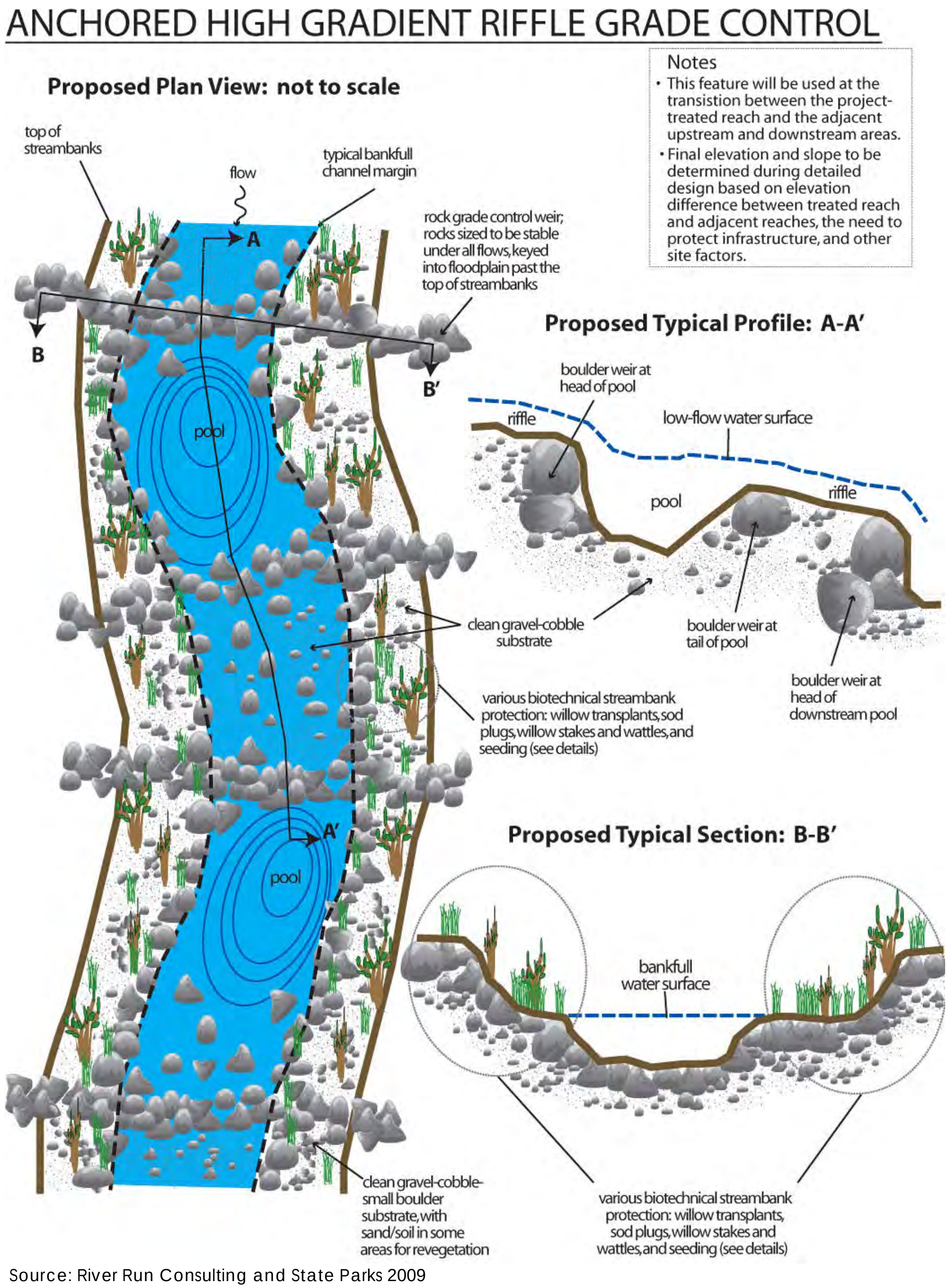
Rock Armor Streambank Protection

Rock Armor Streambank Protection treatments would include a combination of local cut and fill to modify the shape and height of streambanks along with placement of stable rock at the base of the streambank and use of biotechnical treatments on the upper bank (above a design flow stage) (Exhibit 5). This treatment is intended to stabilize the bank in its constructed location and prevent bank erosion or migration.

The intent of the cut and fill topographic treatment would vary by site, but could include: removal of placed fill or non-engineered levee berms; lowering of bank height, reducing bank angle. The design parameters for these aspects would be determined base on target channel dimensions, hydraulic analysis, and bank stability analysis, along with other factors such as anticipated soil moisture and revegetation conditions, as well as constraints due to golf course infrastructure.

The rock size, thickness, height above the channel bed, and keyed depth below the channel bed would vary from site to site based on the target design flow(s), hydraulic analysis, and bank stability analysis of shear stress, along with other factors, such as aquatic habitat (edge conditions and/or cover). Rock Armor would generally be designed to remain stable through the 100-year event.

The type of biotechnical stabilization and the extent of it on the upper bank would depend on the height of rock up the bank needed for stability, along with the bank angle, water surface elevations, soil materials and anticipated soil moisture conditions. Treatments could range from several types of live plantings to mixed live material, Large Woody Debris, and rock.

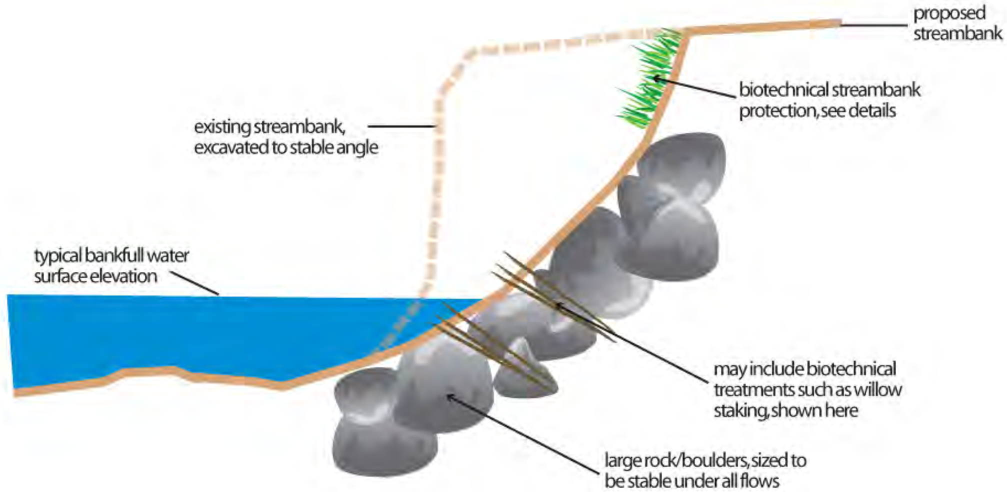


Source: River Run Consulting and State Parks 2009

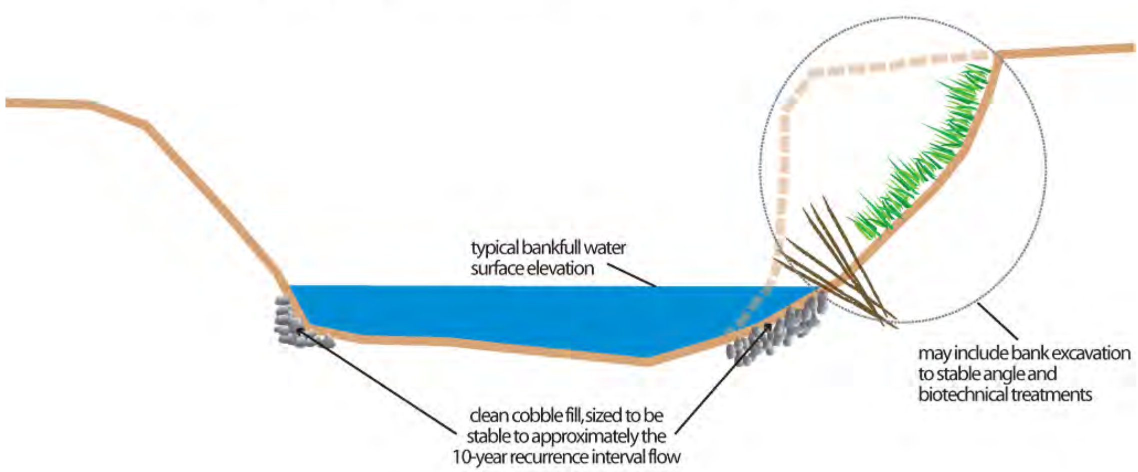
Exhibit 4. Conceptual Treatment Sketch: Anchored High Gradient Riffle Grade Control

ROCK ARMOR STREAMBANK PROTECTION

Proposed Rock Armor Streambank Protection Typical Cross Section



Proposed Rock Toe Streambank Protection Typical Cross Section



Source: River Run Consulting and State Parks 2009

Exhibit 5. Conceptual Treatment Sketch: Rock Armor Streambank Protection

The rock-toe variation of this treatment is not intended to stabilize the bank in its constructed location over the long-term. Rather it would provide greater initial (5-10 year) resistance than biotechnical measures alone, while allowing natural bank migration over the long-term. The rock-toe variant would be stable up to approximately the 10-year flow event, with rock size and height sized accordingly.

Biotechnical Streambank Protection

Biotechnical Streambank Protection treatments would include a combination of local cut and fill to modify the shape and height of streambanks along with installation of biotechnical treatments on the entire bank (Exhibits 6 and 7). The incorporation of rock material would be limited, but rock toe may be locally incorporated as needed.

The intent of the cut and fill topographic treatment would vary by site, but could include: removal of placed fill or non-engineered levee berms; lowering of bank height, reducing bank angle. The design parameters for these aspects would be determined based on target channel dimensions, hydraulic analysis, and bank stability analysis, along with other factors such as anticipated soil moisture and revegetation conditions, as well as constraints due to golf course infrastructure.

A combination of treatments could be used on a particular bank, with differences in their resistance to hydraulic shear, their roughness, and their benefits to bank strength (rooting depth, density, and water use). The type of biotechnical stabilization and the extent of it on the bank would depend on the shear resistance needed for stability, along with the bank angle, water surface elevations, soil materials and anticipated soil moisture conditions.

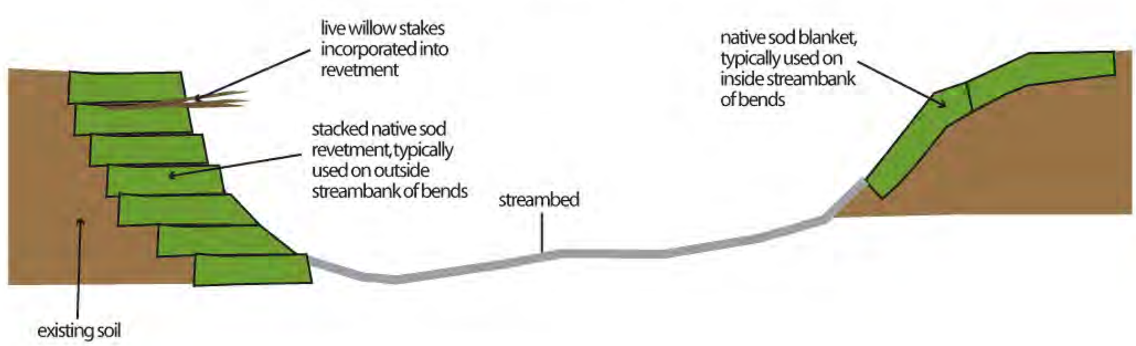
Treatments could range from salvaged sod, shrubs and trees, several types of live plantings to mixed live material, incorporation of erosion control fabrics, and minor use of rock. Final designs would be based on the target design flow(s), hydraulic analysis, and bank stability analysis of shear stress, along with other factors, such as aquatic habitat (edge conditions and/or cover).

Woody Debris Features

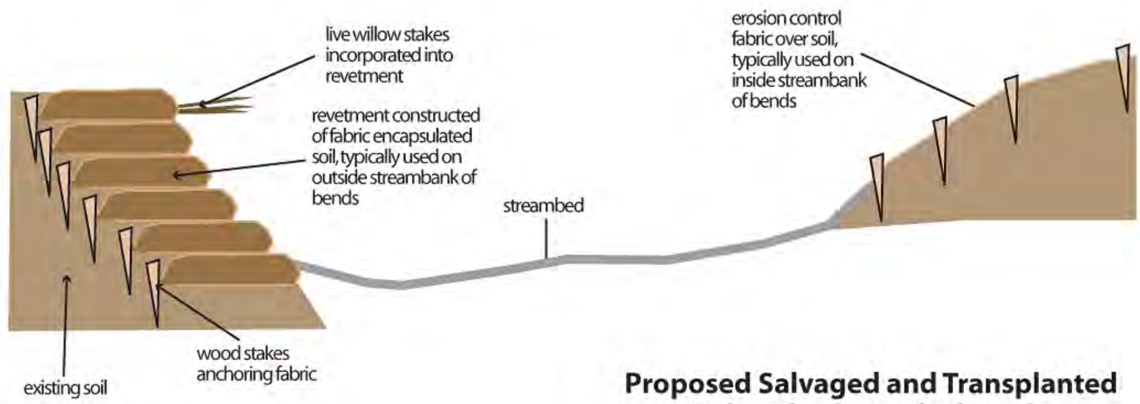
Woody Debris Features could be incorporated in a couple of situations, to either protect eroding or vulnerable streambanks or to locally enhance aquatic habitat. The habitat features could be minor features that are modified channel bars, with partially submerged logs, keyed into the floodplain or excavated floodplain bench and extending in to the channel margins. At any location, they would occupy less than about 15% of the active channel area. They would provide hydraulic roughness and improve channel bar resistance to erosion. Their height may be extended up to about the 5-year peak flow water surface. The woody features might be tied into the top-of-bank at the margin of the active floodplain where it meets the terrace.

BIOTECHNICAL STREAMBANK PROTECTION: SHEET 1

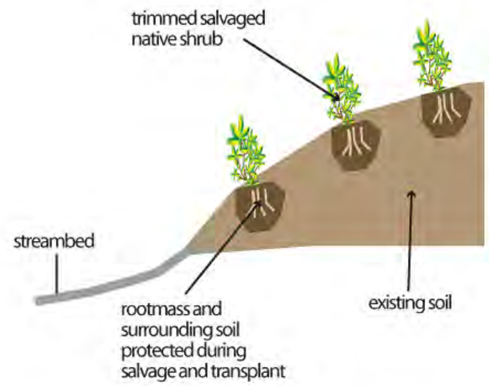
Proposed Sod Salvage and Reuse Typical Cross Section



Proposed Erosion Control Fabric Treatments Typical Section



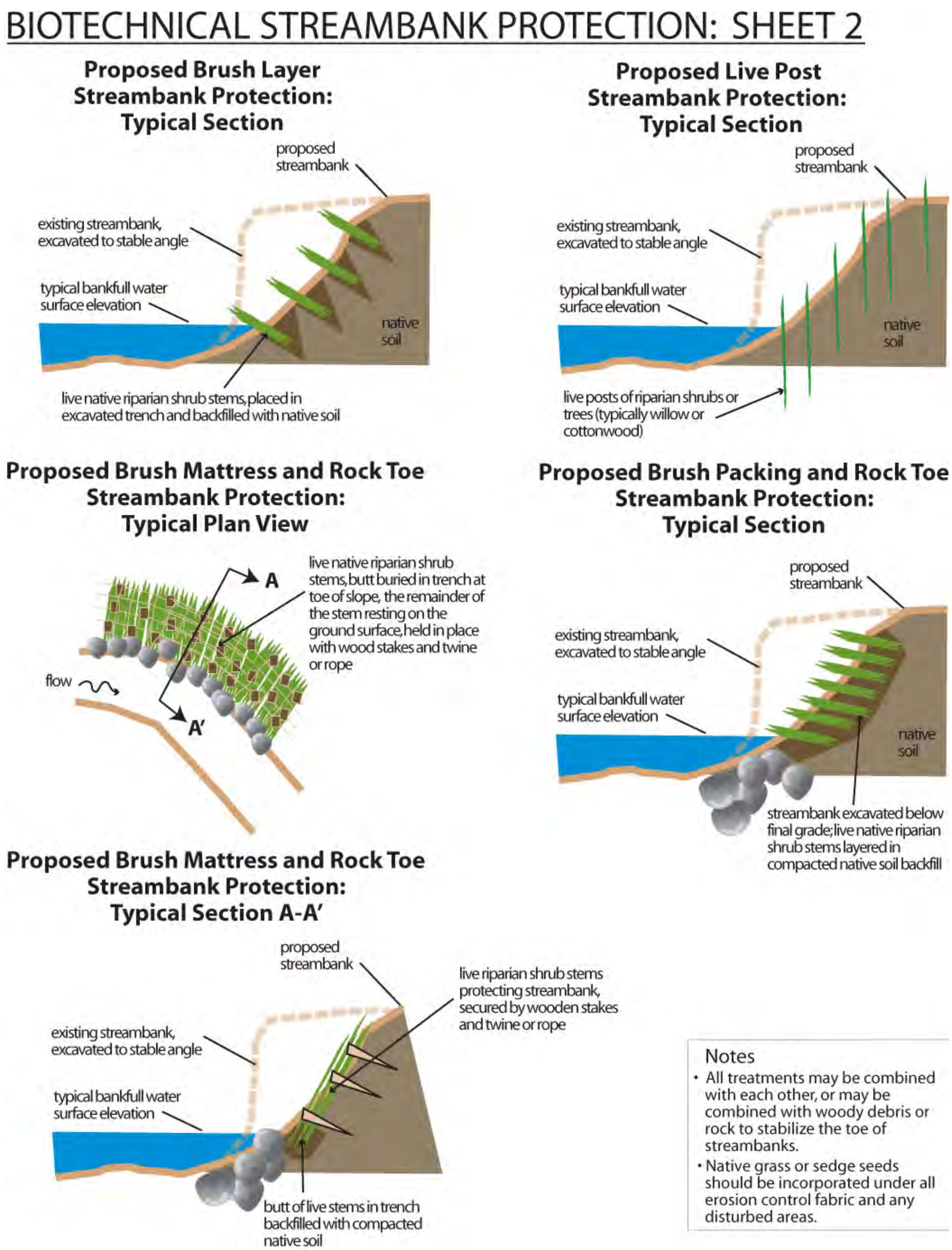
Proposed Salvaged and Transplanted Native Shrubs Typical Section



Notes
- All treatments may be combined with woody debris or rock to stabilize the toe of streambanks.
- Native grass or sedge seeds should be incorporated under all erosion control fabric and any disturbed areas.

Source: River Run Consulting and State Parks 2009

Exhibit 6. Conceptual Treatment Sketch: Biotechnical Streambank Protection, Sheet 1



Source: River Run Consulting and State Parks 2009

Exhibit 7. Conceptual Treatment Sketch: Biotechnical Streambank Protection, Sheet 2

For the purpose of streambank protection, woody debris could be configured as hydraulic deflectors along channel margins, taking up less than 20% of the channel area, and may require partial buried or use of boulder weights to prevent floatation. These jams would be carefully configured to avoid increasing overall streambank erosion or affecting the function of other planned bed and bank treatments.

The other woody debris features for streambank protection would include brush boxes (Exhibit 8), comprised of branches and large wood that is anchored in place in front of eroding or vulnerable streambanks to increase roughness in the channel and decrease shear stress at the earthen bank.

Transition Treatments

Transition Treatments are those that would be installed between existing, reconnected, or constructed channel segments. These treatments will combine streambed stabilization and streambank protection treatments to ensure a stable and relatively smooth hydraulic connection between proposed channel segment types (Exhibit 9). The streambed protection measures would likely be armored riffles in the existing channel). The streambank treatments along the banks facing the active channel adjacent to plugged abandoned channel would have compacted soil and biotechnical measures such as stacked sod (see Exhibit 6). A special type of floodplain restoration, complete backfill (see Exhibit 10), would be used as part of the transition treatments in the abandoned existing channel adjacent to the proposed active channel.

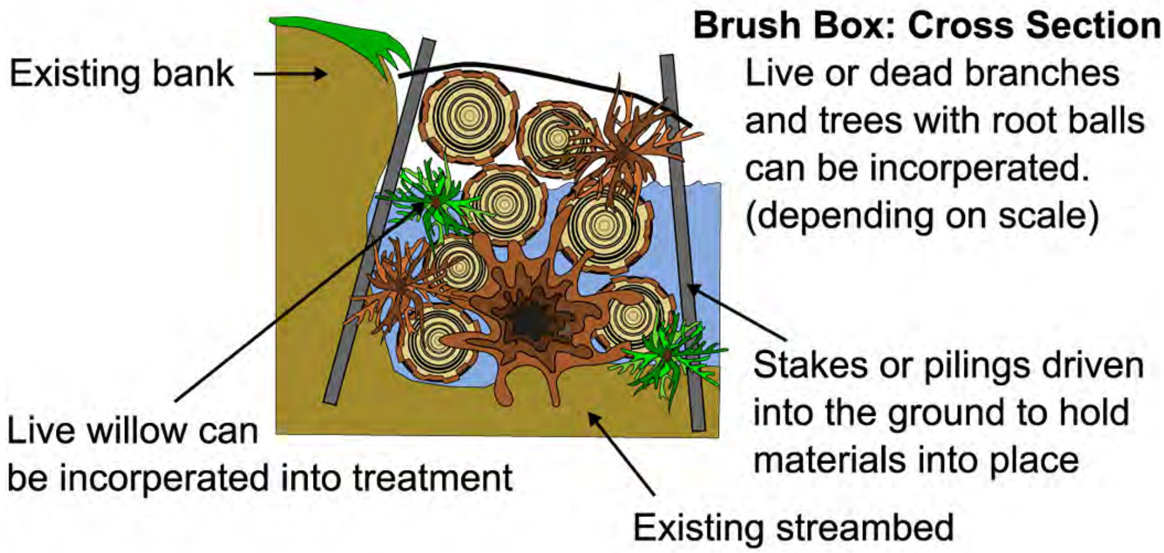
Hydraulic analysis during final design may result in treatments at the transitions that include other combinations, such as: the use of rock armor streambank protection; living woody vegetation; and, large woody debris features.

Floodplain Restoration

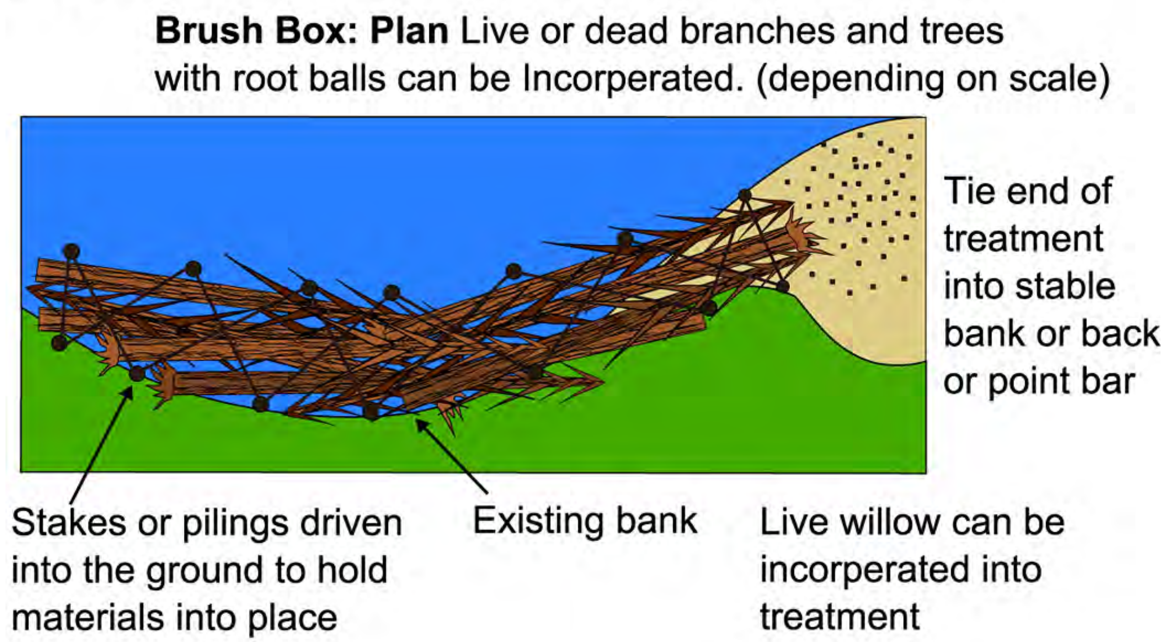
Backfilled Channel

The Backfilled Channel treatment would feature a couple of variations that creates a surface that is either: (1) ‘level’ with the adjacent terrace/floodplain surface and relatively uniform topographic surface without distinct ponds or pools; or, (2) ‘partially’ filled, but lower than the adjacent terrace/floodplain surface and may include swales or low areas(Exhibit 10).

Brush Box: Cross Section



Brush Box: Plan



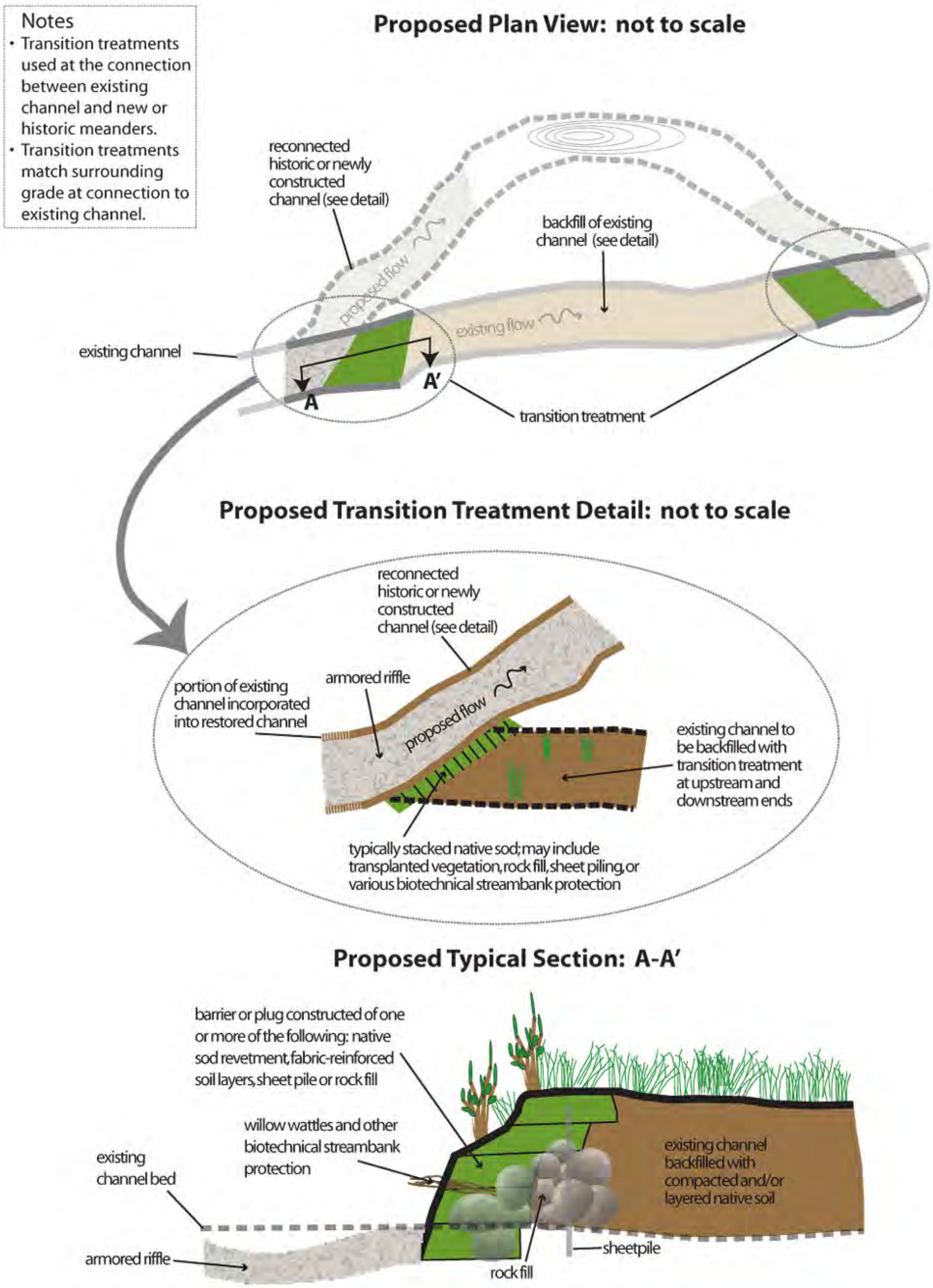
Note: Size of material used depends on the scale of treatment site

Source: River Run Consulting and State Parks 2009

Exhibit 8. Conceptual Treatment Sketch: Brush Box

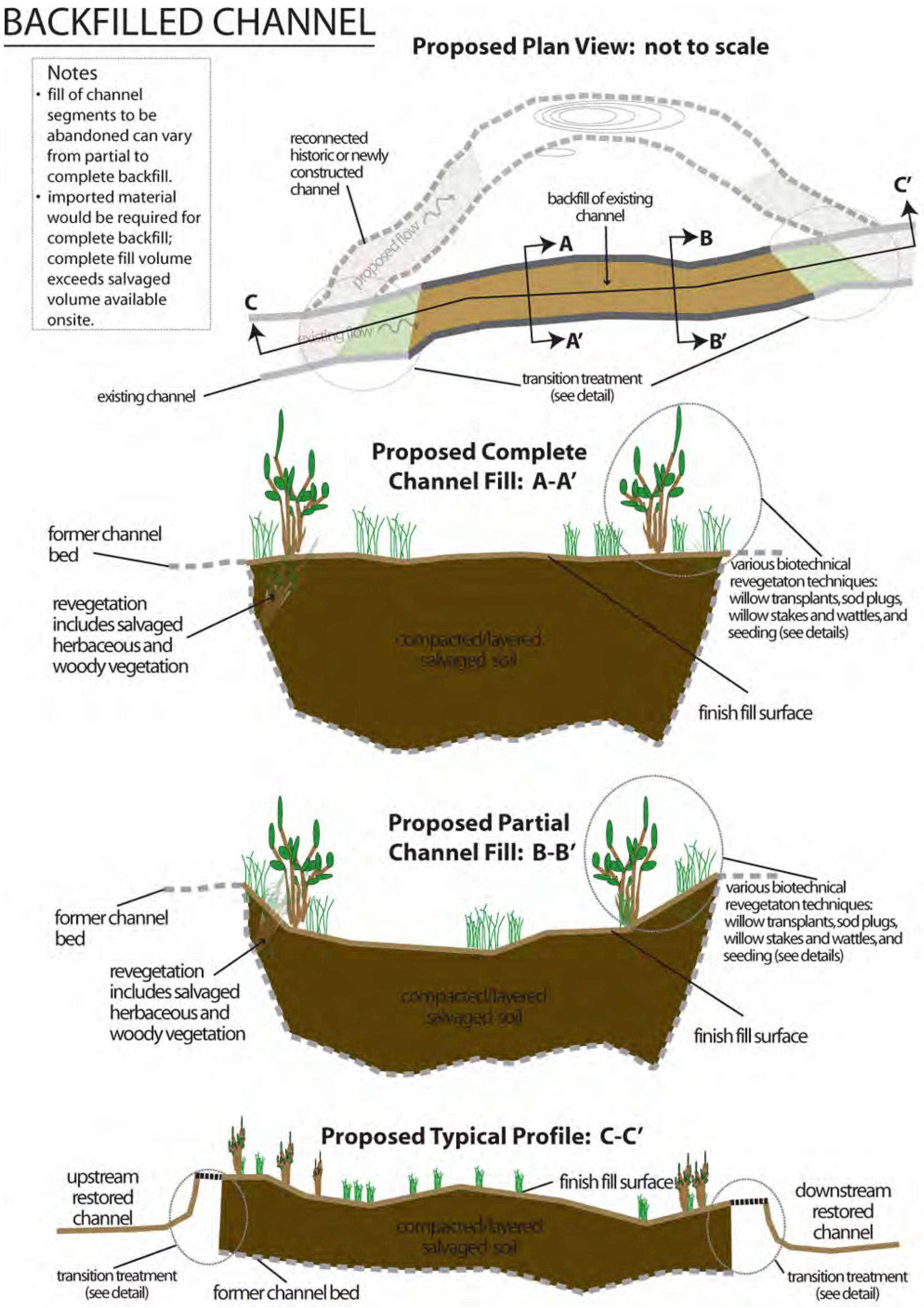
NOTE: Need updated brush box exhibit from State Parks

TRANSITION TREATMENT



Source: River Run Consulting and State Parks 2009

Exhibit 9. Conceptual Treatment Sketch: Transition Treatment



Source: River Run Consulting and State Parks 2009

Exhibit 10. Conceptual Treatment Sketch: Backfilled Channel

Complete backfill would involve placing fill in sections of existing channel (those that would be abandoned) up to the elevation of the adjacent terrace/floodplain. Some microtopography variations would be maintained, and the geomorphic function would be similar to adjacent terrace/floodplain (only inundated during large flood flows). Re-vegetation of the new surface would incorporate a mixture of salvaged/transplanted sod and willow, willow wattles, and new plantings. The backfilled channel sections would be stabilized with vinyl sheet piling across the upstream ends of backfilled channels, within stacked sod and compacted soil plugs. The plugs would be at least 40 to 50 feet long, extend across the entire blocked channel width and have a finished ground surface that is equal to or slightly higher (up to +1.0 ft) than the existing adjacent surfaces (River Run 2006).

Partial backfill would mimic oxbows and abandoned meanders such as those present in the study area. Partial backfill treatment would place fill in sections of existing channel (to be abandoned) up to an elevation about two to three feet lower than the adjacent terrace/floodplain. The surface would be part of the backwatered floodplain and function as a floodplain overflow channel only during streamflows that exceed the design flow of the proposed main channel similar to the complete backfill. Some microtopography variations would be maintained on the new surface, but there would be a net flow direction and path to limit stagnant water after flow events. Re-vegetation of the new surface would incorporate a mixture of salvaged/transplanted sod and willow, willow wattles, and new plantings, and would have more resistant rock or log materials incorporated near the inlet and outlet (adjacent specific vertical and/or lateral grade controls).

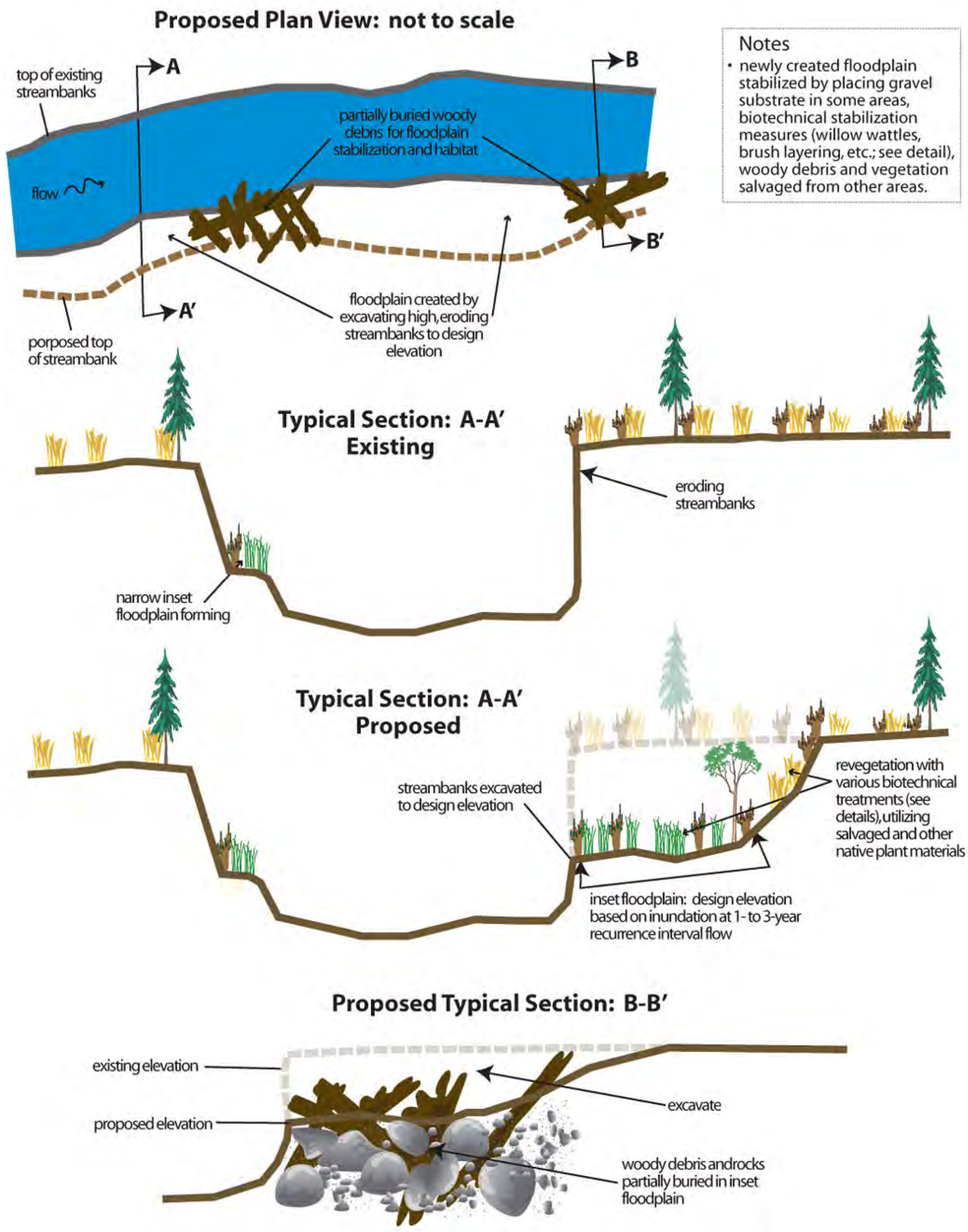
The plugs at the upstream ends of backfilled channel sections would be designed to force all flows up to the design flow (550 cfs) into the proposed new or reconnected meander. However, a portion of flood flows greater than the design bankfull flow could be allowed into the backfill channels, promoting the floodplain function and diversity of natural abandoned meanders. Therefore, the fill would need protection against erosion with techniques such as internal sheet piling or armoring of overflow paths. The designated streamflow at which overflow into the backfill channels might occur would be selected during final design, based on the hydraulic analysis, desired active channel flows and water elevations, and other factors related to the floodplain flow paths and residence time.

The final area and configuration of shallow (partial) backfill would need to and maximize groundwater and soil water continuity across the floodplain.

Inset Floodplain

The Inset Floodplain treatment would excavate portions of the existing terrace banks along one or both sides of the active channel, to a depth that leaves an appropriate bank height for overbank flows approximately at the design flow (Exhibit 11).

INSET FLOODPLAIN



Source: River Run Consulting and State Parks 2009

Exhibit 11. Conceptual Treatment Sketch: Inset Floodplain

Floodplain excavation would reduce active channel bank height and provide additional conveyance capacity for large flood flows between the high terrace banks.

The design width and configuration of the excavated floodplain could be modified based on a number of criteria: extent of severe bank erosion; hydraulic characteristics of the final channel and bridge design; protection of existing vegetation, or other factors.

The width of the excavated floodplain would be determined based on the area and capacity of flow desired between the remaining banks, constraints due to golf course infrastructure, and the location could be adjusted to incorporate robust existing terrace vegetation into the residual terrace banks that would remain after excavation.

The top portions of selected terrace banks would be removed, removing their relatively fine material and organics and leaving the coarser materials of the lower banks as part of the new active channel banks. Salvaged soil and plant materials would be used in stabilizing and revegetating the newly excavated floodplain, and some gravel and cobble would be placed to improve scour resistance on the floodplain (SH+G 2004).

In areas where the inset floodplain will be around curves in the river, bank stabilization that includes rock armor streambank protection would be likely, and/or boulder groins or Large Woody Debris features could be installed to direct high flows and reduce potential bank erosion along the terrace base.

Re-vegetation of the lowered surface would incorporate a mixture of salvaged/transplanted sod and willow, willow wattles, and new plantings.

Willow wattles oriented perpendicular to flow could be planted at intervals, providing both resistance to erosion and germ stock. Willow wattles could also be used on the residual terrace at the outer edge of the inset floodplain.

Restored Floodplain

The Restored Floodplain Treatment would be used where the existing golf course land uses are being discontinued and any infrastructure and non-native vegetation could be modified to restore the topography, hydrology, soils, and vegetation conditions of a natural floodplain. The treatments would include earthwork to remove unnecessary fill and grade the areas to restore more natural topography, as well as various soil treatments and re-vegetation methods to achieve target plant communities and/or terrestrial habitats.

There will be variations in the design for various zones of the restored floodplain, based on their expected frequency of inundation, differences between existing and desired conditions, future buffer distance from incompatible land use, or other engineering and biological factors. The following descriptions of possible treatments cover a conceptual range of approaches that could be used (River Run 2006).

Where the elevation of the ground was raised in golf course construction, (e.g.,greens, tee boxes, and spoils "levees") the historic topography would be restored by removal of non-native material and/or local grading. The final elevation would be no more than one foot above the elevation of late spring/early summer groundwater. In other areas where the naturally diverse and complex topography was smoothed for golf course landscaping, grading would be used to re-create topographic variability similar to natural floodplains or oxbow features.

Along linear features (e.g., golf cart paths), flow breaks would be installed in the form of stacked turf or fiber-wrapped, seeded soil rising slightly above and extending a several feet on either side. The rebuilt soil profile would be vegetated with a combination of regionally collected seed, salvaged native sod, and willow (cuttings, stubs, or entire rooted clumps). At suitable locations, willow plantings would be clustered to reestablish willow-meadow complexes. Where willows are desired but pre-existing relict turf is present, measures would be applied to create a competitive advantage for willow over the meadow vegetation in which they would be planted.

Turf and fill removal with seeding would be applied in areas of elevated fill with buried natural soil that has viable native meadow rhizome. Existing golf turf and sand would be salvaged for other restoration use and/or disposed off-site, some turf and sand will be tilled into soil. The disturbed surface would be seeded with additional desirable species (e.g., Deschampsia cespitosa) and mulched.

In areas where the golf course topography is generally suitable, but the soil lacks viable buried native rhizome bank, and/or the soil conditions are not conducive to the desired vegetation type, soils would be deep-ripped and amended. The prepared soil areas would be seeded, planted with plugs of desired species, and mulched.

The areas anticipated to support mesic meadow, lodgepole pine (mesic or dry type), and dry meadow would be treated with ripping and planting in bands oriented along topographic contours, alternating with parallel bands of the seeding and/or abandonment treatments described below.

Seeding over existing golf course turf may be used in locations where the existing vegetation is desired for erosion protection, and/or the soil profile would not require modification to support the desired future vegetation.

Turf abandonment may be used in locations where existing vegetation has native wet meadow graminoids present and vigorous. Native species such as Carex nebrascensis that grow up through the turf and readily out-compete the grass turf and reestablish wet or mesic meadow habitat with the restored hydrology. During the transition period before native species dominate, existing turf would provide erosion protection.

Seeding and plug plantings would generally be followed by application of mulch (loose or hydraulically applied), or rolled turf pre-grown from native seed in coconut fiber turf-reinforcement mats to provide initial erosion protection.

Recontoured Floodplain Pond

The Recontoured Floodplain Pond treatment would be used where the existing constructed water features will no longer be used for the associated water supply, irrigation, or drainage purposes. Their topography, hydrology, and vegetation could be modified to restore conditions of a natural floodplain. The treatments would include earthwork to locally fill and grade existing deep constructed ponds (that would be abandoned) to resemble natural floodplain swales or remnant meanders. The topography, soil treatments and re-vegetation methods would be implemented to achieve target plant communities and/or aquatic and terrestrial habitats.

Final location(s), areas and configuration of recontoured floodplain pond would be determined in coordination with the selected golf course configuration and evaluation of its water feature needs. The design would need to maximize groundwater and soil water continuity across the floodplain.

References

River Run 2006. Upper Truckee River Restoration Project California Department of Parks and Recreation Reach Riparian Ecosystem Restoration Feasibility Report. Prepared for California Department of Parks and Recreation.

Swanson Hydrology + Geomorphology March 2004. (Final) Upper Truckee River, upper reach environmental assessment. Report prepared for the Bureau of Reclamation, Tahoe Resource Conservation District, and Regional Water Quality Control Board-Lahontan Region.

Swanson Hydrology + Geomorphology. October 2004. (Final) Amendment Report. Upper Truckee River Upper Reach Reclamation Project. Prepared for Tahoe Resource Conservation District and U.S. Bureau of Reclamation.

Swanson Hydrology + Geomorphology January 2004. Upper Truckee River Lake Tahoe Golf Course Hole 6 Design Report (Draft). Prepared for the California Department of Parks and Recreation and the American Golf Corporation.

APPENDIX D

Upper Truckee LVSRA WMSP Bridge Report

Appendix D

Upper Truckee LVSRA WMSP Bridge Report

Cyndie Walck, CA State Parks Engineering Geologist with input from Jim Haen PE

July 2008

This is a brief report on potential bridge locations and designs for various alternatives in the EIR EIS for Upper Truckee restoration and potential golf course reconfiguration at Lake Valley State Recreation Area/Washoe Meadows State Park. Besides off-site re-location of the golf course, the alternatives being considered include:

Alternative 1: No Project/No Action
Alternative 2: Geomorphic/Ecosystem Restoration with 18-hole Regulation Golf Course
Alternative 3: Geomorphic/Ecosystem Restoration with Reduced Golf Course Area
Alternative 4: Engineered Stabilization (In Place) (no change to golf course)
Alternative 5: Geomorphic Restoration with No Golf Course

Alternatives 2, 3, and 5 would remove all existing bridges. In Alternative 1 we would only replace bridges if one begins to fail. Alternative 4 would keep most of the existing bridges in approximately the same location but the bridges at holes 6 and 7 would need to be replaced with one longer bridge in between the two existing bridges. Alternative 2 would be a new longer bridge or pair of bridges that span the floodplain about 100 feet downstream of the current hole 7 bridge. Alternatives 3 and 5 would not have a bridge. See Figure 1 for bridge locations.

The 1.5 year channel design flow is estimated by various researchers to be 450 to 550 cfs. The 5 year flow is estimated at 1,300 to 1,600 cfs. The 100 year flow is estimated at 4,300 to 7,700 cfs.

<u>Alternative 2</u>

Initially two potential sites were considered for location of a bridge under this alternative: One site is between current holes 6 and 7 bridges and a second site is approximately 1,000 feet downstream by cross section 7M in the straight reach at long profile distance 6,500 to 7,000. The site between holes 6 and 7 was subsequently rejected because it is a transitional reach of the river and is naturally an area of adjustment and channel and bed movement. It also has instability due to impacts from the existing bridges which add to risk at this site. The second site is more stable, in a straight reach with a naturally high area on the right bank, and is the preferred site.

The river in this area is in glacial outwash and moraine deposits with a prominent glacial lacustrine clay layer in the bed. The channel banks show active erosion on the south bank and some inset floodplain is present. The restored channel would raise the bed by a couple of feet in this reach, but the banks would still be at about a 3 to 5 year height. To reduce stress on the banks the inset floodplain would be widened in this reach. This would entail excavation of an inset floodplain and laying back and vegetating the stream banks. This would give a cross section width of 110 to 150 feet (see cross section, Figure 2).

The bridges would need to accommodate both 2-way golf cart traffic, service vehicles, and other recreationalists (hikers/bikers using other parts of the park). Parks could use either two narrow (8' to 10') bridges or one wider (approx 15' to 20') bridge. The bridge length would be 135 to 200 feet.

Currently the golf course has five prefabricated weathering steel bridges manufactured by Continental Bridge. For aesthetic consistency, longer spans provided by this manufacturer were evaluated and estimated. Long span bridges (100 to 200 feet, as well as intermediate lengths) are available in the 10 foot, 15 foot and 20 foot widths considered for Alternative 2.

Two options were considered: 1) clear span of the river channel, and 2) a mid span support in the river channel. The first option reduces the threat of flood debris being snagged by the center structural support. This option is more costly and the erection will be more involved. A bridge configuration with three-point bearing (right, mid and left) will be less massive but will require construction access to the middle of the channel for footing erection. Approximate bridge costs, not including erection, are shown in the "Bridge Cost Table."

Bridge guardrails will conform to the existing course bridge guardrail configuration. Guardrail height will vary with clear span between 3 to 6 feet. Conveyance of the 100-year flood will be uninhibited by all bridge options. A freeboard of two feet minimum between the 100-year flood elevation and the bottom chord of the bridge truss will reduce the risk of debris being snagged. Appurtances attached to bridges, such as irrigation waterlines, will be located on the underside and attached with pipe clamps. The waterlines will be protected by a steel sleeve one pipe size larger than the transmission pipe. See bridge figures 4 through 6 for more detail.

Access to construction site will be along an area that will later become part of new golf course holes that cross the river. Parks would need to do clearing and access roads to put in this new set of holes that cross the river so we can use an area that will eventually become golf course. Staging of bridge materials would be on the right/south bank near the site, again in an area that will become part of golf course fairway.

Transport of bridge sections from an unloading zone near Country Club Drive to the two construction staging areas for each bridge will be provided by 40 foot flat bed trailers on a temporary construction road or existing dirt roads. Brushing and grading of a 16 foot road section may be necessary for access.

A pile driver will access either side of the river to 40 by 50 foot construction staging areas. Lengths of 10 inch steel piles will be hammered to a depth of up to 25 feet. Piles will be spaced at 5 feet, 3 piles for 10 foot widths and 5 piles for 20 foot widths. Steel plate one inch thick welded to the pile cluster supports the bridge bolted connection.

After the pile foundation is complete, 20 ton cranes will be stationed on both sides of the river in order to set and connect bridge sections.

Temporary erosion control fencing and an approved refueling station will be incorporated into each staging area. Allow one week for each bridge installation.

The finished product will resemble the existing pedestrian bridges throughout the course. Decking and railing materials are identical to the existing bridges at holes 6 and 7.

Launchable rip rap could be buried in the banks to limit channel migration and protect the piers, but could be buried, vegetated and essentially invisible. Alternatively biotechnical methods could stabilize the banks.

Bridge Cost Table

Bridge Options	Width	Span	Cost/Ea	# of Units	Total Cost
1	10’	100’	$103,000	4	$412,000
2	10’	150’	$196,000	2	$392,000
3	10’	200’	$390,000	2	$780,000
4	20’	100’	$255,000	2	$510,000
5	20’	150’	$458,000	1	$458,000
6	20’	200’	$676,000	1	$676,000

The above prices do not include taxes, unloading, foundations and erection.

<u>Alternative 4 (and on as needed basis under Alternative 1)</u>

The hole 6 bridge is currently 45 feet long and the hole 7 bridge is 74 feet long (it was replaced in mid 90’s). These bridges are undersized, and contribute to bed and bank instability. The hole 6 bridge causes significant backwater upstream which in turn causes extensive erosion on the downstream side (cross section 4–5M) while acting to stabilize the reach upstream of the bridge. The hole 7 bridge cause a recirculation pattern upstream with large amounts of bank erosion both upstream and downstream that have been temporarily stabilized. Parks would remove both bridges and replace with one 100 to 140 foot span bridge in between the two holes at approximate cross section 4–5L. This would require creating an insert floodplain with buried rip rap and woody debris for lateral stabilization as that reach is transitional and naturally would adjust bed and banks without engineered stabilization. It would also require a hard grade control upstream of hole 6 bridge since that undersized bridge currently acts as a backwater (Swanson Jan 2004 report) and grade control: removal of that bridge would result in head cutting without grade control.

For Alternative 4 bridge widths, configuration and erection will be similar to the Alternative 2 scenario.

<u>Removal of Old Bridges</u>

For Alternatives 3 and 5, all of the bridges on the Upper Truckee would be removed. For alternative 5 we would also remove the smaller bridges on Angora (holes 10 and 11) and the golf course creeks.

Bridges with steel pile footings will require excavation of the piles down two feet below finish grade and cutting of the 10 inch piles. A ½ inch steel plate will be welded to the newly cut end. The quantity of material removed is minimal and all steel products will be recyclable.

Bridges with concrete footing will require jack hammering of the concrete to two feet below finish grade. Exposed reinforcing steel will be cut flush with the concrete surface. Approximately 3 cubic yards of concrete debris will be generated at each footing removal.

Rip rap associated with the bridges would also be removed. Some of it may be re-utilized for other aspects of the project. The bridge removal sites will be evaluated to determine if bio-technical or grade stabilization is needed. Sites will be restored and re-vegetated.

Figures:

1. Site map showing location of current bridges, proposed bridge under Alternative 2, and proposed bridge replacement under Alternative 4.
2. Cross section at bridge sites Alternative 2
3. Cross section at bridge site Alternative 4
4. Typical bridge section
5. Typical bridge shipping
6. Typical bridge Footing

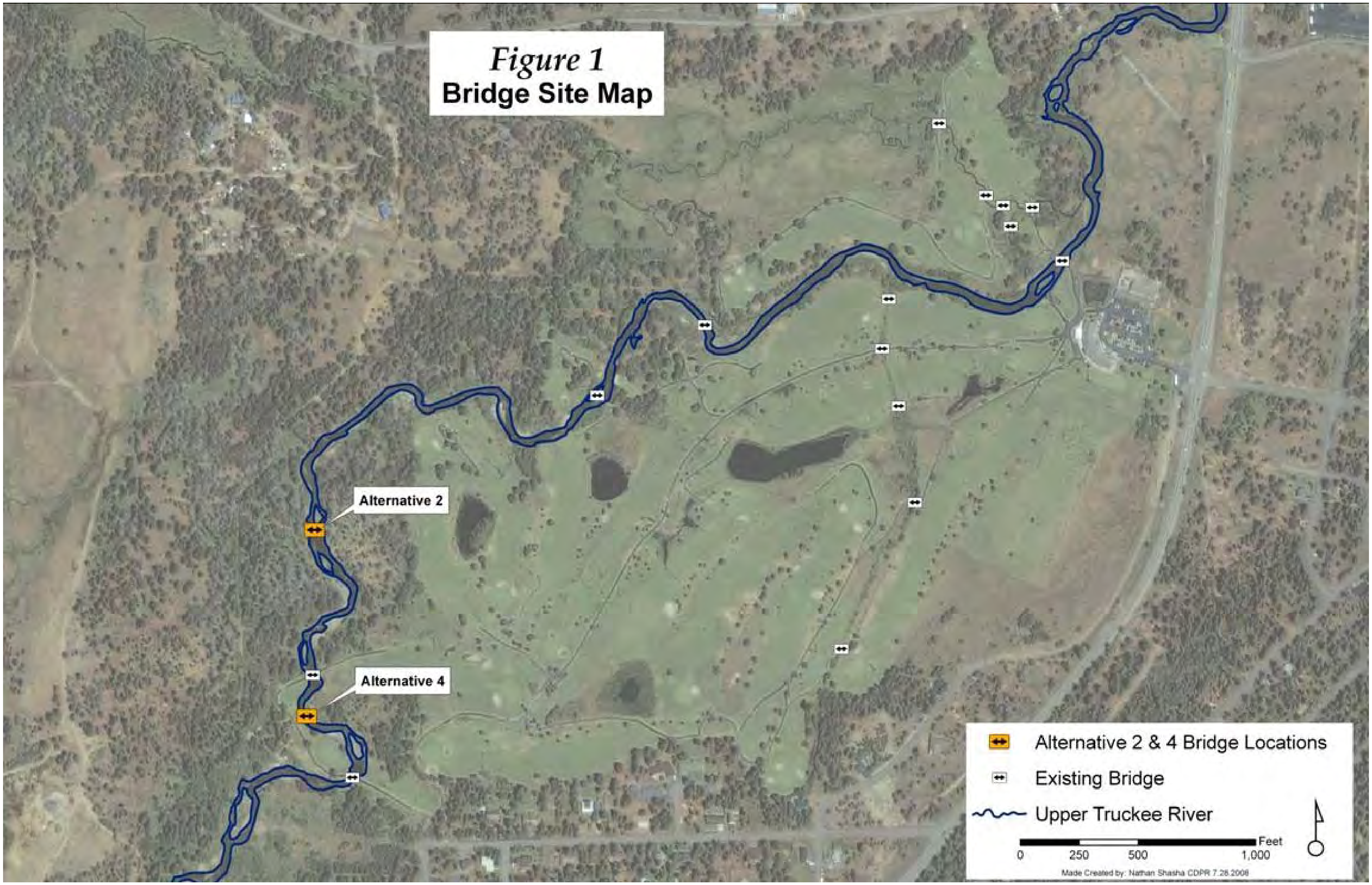
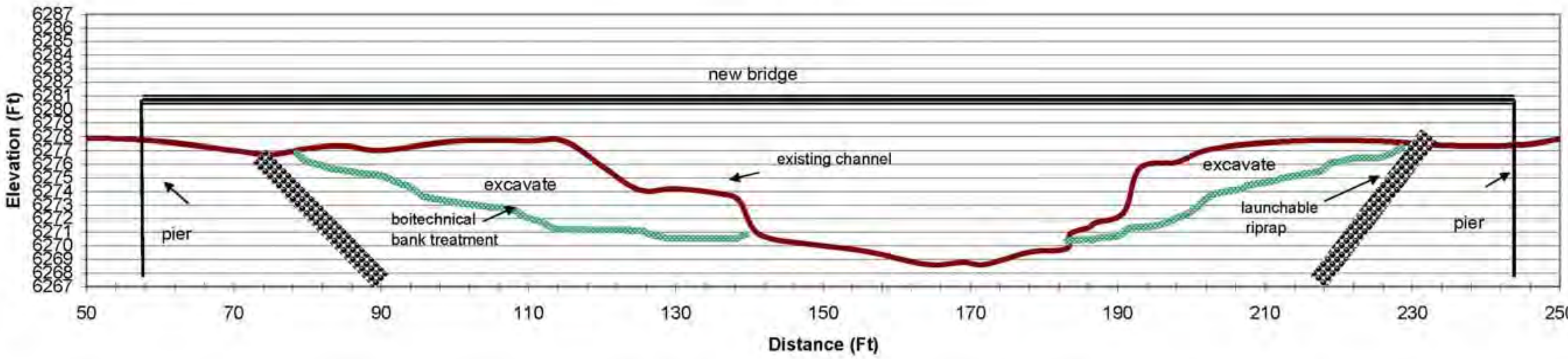
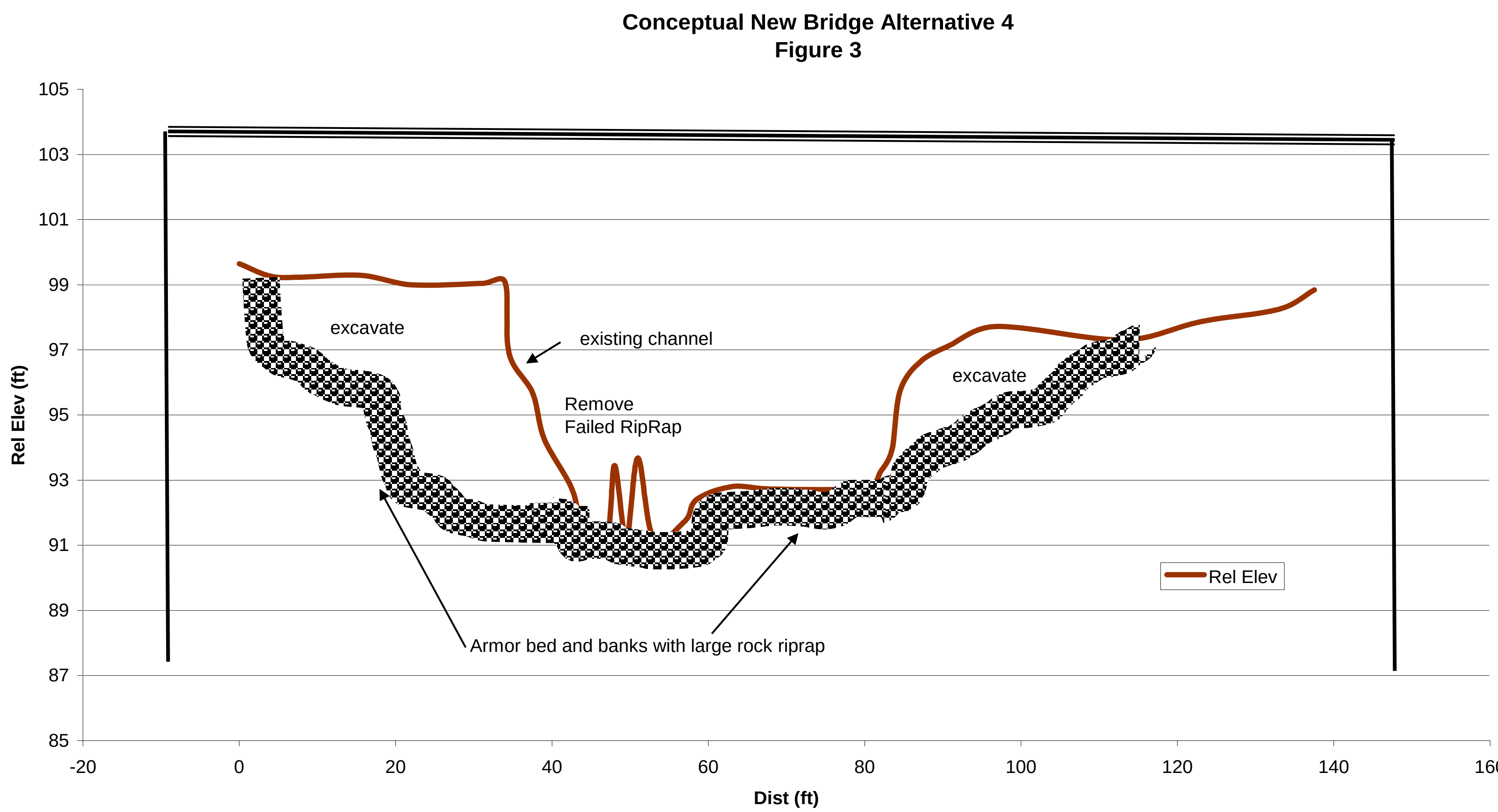


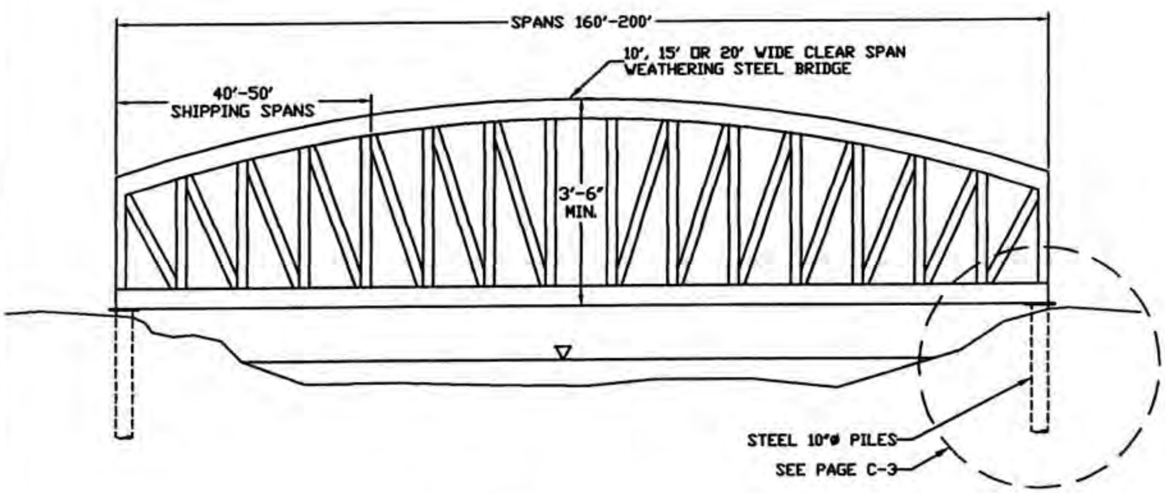
Figure 1
Bridge Site Map

Conceptual Bridge Under Alternative 2
Figure 2





Conceptual New Bridge Alternative 4
Figure 3
Rel Elev (ft)
Dist (ft)
105
103
101
99
97
95
93
91
89
87
85
-20
0
20
40
60
80
100
120
140
160
excavate
existing channel
Remove
Failed RipRap
excavate
Armor bed and banks with large rock riprap
Rel Elev

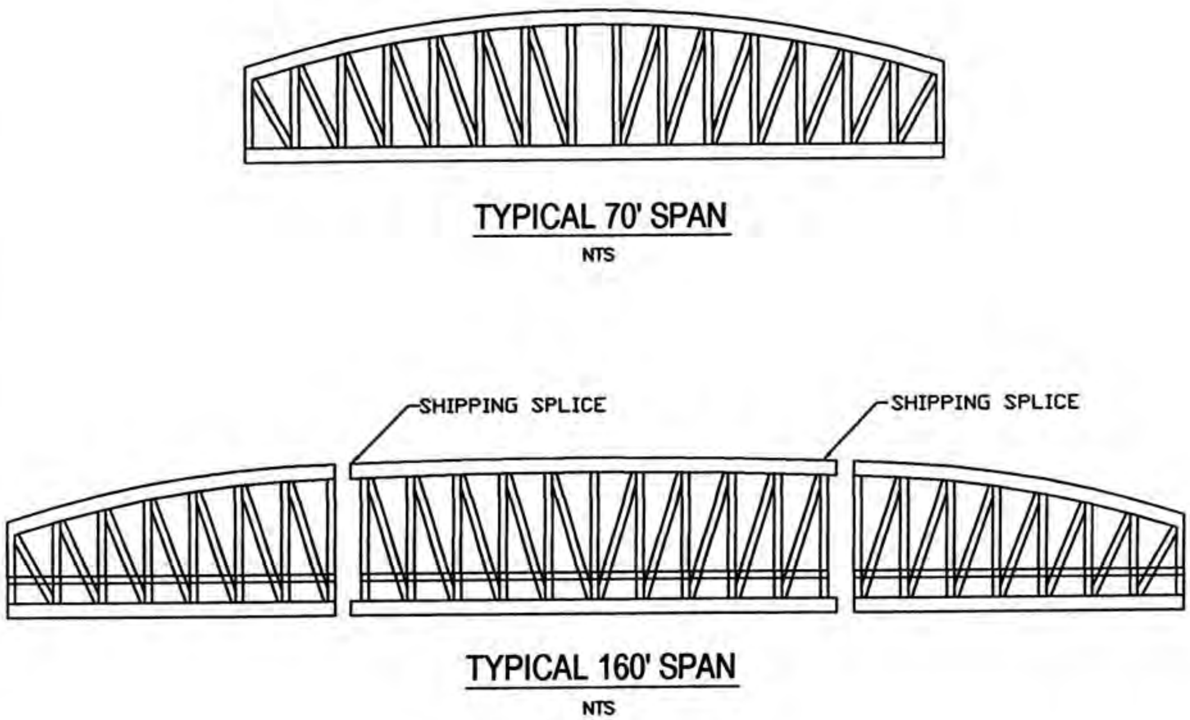


TYPICAL BRIDGE SECTION

NTS

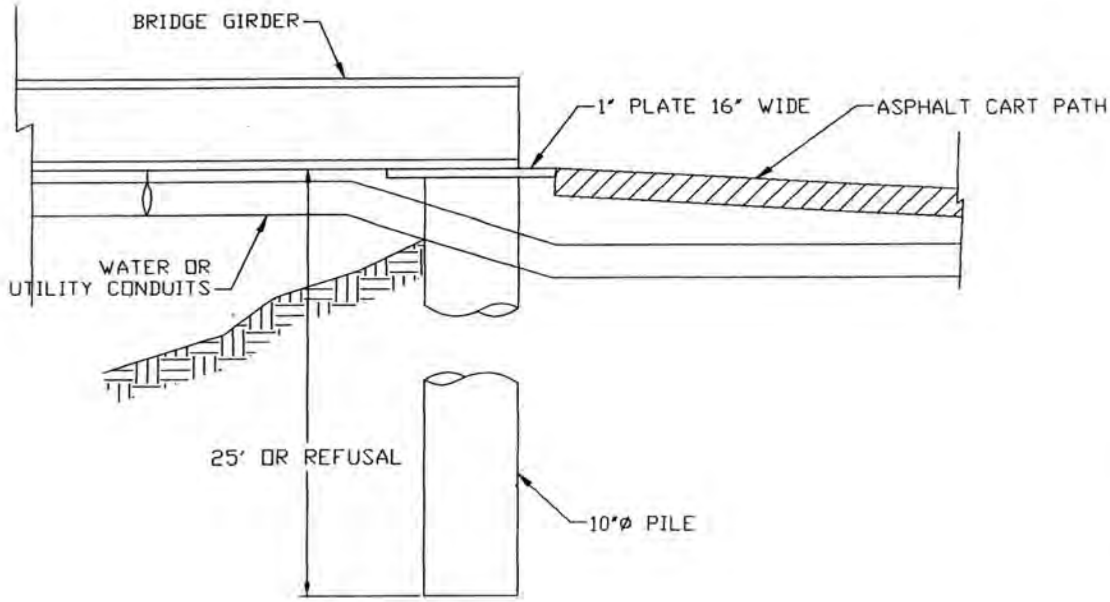
HAEN ENGINEERING P.O. BOX 11609 SOUTH LAKE TAHOE, CA. 96155 (530) 5414343 FAX (530) 5414461	**LAKE TAHOE GOLF COURSE BRIDGE** DATE: 5/12/08 PROJECT NO.: 01-37 BY: JFH	SHEET C-1

Figure 4



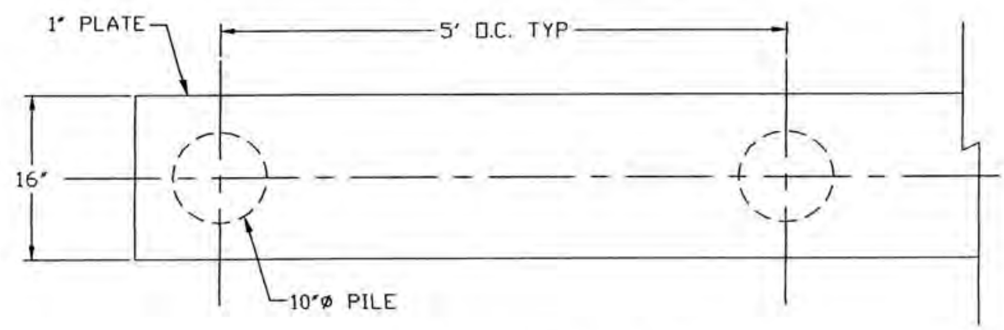
HAEN ENGINEERING P.O. BOX 11609 (530) 5414343 SOUTH LAKE TAHOE, CA 96155 FAX (530) 5414461	LAKE TAHOE GOLF COURSE BRIDGE DATE: 5/12/08 PROJECT NO.: 01-37 BY: JFH	SHEET C-2

Figure 5



BRIDGE FOOTING

NTS



BRIDGE MOUNTING PLATE

NTS

HAEN ENGINEERING	LAKE TAHOE GOLF COURSE BRIDGE	SHEET C-3
P.O. BOX 11609 SOUTH LAKE TAHOE, CA. 96155 (530) 5414343 FAX (530) 5414461	DATE: 5/12/08 PROJECT NO.: 01-37 BY: JFH	

Figure 6

APPENDIX E

Lake Tahoe Golf Course Economic Feasibility Analysis

HANSFORD ECONOMIC CONSULTING

LAKE TAHOE GOLF COURSE ECONOMIC FEASIBILITY ANALYSIS

A Report Prepared For:

The Upper Truckee River Restoration and Golf Course Reconfiguration Project

DRAFT
Environmental Impact Report (EIR) / Environmental Impact Statement (EIS)/EIS

HEC Project #60631

September 8, 2008

CONTACT INFORMATION

Lake Tahoe Golf Course Economic Feasibility Analysis

September 8, 2008

This report was prepared by Hansford Economic Consulting (HEC), under subcontract to EDAW, Inc. This report (HEC Project No. 60631) was prepared to accompany the Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS)/EIS for the 'Upper Truckee River Restoration and Golf Course Reconfiguration Project, Lake Valley State Recreation Area and Washoe Meadows State Park, Meyers', a joint project of the Tahoe Regional Planning Agency, California State Parks, and the United States Department of the Interior, Bureau of Reclamation. EDAW, Inc. is responsible for preparation of the complete Draft EIR/EIS/EIS.

The analyses, opinions, and findings contained within this report are based on primary data provided by responsible parties, as well as additional research documents available as of the date of this report. Updates to information obtained for this report could change or invalidate the findings contained herein. The contents of this report are based, in part, on data from secondary sources. While it is believed that these sources are accurate, this is not guaranteed.

The findings presented in this report are limited to documentation necessary in the EIR/EIS/EIS process for aiding in planning decisions. This report should not be relied upon as sole input for decision-making; it should be utilized strictly for the purposes of the scope and objectives of the commissioned study.

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SECTION 1: INTRODUCTION AND SUMMARY FEASIBILITY FINDINGS

INTRODUCTION

This economic feasibility analysis for Lake Tahoe Golf Course (LTGC) is a separate companion document to the Upper Truckee River Restoration and Golf Course Reconfiguration Project (UTRGCR) environmental document. The environmental document for this project includes an Environmental Impact Report (EIR) for the California Department of Parks and Recreation (State Parks) pursuant to the California Environmental Quality Act (CEQA), an Environmental Impact Statement (EIS) for the U.S. Bureau of Reclamation (Reclamation) pursuant to the National Environmental Policy Act (NEPA), and an EIS to meet the Tahoe Regional Planning Agency (TRPA) Code of Ordinances requirements. It is described herein as an EIR/EIS/EIS or environmental document.

Objectives of the UTRGCR project that relate to the golf course include:

A. Improve the golf course layout, infrastructure, and management to reduce the environmental impact of the golf course on the river's water quality and riparian habitat by integrating environmentally-sensitive design concepts.

B. Maintain golf recreation opportunity and quality of play.

C. Maintain revenue level of the golf course to State Parks.

D. In the stream environment zone, reduce the area occupied by the golf course and improve the quality and increase the extent of riparian and meadow habitat.

The purpose of the analysis contained within this report is to study the feasibility of continued operations at Lake Valley State Recreation Area (SRA) both with and without a golf course, which may occur as a result of river restoration, in light of the objectives stated above. The analysis examines three scenarios for configurations of the golf course, as described below. It addresses the revenue and operating expenditures of each scenario, as well as the changes in revenues to be received by State Parks, changes in revenues received by the concessionaire, and economic impacts within the surrounding community (which, for purposes of this study, is the South Shore portion of the Lake Tahoe Basin).

Lake Tahoe Golf Course (LTGC)

The LTGC is on State Parks-owned property within the Lake Valley SRA. It is located in the community of Meyers just south of the City of South Lake Tahoe on the west side of U.S. Highway 50 (US 50) and State Route 89 (SR 89). The area is part of the South Shore portion of the Lake Tahoe Basin. The golf course is an 18-hole regulation-play golf course operated by American Golf Corporation through a concession contract with State Parks. The golf course is situated on the valley floor with holes on both sides of the Upper Truckee River. The mountains of the Desolation Wilderness area of the Sierra Nevada provide a picturesque backdrop to the scenic golf course.

There are three golf course economic scenarios studied in the economic feasibility model for LTGC:

1. An 18-hole regulation golf facility (with two sub-options, one of which includes the potential changes to course layout),

2. A reduced-play area (non-traditional length) course with all golf located on the east side of the river. This scenario is modeled with a range of potential green fees resulting in a low to high range of financial projections, and

3. No golf course, but with retention of the clubhouse for an events facility.

It is important to distinguish that EIR/EIS/EIS analyses are referred to as 'Alternatives' and economic analyses are referred to as 'Scenarios'. The reason for these different labels is that more than one environmental alternative can be captured under one economic scenario. ***Table 1*** shows how the environmental alternatives correspond to the economic scenarios being examined in this report.

Table 1: Summary of Economic Scenarios

Scenario	River Restoration	Golf Course	Golf Course Layout	Snowmobiling	EIR Alternative(s)	
1A (Base Case)	NO	18-hole regulation	No change	Yes	1	No Action
1B	YES	18-hole regulation	No change / relocation of 7 or 8 holes west of river	Yes	2, 4	Stabilize in place or full river restoration
2	YES	Non-traditional (18-hole executive, 9-hole, or par 3)	All golf east of river	Yes	3	Full river restoration
3	YES	No golf course	No course; clubhouse operates as an event facility	No	5	Full river restoration

KEY FEASIBILITY FINDINGS

This report makes the following key findings and observations:

Direct LTGC Financial Impacts

Revenues and expenditures projected for each economic scenario are shown in ***Table 2***. There are four columns of results shown under Scenario 2. These columns model a range of potential number of rounds played and green fees achieved at a reduced-play area golf course. These two variables are the key drivers of financial feasibility under Scenario 2.

In summary:

- Operation of LTGC with a reconfigured 18-hole regulation course is estimated to be feasible (i.e., golf course revenue would exceed operating expenditures after making concession payments to State Parks),

- A reduced-play area course is estimated to be infeasible under all but the most optimistic of circumstances. A reduced-play area course would not meet Objectives B and C of the project regarding retention of regulation-quality play and maintenance of golf revenue.

- Operation of Lake Valley SRA clubhouse for events only is estimated to be infeasible, even if the number of events is doubled per year. Concessionaire operations would have to cease because operating expenditures would exceed revenues.

A summary of direct financial impacts, including revenues and earnings, and number of jobs caused by reconfigurations to the layout of, and changes in the operations of LTGC are shown in ***Table 3***. Estimated impacts include:

- Potential annual loss of income (rent and capital improvement program fund) to State Parks from decommissioning and removing the LTGC of $881,000.

- A reduced-play area (non-traditional length) course at LTGC is most likely financially infeasible because the concessionaire would have a negative cash flow after making payments to State Parks. If the reconfigured golf course can achieve more than 25,000 rounds annually and command green fees above the median rack rate for comparable Tahoe non-traditional length facilities, it may be financially feasible; however, the concessionaire's net revenues would be marginal, making the golf course susceptible to closure.

Table 2: Estimated Revenues and Expenditures by Scenario

Lake Tahoe Golf Course Economic Feasibility Analysis
Summary LTGC Revenues and Expenditures by Economic Scenario

	Scenario 1		Scenario 2 (Low Rounds)		Scenario 2 (High Rounds)		
Revenue or Expense	1A - Base Case	1B	Low Fees	High Fees	Low Fees	High Fees	**Scenario 3**
	[1]						
Estimated Revenues	$2,789,000	$2,809,000	$1,027,000	$1,128,000	$1,530,000	$1,698,000	$256,000
Scenario 3 Potential Event Revenues							$131,000
Total Estimated Revenues	**$2,789,000**	**$2,809,000**	**$1,027,000**	**$1,128,000**	**$1,530,000**	**$1,698,000**	**$387,000**
Estimated Expenditures	$1,294,000	$1,333,000	$965,000	$965,000	$1,069,000	$1,069,000	$461,000
Revenues less Expenditures	**$1,495,000**	**$1,476,000**	**$62,000**	**$163,000**	**$461,000**	**$629,000**	**($74,000)**
Payments to State Parks (Rent and CIP) [2]	$881,000	$887,000	$324,000	$356,000	$484,000	$536,000	[3]
Net Concessionaire Revenues	**$614,000**	**$589,000**	**($262,000)**	**($193,000)**	**($23,000)**	**$93,000**	**($74,000)**

Source: Hansford Economic Consulting

ltgc sum

[1] Base Case data uses average of years 2003 - 2006.
[2] Base Case payments to State Parks differs from Table 6 due to the discontinuation of the Nike Learning Center.
[3] With projected negative financial returns the concessionaire would cease operations. This result would be exacerbated by increased expenditures associated with increased events, which is not reflected in this table.

Table 3: Summary of Direct LTGC Economic Impacts by Scenario

Lake Tahoe Golf Course Economic Feasibility Analysis
Summary of Direct LTGC Economic Impacts by Scenario

	Net Revenues	**Scenario 1**	**Scenario 2 (Low Rounds)**		**Scenario 2 (High Rounds)**		**Scenario 3**
Direct Impact	1A - Base Case	1B	Low Fees	High Fees	Low Fees	High Fees	
California State Parks							
State Park Net Revenues [1]	$881,000	$887,000	$324,000	$356,000	$484,000	$536,000	[2]
Income Impact to State Parks		**$6,000**	**($557,000)**	**($525,000)**	**($397,000)**	**($345,000)**	**($881,000)**
Golf Course Concessionaire							
Concessionaire Net Revenues	$614,000	$589,000	($262,000)	($193,000)	($23,000)	$93,000	[2]
Income Impact to Concessionaire		**($25,000)**	**($876,000)**	**($807,000)**	**($637,000)**	**($521,000)**	**($614,000)**
Golf Course Employee Earnings and Jobs							
LTGC Earnings	$612,500	$650,200	$494,600	$494,600	$531,200	$531,200	[2]
Earnings Impact to Employees		**$37,700**	**($117,900)**	**($117,900)**	**($81,300)**	**($81,300)**	**($612,500)**
LTGC Jobs	76	80	60	60	65	65	[2]
Jobs Impact [3]		**4**	**-16**	**-16**	**-11**	**-11**	**-76**

Source: Hansford Economic Consulting

net summ

[1] Rent from concessionaire plus 5% capital improvement fund program.
[2] With projected negative financial returns the concessionaire would cease operations.
[3] Excludes 2 - 3 jobs associated with snowmobile operations.

- A well-designed reconfigured 18-hole regulation course that takes maximum advantage of the terrain and vistas is projected to have financial performance similar to that currently experienced at LTGC. Because revenues are projected to increase slightly over the Base Case, State Parks may receive a slight increase in revenues with a reconfigured 18-hole regulation course. Impact to the golf course concessionaire is estimated to be a decrease of approximately $25,000 annually because expenses associated primarily with labor are estimated to increase.

- No financial impact is estimated for winter operations (i.e., snowmobile rides on a circuit course around the driving range) with changes to the golf course under Scenarios 1B and 2. Operations are anticipated to cease if Lake Valley SRA becomes a State managed and operated site with no golf course. Snowmobiling revenues and costs are variable, primarily a function of the weather (snowfall), and are minor compared to golf course revenue.

- Earnings by employees at LTGC are estimated to increase $37,700 per year with a reconfigured 18-hole regulation course, and decrease approximately $81,300 to $117,900 per year with a reduced-play area (non-traditional length) course. Earnings impacts from potential cessation of snowmobile ride operations are not estimated in this study. Earnings impacts of the snowmobile ride operations would be minor compared to the earnings impacts of changes in golf operations.

Additional Direct Impacts to the South Shore Economy

Additional direct impacts to the South Shore economy accrue from spending by LTGC visitors within the local economy generating additional sales tax, transient occupancy tax, and property taxes. Other impacts include additional jobs that are created in support of these visitors, and associated earnings. A summary of impacts to the South Shore economy, including job impacts outside of LTGC, are shown in ***Table 4***.

The following findings are made:

- Total additional LTGC revenues and taxes benefiting the local economy are estimated at $6.1 million annually. These revenues would be lost if the golf course closed, and reduced to between approximately $3.5 million and $5.2 million with a reduced-play area (non-traditional length) course. Reconfiguration of the 18-hole regulation course may increase these revenues slightly, but not significantly.

- Earnings by employees generated elsewhere in South Shore by visitors to LTGC are estimated to decrease by $287,000 to $880,000 annually with a reduced-play area (non-traditional length) course, and $2.0 million with no golf course.

Table 4: Summary of South Shore Economy Impacts by Scenario

Lake Tahoe Golf Course Economic Feasibility Analysis
Summary of South Shore Economy Impacts by Scenario

Direct Impact	Net Revenues 1A - Base Case	Scenario 1 1B	Scenario 2 Low Rounds	Scenario 2 High Rounds	Scenario 3
Revenues and Taxes					
Visitor Spending [1]	$5,568,080	$5,554,412	$3,181,167	$4,807,897	[4]
Impact of Visitor Spending		**($13,668)**	**($2,386,913)**	**($760,183)**	**($5,568,080)**
Sales Taxes Generated	$271,000	$273,000	$147,000	$216,000	[4]
Impact on Sales Tax [2]		**$2,000**	**($124,000)**	**($55,000)**	**($271,000)**
Transient Occupancy Tax Generated	$157,000	$157,000	$82,000	$123,000	[4]
Impact on Transient Occupancy Tax		**$0**	**($75,000)**	**($34,000)**	**($157,000)**
Property Tax Generated	$65,000	$65,000	$65,000	$65,000	[4]
Impact on Property Tax [3]		**$0**	**$0**	**$0**	**($65,000)**
Total Additional South Shore Revenues & Taxes	**$6,061,080**	**$6,049,412**	**$3,475,167**	**$5,211,897**	[4]
Impact to South Shore Revenues & Taxes		**($11,668)**	**($2,585,913)**	**($849,183)**	**($6,061,080)**
Employee Earnings and Jobs					
South Shore Employee Earnings	$2,053,633	$2,048,592	$1,173,286	$1,765,961	[4]
Impact to South Shore Employee Earnings [1]		**($5,041)**	**($880,347)**	**($287,672)**	**($2,053,633)**
Jobs in South Shore	92	92	53	74	0
Jobs Impact to South Shore [1]		**0**	**-39**	**-18**	**-92**

Source: Hansford Economic Consulting economy

[1] Excludes direct impacts at LTGC shown in Table 3.
[2] Includes spending at LTGC.
[3] Property tax generated by LTGC.
[4] With projected negative financial returns the concessionaire would cease operations.

- The closure of the golf course at Lake Valley SRA would result in the loss of approximately 168 full and part-time jobs (76 at LTGC and 92 elsewhere). Closure of winter operations would result in the loss of approximately 3 jobs.

- If LTGC was reduced in length of play, as in Scenario 2, 29 to 55 jobs (11 to 16 of which at LTGC) would be removed from the local economy. Reconfiguration of the 18-hole regulation course may result in 4 additional jobs at LTGC.

Observations Relevant to the Future of LTGC

- The feasibility of LTGC is heavily affected by national leisure trends and the national and regional economy. Approximately two-thirds of rounds played are estimated to be made by visitors to the area. Of the estimated 22,219 rounds played by visitors, 8,942 rounds are estimated to be made by visitors with the specific purpose of visiting the Tahoe Basin to play golf at LTGC.

- Population growth and participation rates for golf both regionally and nationally will affect demand for golf at LTGC, because players are primarily from out of the region.

- Although the local population only plays about one-third of the golf rounds at LTGC, they may be described as 'avid' or 'core' golfers, and are important contributors to early and late season spending at LTGC.

- Reduced-play area courses already exist within a 60-minute drive of South Lake Tahoe; however, there are no public par-3 / pitch and putt courses. The net revenues estimated for each scenario in this study indicate that a reduced-play area (non-traditional length) course is financially infeasible. An increased number of events held at the clubhouse could potentially enhance the revenue stream of a reduced-play area (non-traditional length) golf course; this analysis was not undertaken as part of the study.

- An increase in food and beverage sales in recent years indicates potential to expand facilities for events in the future; however, comparison with data from the North Tahoe Conference Center indicates that even with a doubling of the number of events currently held at LTGC, a no-golf scenario is financially infeasible.

- LTGC is the most affordable golf course for 18-hole regulation play in the region. The maximum allowables fees are controlled by State Parks. Because the majority of players are visitors who have already allocated leisure time to recreate, and because the local golfers are unlikely to be able to play twice as much even if the price is halved, demand at LTGC is likely to fairly price inelastic, meaning a moderate price increase would not greatly decrease demand for play, and vice-versa, a moderate price decrease would not greatly increase rounds played.

- A recent trend of declining number of rounds played at LTGC is partly a function of increased competition, most particularly from the golf courses located at the base of the mountains in Nevada, and decreased visitation to the area as evidenced by increased vacancy rates at hotels, motels and vacation rentals, as described in other economic studies for South Lake Tahoe. Occasional fluctuations in number of rounds (as opposed to a trend) are more likely attributable to the advent and departure of playable weather, which influences the length of the playing season.

- Personal income is a major determinant of rounds played at LTGC since the majority of players are visitors whose total trip costs are largely spent on transportation costs. The increased number of baby boomers reaching retirement age is projected to increase rounds played nationally in the near future, but it is not necessarily helpful to LTGC because retired persons tend to have more fixed incomes.

Report Organization

Section 2 provides project overview, description of the management and operations structure at Lake Valley SRA, and approach to the study. ***Section 3*** describes the methodology used to estimate financial impacts to State Parks and American Golf Corporation (the concessionaire). ***Section 4*** is a competitive market analysis of factors that affect demand for rounds and pricing at the golf course. The analysis accounts for relevant national and regional golf statistics and their relationship to this project as well as key information from local competitive golf courses. Detailed estimates of financial impacts to State Parks and its concessionaires of a reconfigured golf course, and no golf scenarios associated with the river restoration alternatives are presented in ***Section 5***. The final section of this report, ***Section 6,*** provides detailed estimates of direct economic impacts to the South Shore economy generated by LTGC.

Appendix A presents tables of LTGC performance and rent to State Parks since 1995 that support the analysis. ***Appendix B*** provides a copy of the questionnaire and summary interviewee comments from surveys conducted by State Parks at LTGC during the 2007 golf season. ***Appendix C*** contains descriptions of competitor golf courses. ***Appendix D*** includes detailed estimates of LTGC's economic impacts on the South Shore for each scenario modeled.

SECTION 2: PROJECT OVERVIEW AND STUDY APPROACH

PROJECT OVERVIEW

As part of the EIR/EIS/EIS process to restore the Upper Truckee River, various restoration alternatives are evaluated for their environmental and economic impacts. The river restoration and golf course reconfiguration alternatives have been determined based on input from stakeholders and the public. The economic analysis of these alternatives is provided in this report as input to the EIR/EIS/EIS process. Three economic scenarios were modeled, as shown in ***Table 1***.

Structure of Lake Valley SRA Management and Operations

LTGC was owned and operated by a private enterprise from 1962 until it was purchased by California State Parks in 1985 (California State Parks, July 1, 2006). A General Plan for Lake Valley SRA was prepared that still governs the management of the area today. The declaration of purpose for Lake Valley SRA (California State Parks) is as follows:

"The purpose of Lake Valley State Recreation Area is to make available to the people for their enjoyment and inspiration the 18-hole golf course, and the scenic Upper Truckee River and its environs."

The General Plan calls for State Parks to:

- Balance the objectives of providing optimum recreational opportunities and maintaining the highest standards of environmental protection.

- Define and execute a program of management that perpetuates established values for Lake Valley SRA, providing for golfing along with other compatible summer and winter recreation opportunities while restoring the natural character and ecological values of the Upper Truckee River, protecting its water quality, and protecting and interpreting significant natural, cultural, and scientific values.

Since 1989 the golf course has been operated by American Golf Corporation under a concessionaire contract with State Parks. The clubhouse and maintenance structures, approximately 7,000 square feet and 2,000 square feet respectively were built under American Golf Corporation's guidance and opened in 1992.

In keeping with the General Plan, the concessionaire contract (State of California, 1989, amended 1995) explicitly states that, "Of prime importance under this contract is the requirement to balance the dual objectives of providing a quality golfing experience and protecting the ecologically sensitive Upper Truckee River and the natural environment of Lake Valley State Recreation Area."

A key consideration of State Parks with regards to the operation of the golf course is affordability. Per Section 7 of the concessionaire contact, "It is the intent of the State under this contract to provide the general public with the opportunity to enjoy quality golfing and winter recreational opportunities at reasonable and affordable prices. Service to the public, with goods, merchandise, and services of the best quality and at reasonable charges, is of prime concern to the State……"

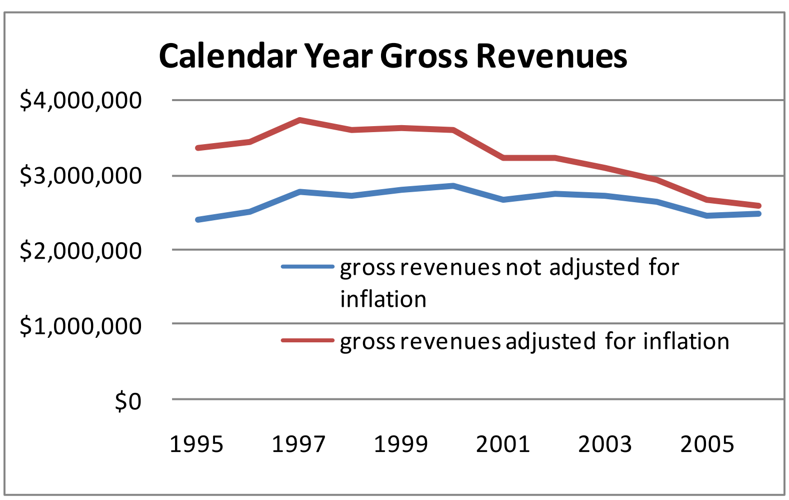
Under terms of the concession contract, amended in 1995, a maximum green fee of $40.00 was considered by the State to be fair and reasonable. Increases to this green fee benchmark are made based on changes in the California Consumer Price Index, or other extraordinary circumstances justified by the concessionaire and approved by the State.

Telephone interviews were conducted with State Parks personnel to provide perspective on the impact of LTGC revenues on the State Parks system. Revenues generated by LTGC are very important to State Parks. The revenue of LTGC operations is the fifth largest source of concession revenue in the State Parks system (California State Parks, Fiscal Year 2006/07). The Sierra District of State Parks uses a combination of concession revenues, user fees, and other revenue sources allocated by State Parks to support District operations.

Historic Financial Performance of LTGC

In real terms (i.e., using constant 2007 dollars), LTGC has experienced declining gross revenues since 1997, as charted in ***Figure 1***.

Figure 1: LTGC Gross Revenues by Calendar Year, 1995 – 2006



One of the reasons for this decline is the terms of the concession contract which restricts pricing to what is considered fair and reasonable by State Parks. American Golf Corporation has also noted that the number of rounds played has declined, which they attribute primarily to increased supply of golf courses (competition) both regionally and nationally and a national decline in golf demand. A small portion of declining gross revenues from golf operations has been made up by increased revenues from events held at the clubhouse. Gross revenues with and without inflation adjustments are detailed in ***Table 5.***

Payments to State Parks

American Golf Corporation signed a 20-year concessionaire contract with State Parks in 1989 which is due to expire March 31 2009. Per the terms of the agreement, American Golf Corporation must allocate 5% of gross annual receipts to a Capital Improvements Program (CIP) fund, which is interest-bearing and administered by the concessionaire for capital improvements or resource management projects with direction by and approval of the State[1].

Monthly rents are calculated based on gross revenues; either 29% of monthly gross receipts or minimum monthly rents of $22,690 April through September and 10% of winter operations gross receipts or $4,538 October through March, whichever is greater.

The minimum monthly rental amounts are adjusted every 5 years to reflect changes in the California Consumer Price Index. 'Gross receipts' refers to all monies, property, or any other thing of value received by the concessionaire and any sub-concessionaire from any business carried upon the premises. It excludes sales taxes. Payments to State Parks since 1995 are also shown in ***Table 5***.

The percentage distribution of gross revenues generated by operations at LTGC by month is illustrated in ***Figure 2.*** Over 80% of annual gross revenues are from golf during the months of June through September.

Weather and other factors can cause annual fluctuations in revenues. Data in 2007 were not used for this report because of the Angora fire, a large wildfire near LTGC that severely affected businesses in South Shore. The drop in golf rounds due to that fire would skew analysis performed in this study by pulling revenues artificially down. ***Figure 3*** charts gross revenues generated by summer and winter operations by year since 1995. Winter operations include snowmobile sublease payments and event revenues.

Golf operations revenues have been relatively stable in recent years; however, the golf course has not recovered from a particularly poor performance in 2001 (this coincides with decreased lodging occupancy rates in South Shore – see ***Section 3*** of this report).

[1] The State may elect to receive all or part of the CIP funds, including accrued interest, as additional rent.

Table 5: LTGC Gross Revenues by Calendar Year

Item	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
LTGC Financial Performance												
LTGC Gross Revenues	$2,409,221	$2,525,072	$2,784,177	$2,736,221	$2,802,109	$2,858,313	$2,661,577	$2,756,513	$2,715,472	$2,640,030	$2,461,838	$2,488,888
Payments to State Parks	$549,533	$630,013	$693,364	$681,347	$699,320	$715,947	$664,372	$672,907	$790,306	$702,068	$616,188	$626,552
CIP Fund	$120,461	$126,254	$139,209	$136,811	$140,105	$142,916	$133,079	$137,826	$135,774	$132,002	$123,092	$124,444
LTGC Financial Performance in 2007 Dollars												
LTGC Gross Revenues	$3,341,027	$3,442,972	$3,723,836	$3,588,863	$3,614,650	$3,582,583	$3,218,909	$3,207,780	$3,084,108	$2,920,120	$2,649,506	$2,582,905
Payments to State Parks	$762,074	$859,032	$927,375	$893,664	$902,105	$897,362	$803,490	$783,068	$897,593	$776,553	$663,160	$650,219
CIP Fund	$167,051	$172,149	$186,192	$179,443	$180,732	$179,129	$160,945	$160,389	$154,205	$146,006	$132,475	$129,145
Percent Change in Gross Revenues (2007 Dollars)												
Annual % change [1]		3.1%	8.2%	-3.6%	0.7%	-0.9%	-10.2%	-0.3%	-3.9%	-5.3%	-9.3%	-2.5%

Source: California State Parks

[1] Percentage increase or decrease in Gross Revenues from year to year.
[2] Average annual percentage change in Gross Revenues over the period.

	Average Annual Revenues (2007 $s)	
	1995 - 2006	**2003 -2006**
LTGC Gross Revenues	**$3,246,438**	**$2,809,160**
Payments to State Parks	**$817,975**	**$746,882**
CIP Fund	**$162,322**	**$140,458**
Annual % Change [2]	**-2.3%**	**-5.7%**

year sum

It is not known why a 13% decrease in revenues between 2000 and 2001 occurred (speculation about an influence of the 9/11 attack may or may not be well founded, because its immediate economic effects occurred after the peak summer period). Due to early snow fall, 2005 also saw a significant drop in revenues from 2004, with a decrease of 10% (almost $300,000) in revenues. Annual revenue changes are shown in ***Table 6***. Support tables for LTGC's historic financial performance are presented in ***Appendix A*** of this report.

Figure 2: Concessionaire Percent of Annual Gross Revenues by Month

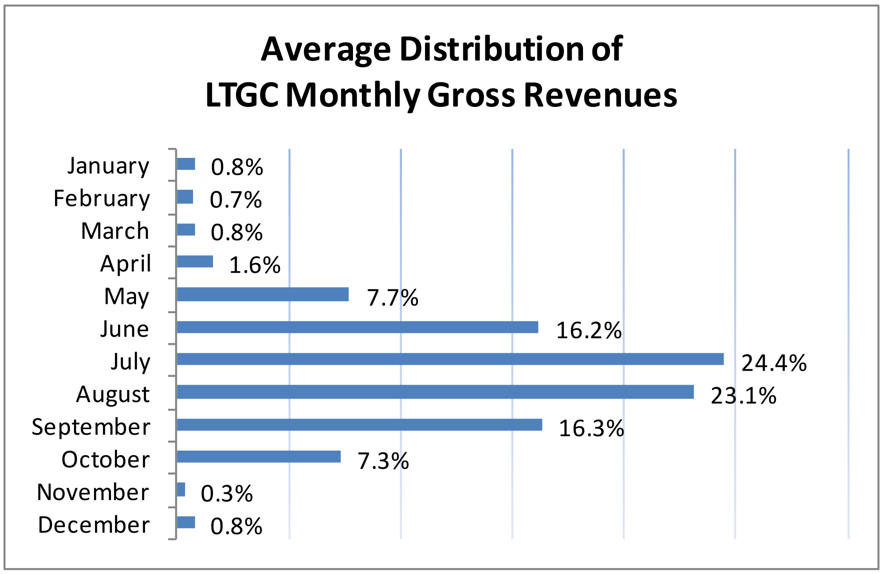


Figure 3: Winter and Summer Operations Gross Revenues, 1995 - 2006

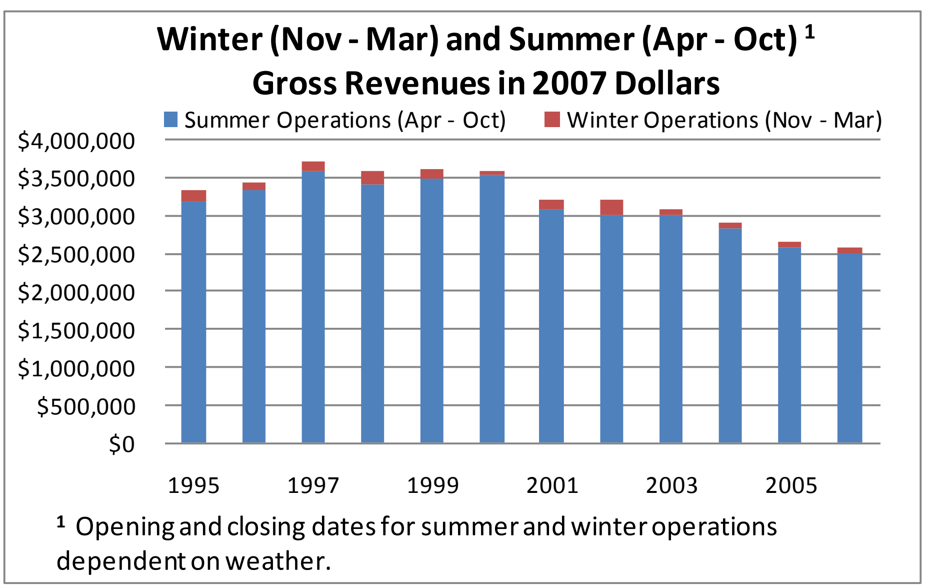


Table 6: LTGC Gross Revenue and Rent to State Parks in 2007 Dollars

Lake Tahoe Golf Course Economic Feasibility Analysis
Calendar Year LTGC Gross Revenue and Rent to State Parks Adjusted for Inflation (in 2007 Dollars)

DRAFT

Item	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Average 2003 - 2006
Calendar Year Revenues in 2007 Dollars													
Summer Operations (April through October) [1]													
Gross Revenues [2]	**$3,183,842**	**$3,343,859**	**$3,593,044**	**$3,419,406**	**$3,490,079**	**$3,554,281**	**$3,085,972**	**$3,017,692**	**$3,025,239**	**$2,842,738**	**$2,572,360**	**$2,508,163**	**$2,737,125**
Annual Change in Revenues		$160,017	$249,186	($173,639)	$70,673	$64,202	($468,309)	($68,280)	$7,547	($182,501)	($270,378)	($64,197)	
Annual Percent Change		5%	7%	-5%	2%	2%	-13%	-2%	0%	-6%	-10%	-2%	
Winter Operations (November through March) [1]													
Gross Revenues [3]	**$157,185**	**$99,114**	**$130,792**	**$169,457**	**$124,571**	**$28,302**	**$132,937**	**$190,088**	**$58,869**	**$77,382**	**$77,145**	**$74,742**	**$72,035**
Annual Change in Revenues		($58,072)	$31,678	$38,665	($44,886)	($96,269)	$104,635	$57,151	($131,218)	$18,513	($237)	($2,404)	
Annual Percent Change		-37%	32%	30%	-26%	-77%	370%	43%	-69%	31%	0%	-3%	
Gross Revenues by Calendar Year	**$3,341,027**	**$3,442,972**	**$3,723,836**	**$3,588,863**	**$3,614,650**	**$3,582,583**	**$3,218,909**	**$3,207,780**	**$3,084,108**	**$2,920,120**	**$2,649,506**	**$2,582,905**	**$2,809,160**
Payments to State Parks													
Capital Improvement Projects Fund	$167,051	$172,149	$186,192	$179,443	$180,732	$179,129	$160,945	$160,389	$154,205	$146,006	$132,475	$129,145	**$140,458**
Percent of Gross Revenues	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	***5%***
Rent to State Parks	$762,074	$859,032	$927,375	$893,664	$902,105	$897,362	$803,490	$783,068	$897,593	$776,553	$663,160	$650,219	**$746,882**
Percent of Gross Revenues	*23%*	*25%*	*25%*	*25%*	*25%*	*25%*	*25%*	*24%*	*29%*	*27%*	*25%*	*25%*	***27%***
Total Payments to State Parks	**$929,125**	**$1,031,180**	**$1,113,567**	**$1,073,107**	**$1,082,837**	**$1,076,491**	**$964,436**	**$943,457**	**$1,051,799**	**$922,559**	**$795,636**	**$779,365**	**$887,339**

Source: California State Parks

season rents

[1] Start and close dates of summer and winter operations are dependent on weather.
[2] Summer operations gross revenues includes golf course operation revenues plus event revenues.
[3] Winter operations gross revenues includes all golf course concessionaire revenues from snowmobile operations sublease payments and event revenues.

FEASIBILITY ANALYSIS APPROACH

The purpose of golf course feasibility studies is to analyze major factors affecting the feasibility of a course by reviewing elements influencing demand, which include:

- Market area population and growth potential (demographic trends),
- Price of a round of golf,
- Income of players,
- Number of, and pricing of existing and planned courses in the area,
- Consumer tastes and preferences,
- Consumer time available for leisure, and
- Transportation costs to the golf course.

The feasibility of a reconfigured golf course includes the quality and condition of the modified course, amenities offered, and competing golf courses. This study examines these factors with the knowledge that LTGC is an established and popular golf course.

Economic Scenarios Modeled in this Study

This study models revenues and expenditures using the most recent data available from the golf course concessionaire, as well as data provided by State Parks and other pertinent sources. The three economic scenarios analyzed in this report (see ***Table 1***) are described in more detail below.

Scenario 1

Under Scenario 1 LTGC remains an 18-hole regulation golf facility. The definition of a regulation golf course is (www.golf2020.com):

"any nine-hole or 18-hole golf course that includes a variety of par-three, par-four and par-five holes, and is of traditional length and par; a nine-hole facility must be at least 2,600 yards in length and at least par 33, and an 18-hole facility at least 5,200 yards in length and at least par 66".[2]

This scenario has two versions:

- Scenario 1A is the 'Base Case' under which there is no change to the golf course layout and no river restoration (No Action Alternative in the EIR/EIS/EIS). The Base Case scenario portrays the current feasibility of LTGC.

[2] Some definitions of alternative golf courses also include driving ranges.

- Scenario 1B has river restoration, which may be either stabilize in place (Alternative 4 of the EIR/EIS/EIS), or full geomorphic and ecological restoration (Alternative 2 of the EIR/EIS/EIS or off-site relocation). The golf course layout would remain as it currently is under the 'stabilize in place' form of river management, but under the full geomorphic and ecological restoration alternative 7 or 8 holes would be reconfigured and placed on the west side of the river. Potential alternative locations for the golf course are also being reviewed in the EIR/EIS/EIS: for this report it is assumed that the economics would be the same as under Scenario 1B. Total yardage of the golf course under Scenario 1B would remain similar to or the same as the Base Case.

<u>Scenario 2</u>
Under Scenario 2 LTGC becomes a reduced-play area (non-traditional length) golf facility, which may be an alternative (par-3, short-fairway, pitch and putt) or 9-hole regulation golf facility. Alternative-length golf courses include (www.golf2020.com):

- **Par-three Courses -** consisting exclusively of par-three holes averaging at least 100 yards in length;

- **Executive Courses –** short-fairway courses with a variety of par-three, par-four and/or par-five holes. Eighteen-hole executive courses are 5,200 yards in length or less, with a par of 65 or less; 9-hole executive courses are par 33 or less. The only physical difference between an executive golf course and a full-sized course is the length of fairways. Tees, greens, sand traps, water hazards, and mounds are identical in size, shape, and appearance to 18-hole regulation courses (Hurdzan, 1996).

- **Pitch and Putt Courses -** short par-three courses where the holes average less than 100 yards in length.

- **Courses of Nontraditional Hole Configuration -** the holes are of traditional length in something other than a nine or 18-hole configuration.

Because course layout under Scenario 2 is not yet determined, this report does not specify which type of alternative golf facility or 9-hole regulation course would be constructed.

<u>Scenario 3</u>
There is no golf course under Scenario 3; however, the clubhouse is proposed to remain as an events facility. Without a driving range to use for winter activities (snowmobile operations), these are not expected to continue. Included in the analysis for this scenario is potential additional revenue from increased number of events at the clubhouse. This scenario is comparable to Alternative 5 in the EIR/EIS/EIS.

METHODOLOGY

There are two separate methodologies employed to estimate the financial and other economic impacts reported in this study. These are:

1. **Financial Analysis**

   Step 1: Establish the base data used as a platform on which to project revenues and expenditures under each economic scenario. See ***Section 3*** for description of this step.

   Step 2: Establish general assumptions to be used for projections. General assumptions used in this second step of the analysis are based on findings of the competitive market analysis provided in ***Section 4***.

   Step 3: Determine revenue and expense multipliers for revenue and cost line items. Using the base data and developed multipliers, estimate projections of revenues and expenses under each scenario, as detailed in ***Section 5***.

2. **Economic Impacts to South Shore**
   Estimate annual visitation to LTGC and utilize available direct spending data from secondary sources to estimate additional economic benefits of LTGC-generated visitation to the South Shore economy. This methodology and results of the analysis are presented in ***Section 6***.

SECTION 3: BASE DATA

In this section of the report the base data used to estimate potential revenues and expenses of the modified 18-hole course, reduced-play area (non-traditional length) course, and no golf course economic scenarios are described.

The goal of this study is to project revenues and expenses under each economic scenario based on an average year, thereby accounting for good and poor years of financial performance. The base data used in this analysis is the average of years 2003 – 2006 because:

1. Revenues "bounce" from year to year, largely due to course conditions resulting from weather and other outside influences (for example, the Angora fire, which severely skews 2007 statistics negating their use in the study). Using the most recent five-year period allows for revenue fluctuation due to variations in weather and corresponding annually changing number of rounds played.

2. LTGC is particularly susceptible to swings in annual revenue per round due to its reliance on visitor golfers (i.e., golfers not originating from South Shore). Factors affecting the numbers of visitors that are outside of LTGC's control include, among others, travel costs and the attractiveness / competitiveness of the South Shore with other destinations for visitors. Increased travel costs, particularly for gasoline, may also reduce the number of visitors and golfers to the area. Improvement of South Shore's appeal to tourists can greatly improve LTGC's financial performance. Since it is impossible to project these types of factors with any accuracy, this analysis relies on the most recent 5-year historical financial performance of the golf course (with the omission of 2007 data which is invalid for the study's purpose).

FACILITY USE

The golf course concessionaire provided the facility use data for calendar years 2003 through 2006 as shown in ***Table 7***. (Data from 2007 were not used to contribute to the Base Case, because of the anomalous demand dampening influence of the Angora fire). Over this time period, LTGC averaged generation of 76 full and part-time jobs, the majority of which for food and beverage activities, and 27,864 regular rounds and 5,299 tournament rounds, for a total of 33,163 rounds. An annual average of 37 events were held generating visitation by 3,663 wedding and banquet guests.

The facility use data shows a trend of declining number of rounds played over the four-year period. This trend is in line with recent analysis of visitor lodging data conducted for the City of South Lake Tahoe (RRC Associates, 2006) which observed that the average annual occupancy rate of hotels, motels and vacation rentals has declined significantly since 2000, slipping from 43 percent to 29 percent. Length of season of play can cause number of rounds to fluctuate periodically, but is not cause for the trend in declining number of rounds. LTGC facility use data also shows increased visitation by non-golfers corresponding to an increased number of events held at the clubhouse.

REVENUES

Revenues for the 2003 through 2006 time period are used as the basis upon which to project long-term revenues generated under each economic scenario and are shown in ***Table 8***. All figures are shown in 2007 dollars. Revenues are broken down by the various revenue-generating categories:

- green fees,
- carts,
- driving range,
- merchandise,
- food and beverage (both golf-related and events-related), and
- other.

The average revenues in 2007 dollars are $2,012,000 for golf activities, $780,000 for concessions and other activities, and $17,000 for snowmobile sublease payments for a total of $2,809,000. Total revenue by year matches the historical data given earlier in ***Table 5***. Seventy two percent of total annual revenues are generated by golf activities, 28% by concessions and other activities (which include merchandise and food and beverage sales by golf-related activities), and 1% by snowmobile sublease payments. Total revenues are approximately $85 per round (with golf operations-only revenues $61 per round).

According the National Golf Foundation (NGF), in 2001 the average 18-hole daily fee golf course in Region 9 (covering the Tahoe area, and Northern California to Washington State) recorded 35,000 rounds per year, employed a total of 34 full and part-time employees and generated about $1,249,000 in revenues, (National Golf Foundation, 2001). This data compared to the facility use and revenue data affirms that LTGC is a competitive course, and employs more persons than the average course (although the majority of these are minimum wage jobs associated with food and beverage for events).

Table 7: Base Data – Annual Facility Use

Assumptions	2003	2004	2005	2006	Existing Average	Percent of Average
	Calendar Year					
Number of employees						
Pro Shop				11	11	14%
Carts				7	7	9%
Maintenance				24	24	32%
Food & Beverage				31	31	41%
Administration				3	3	4%
Subtotal Number of Employees				76	76	100%
Number of golf rounds played						
Regular Rounds	27,430	29,001	26,615	28,411	27,864	84%
Tournament Rounds	7,279	5,007	4,467	4,442	5,299	16%
Subtotal Number of Rounds	34,709	34,008	31,082	32,853	33,163	100%
Events						
Number of Weddings	28	28	32	28	29	78%
Number of Banquets	5	10	7	11	8	22%
Total Number of Events	33	38	39	39	37	100%
Guests						
Guests at Weddings	2,920	2,780	3,727	2,935	3,091	84%
Guests at Banquets	410	611	389	880	573	16%
Total Guests at Events	3,330	3,391	4,116	3,815	3,663	100%

Source: American Golf Corporation and Hansford Economic Consulting gen

LTGC's driving range generates only 5% of its annual revenues from golf activities, and 4% of total revenues; however, its presence is essential for LTGC to offer instruction and is important to overall golf course operations. NGF data compiled in 2002 show that 84% of daily fee courses had driving ranges (National Golf Foundation, 2002). Research conducted by Sportometrics in 2001 for non-traditional length courses determined that driving ranges increase both play and fees commanded at both traditional and non-traditional length golf courses. As of the writing of that research 50% of non-traditional length courses had a driving range (Sportometrics, 2001).

Snowmobile (Sublease) Operations Revenue

Consistent with permitted uses at Lake Valley SRA, winter recreational activities may occur at the golf course from November through March. Winter recreation activities may include snowmobiling, cross-country skiing, ski rentals and equipment sales. Currently, the driving range area of the property is used as a snowmobile track. Guests can rent a snowmobile to ride for 30-minute increments around an oval track located in the driving range[3].

[3] Snowmobiles are not permitted anywhere else on the property, except by golf course staff. Staff periodically patrols the golf course and checks course conditions.

Table 8: Base Data – Annual Revenues

Revenues	Calendar Year 2003	2004	2005	2006	**2003 - 2006 Average**	Percent of Activity	Percent of Revenue
Golf Concessionaire Operations		**All Figures in 2007 Dollars**			**[1]**	[1]	
Golf Activities							
Green Fees	$1,514,162	$1,434,586	$1,262,750	$1,262,118	$1,368,000	68%	49%
Cart Rental	$580,300	$551,607	$462,766	$474,812	$517,000	26%	18%
Driving Range	$116,721	$120,804	$97,715	$94,011	$107,000	5%	4%
Nike Golf Learning Center	$26,752	$29,084	$14,027	$11,671	$20,000	1%	1%
Subtotal Golf Activities [2]	**$2,237,935**	**$2,136,080**	**$1,837,258**	**$1,842,612**	**$2,012,000**	**100%**	**72%**
Concessions/Other							
Merchandise	$239,314	$174,745	$157,590	$150,812	$181,000	23%	6%
Food	$303,066	$310,125	$315,609	$290,052	$305,000	39%	11%
Beverage	$186,106	$201,862	$194,604	$184,486	$192,000	25%	7%
Service charges, fees & other	$117,688	$77,559	$121,883	$105,647	$102,000	13%	4%
Subtotal Concessions/Other	**$846,173**	**$764,292**	**$789,686**	**$730,997**	**$780,000**	**100%**	**28%**
Subtotal Annual Revenue	**$3,084,108**	**$2,900,372**	**$2,626,945**	**$2,573,609**	**$2,792,000**		
Snowmobile Sub-lease Payments to American Golf [3]	n.a.	$19,748	$22,561	$9,295	$17,000		1%
Total Annual Revenue [4]	**$3,084,108**	**$2,920,120**	**$2,649,506**	**$2,582,905**	**$2,809,000**		**100%**
Rounds Played	34,709	34,008	31,082	32,853	33,163		
Revenues (in 2007 Dollars) per Round Played [4]	**$89**	**$86**	**$85**	**$79**	**$85**		

Source: American Golf Corporation

rev

[1] Figures may not add exactly due to rounding.
[2] The Nike Golf Learning Center no longer operates, reducing the annual average golf activity revenue from $2,012,000 to $1,992,000.
[3] See Table 9.
[4] Includes non-golf activity revenue such as snowmobiling sub-lease payments to American Golf Corporation and non-golf related events revenue.

American Golf Corporation has subleased snowmobile operations since 2000, and recently executed a new sublease agreement with Sierra Mountain Sports for two years, which started with the 2007-08 winter season. Under terms of the lease, sublease rent is paid to American Golf Corporation at an increasing percentage as revenue increases[4].

Winter operations revenue for calendar years 2004, 2005, and 2006 is shown in ***Table 9***. During these years, sublease payments to American Golf Corporation fluctuated between $9,000 and $23,000 in 2007 dollars, with an average rent of $17,200 per year. Using this data, approximately 23% of American Golf Corporation's average annual winter gross revenues are from snowmobile operations, with the remaining revenues generated by events held at the clubhouse. Snowmobile revenues are highly variable from year to year due to variation in the amount and timing of snowfall.

Snowmobile operations are typically conducted by two or three employees; however, staffing is determined by projected demand.

EXPENDITURES

Expenditures for the 2003 through 2006 time period are shown in ***Table 10***. All figures are shown in 2007 dollars. Expenses are broken down by the various expense-generating categories:

- cost of goods,
- payroll,
- operating expenses (including utilities),
- equipment leases and rentals, and
- fixed costs of taxes and insurance.

Average annual expenditures in 2007 dollars are $233,000 for cost of goods, $628,000 for payroll, $286,000 for operating expenses, $89,000 for leases and replacement of equipment, and $79,000 for taxes and insurance. The greatest share of expenditures is payroll, at 48% of total average annual expenditures.

[4] Rent is 16% for the first $75,000 in revenues, 20% for the next $50,000, and 23% for all revenue exceeding $125,000.

Table 9: Snowmobile Revenues and Sublease Payments

Item	2004	2005	2006	Average Annual
Snowmobile Operations				
Gross Revenues [1]	$93,134	$102,782	$49,288	$81,735
Gross Revenues in 2007 Dollars [1]	**$103,015**	**$110,617**	**$51,150**	**$88,261**
Lease Payments to American Golf	$17,854	$20,963	$8,957	$15,925
Lease Payments to American Golf in 2007 Dollars	**$19,748**	**$22,561**	**$9,295**	**$17,202**
LTGC Winter Operations Revenue (November through March)		***All Figures in 2007 Dollars***		
Snowmobile Sub-concessionaire Sub-lease Payments to American Golf	$19,748	$22,561	$9,295	$17,202
Estimated Other Revenues [2]	$57,634	$54,584	$65,446	$59,222
Gross Revenues [3]	**$77,382**	**$77,145**	**$74,742**	**$76,423**
Estimated percentage of winter revenues from snowmobiling	*26%*	*29%*	*12%*	*23%*

Source: American Golf Corporation and California State Parks snowmobiling

[1] Total revenues by the sub-concessionaire.
[2] Revenues from activities other than snowmobiling (such as events).
[3] Gross revenues reported by American Golf Corporation to State Parks for the months of November through March inclusive.

Table 10: Base Data – Annual Expenditures

Expense Item	Calendar Year 2003	2004	2005	2006	2003 - 2006 Average	Percent of Activity	Percent of Total Cost
	All Figures in 2007 Dollars				**[1]**	[1]	
Cost of Goods							
Merchandise	$154,708	$101,940	$93,841	$81,236	**$108,000**	46%	8%
Food and Beverage	$126,210	$124,666	$121,031	$129,624	**$125,000**	54%	9%
Subtotal Cost of Goods	**$280,917**	**$226,605**	**$214,872**	**$210,860**	**$233,000**	**100%**	**18%**
Payroll							
Golf and Facilities	$87,662	$58,829	$51,269	$42,924	**$60,000**	10%	5%
Carts & Range	$42,418	$38,822	$27,510	$40,117	**$37,000**	6%	3%
Nike Golf Learning Center	$28,827	$26,409	$18,065	$5,125	**$20,000**	3%	2%
Course Maintenance	$234,961	$240,555	$234,939	$215,957	**$232,000**	37%	18%
Food and Beverage	$183,739	$179,570	$173,374	$172,296	**$177,000**	28%	13%
General and Administrative	$95,077	$108,777	$110,217	$94,785	**$102,000**	16%	8%
Subtotal Payroll	**$672,684**	**$652,961**	**$615,374**	**$571,205**	**$628,000**	**100%**	**48%**
Operating Expenses (including Utilities)							
Golf	$8,777	$6,004	$8,804	$6,217	**$7,000**	2%	1%
Carts & Range	$10,285	$18,727	$14,427	$12,647	**$14,000**	5%	1%
Nike Golf Learning Center	$619	$72	$491	$5,739	**$2,000**	1%	0%
Nike Golf Membership	$19,268	$670	$0	$0	**$5,000**	2%	0%
Course Maintenance	$60,111	$74,500	$68,802	$67,012	**$68,000**	24%	5%
Food and Beverage	$15,441	$15,333	$20,889	$18,666	**$18,000**	6%	1%
General and Administrative	$76,787	$84,367	$100,936	$86,660	**$87,000**	30%	7%
Facilities	$11,504	$14,183	$16,732	$14,942	**$14,000**	5%	1%
Water	$5,815	$5,309	$6,533	$5,847	**$6,000**	2%	0%
Power	$29,431	$35,626	$49,968	$52,567	**$42,000**	15%	3%
Phone / TV / Internet Providers	$13,010	$10,196	$7,403	$7,546	**$10,000**	3%	1%
Solid Waste	$12,834	$15,541	$13,471	$14,515	**$14,000**	5%	1%
Subtotal Operating Expenses	**$263,882**	**$280,529**	**$308,456**	**$292,360**	**$286,000**	**100%**	**22%**
Leases and Rentals, Equipment Replacement							
Carts	$54,074	$59,277	$62,387	$62,746	**$60,000**	67%	5%
Maintenance	$38,125	$19,433	$15,561	$24,515	**$24,000**	27%	2%
Kitchen	$11,309	$4,031	$2,137	$2,618	**$5,000**	6%	0%
Subtotal Leases and Rentals, Equipment Replacement	**$103,508**	**$82,740**	**$80,086**	**$89,880**	**$89,000**	**94%**	**6%**
Taxes and Insurance							
Property Tax	$64,741	$64,098	$65,847	$64,670	**$65,000**	82%	5%
Insurance	$24,572	$16,864	$23,212	$21,170	**$21,000**	27%	2%
Other	($5,968)	($4,322)	($18,138)	$0	**($7,000)**	-9%	-1%
Subtotal Taxes and Insurance	**$83,345**	**$76,640**	**$70,921**	**$85,840**	**$79,000**	**100%**	**6%**
Total Annual Expenses	**$1,404,337**	**$1,319,476**	**$1,289,709**	**$1,250,143**	**$1,316,000**		**100%**

Source: American Golf Corporation and Hansford Economic Consulting

exp

[1] Percentages may not add exactly due to rounding.

SECTION 4: COMPETITIVE MARKET ANALYSIS

The findings of the competitive market analysis affect the demand for play and pricing variables under each economic scenario modeled in ***Section 5***. This section of the report first discusses national golf trends then describes the competitive market region, golf courses within that region, and statistics associated with those golf courses. Independent evaluation is made as to how the characteristics of these golf courses influence desirability of play and pricing at LTGC.

NATIONAL GOLF TRENDS

Since 1950, the number of American golfers has grown tenfold, from 3.5 million to roughly 30 million. The percentage of Americans playing has risen from 3.5% to 12.6%. The number of golf facilities has more than tripled, from about 5,000 to 16,000. With golf now considered a major sport, the golf industry is big business in America. To put it in perspective, the golf industry sector is approximately the same economic size as the motion picture industry in the United States (SRI International and the World Golf Foundation, 2002).

In 2000, golf accounted for $62 billion of goods and services in the United States, of which $20.5 billion in revenues were generated at golf facilities, primarily through green fees (National Golf Foundation). During the first Zagat golf survey period (2006-2007), golfers reported spending an average of nearly $775 per person on equipment. According to the NGF's 2007 golf participation study (National Golf Foundation, Second Quarter 2007), there were 28.7 million golfers in the U.S. ages 6 and above in 2006.

The total number of golfers is driven by two key variables, 1) population growth and 2) participation rate growth. Golf participation[5] is affected by several factors including ethnicity, age, and gender of players.

Per the NGF, the number of frequent golfers and rounds played has leveled off over the past several years[6]. The NGF's perspective on the future of golf (National Golf Foundation, 2006) is that continued increase in rounds played will occur based on population growth and the aging of the population (older persons tend to play more since they have more time available for leisure). A potentially better future exists if the industry can increase participation rates, particularly among non-traditional golfing segments by capturing latent demand. Latent demand includes golfers who want to play more, former golfers who want to try again, and persons interested in playing golf. NGF estimates participation rates will

[5] Participation Rate definition: The percentage of a given population or demographic group who are golfers.
[6] Round of Golf definition: A round of golf is defined by one person who tees off in an authorized "start" on a golf course. The round is not defined by the number of holes played or the fees paid.

decrease without increased programs aimed at maintaining and increasing participation rates. Population growth in the future may not be favorable for golf because the fastest growing segments of population are Hispanic and African-American which have lower participation rates than the non-Hispanic white population.

Trends noted by NGF since 1986 and implications for LTGC include these shown in ***Table 11***.

Table 11: National Golf Trends Implications for LTGC

National Golf Trends	Implications for LTGC
The 5-17 age group has experienced the greatest increase in golf participation, indicating that golf has become more of a family activity. (The trend of golf to a more family sport was confirmed by the Zagat Survey of 2007/2008).	Primary audience is vacationers and day trip visitors; however, under terms of the concession agreement, discount programs may be offered for junior and senior golfers to encourage increased participation by these age groups.
Caucasians have the highest participation rate of any ethnic group.	Participation rates at LTGC are more a function of income because the majority of players are visitors.
Core golfers (those aged 18 years and older who play eight or more rounds per year) are responsible for 91 percent of all rounds played and 87 percent of all golf-related spending. The number of core golfers has not increased since 1992, but the number of occasional golfers has.	The implication for LTGC is the same as for all golf courses; greater revenues can be realized by capturing more core golfers than occasional golfers.
Avid golfers (25+ rounds annually) make up the smallest player segment (23 percent), but accounted for 63 percent of all golf-related spending in 2002.	Avid golfers are most likely to be locals in LTGC's market; important contributors to the golf course, particularly during the early and late portions of the season.
The recent leveling-off of rounds played may be temporarily negated by baby boomers who have more time for leisure	Not necessarily true for LTGC since older persons have more fixed incomes; increased travel costs have a greater influence on number of rounds played.

GOLF PLAY AND EVENTS AT LAKE TAHOE GOLF COURSE

LTGC is located approximately three and a half miles south of the City of South Lake Tahoe on the west side of US 50 / SR 89 on California State Parks property within Lake Valley SRA.

LTGC is a daily fee public course offering 18-hole regulation play with clubhouse facilities used to host weddings and banquets. Golfers may rent powered carts and golf clubs and utilize the driving range and practice greens to warm up. The golf course is a par 71 course with a total playing distance of 6,707 yards.

LTGC hosts a variety of golf tournaments and outings each season. In total, about 16% of rounds played at LTGC are tournament rounds, where tournament rounds may include parties of large corporate outings, traveling golf clubs, civic associations, government agencies, bachelor parties, reunions, and memorial events. Pricing for golf events differs from open play rounds. Open play rounds typically pay $80 per player, which consists of a $55 greens fee and a $25 cart fee. Tournament / event golf packages start at $95 per player and include greens fees, cart fees, range balls, reservations, and tournament services (such as contests, scoring, cart signs, and other personal attention as needed). In addition, LTGC will provide customized packages with food and beverage depending on the needs of the party.

Throughout the year, LTGC hosts a variety of non-golf functions, such as weddings and banquets. The average number of events has been 37 per year. Of the approximately 37 events per year, about 15 of these occur during the winter months. According to American Golf Corporation, the non-golf segment of the business has grown over the past few years as a result of the quality of the venue and the tremendous scenery and views from the clubhouse grounds. Banquet events consist of civic events, meetings, reunions, memorials services, holiday parties, birthday parties, and any other type of event other than a wedding. Approximately 15% of food and beverage sales are made at the snack bar.

As previously discussed, winter operations at LTGC include snowmobile rides on the driving range.

2007 STATE PARKS SURVEY

During the 2007 golf season, State Parks conducted an on-site survey of golfers (see ***Appendix B*** for a copy of the questionnaire). A total of 227 complete surveys were collected. The surveys represent responses from less than 1% of the total player population; therefore, the results are not statistically valid. Nevertheless, they are still useful and indicative of the total player population profile and preferences.

The surveys revealed that approximately two-thirds of the players at the Lake Tahoe Golf Course are visitors, and one-third of players are local (defined as residing in South Shore). Because the majority of players are non-local, it is unsurprising that just over half of all players make less than 5 visits per year. About thirty percent of the survey respondents play more than 16 times per year. If the players frequenting the course more than 16 times per year represent the local player population, then over the course of the summer the locals play golf more than 3 times per month. These local players are avid golfers[7]. Origination of players and number of visits is shown in ***Table 12***.

Table 12: Summary Statistics from 2007 State Parks Survey

Survey Item	First Time Survey Respondent Total	First Time Survey Respondent Percent of Total	Repeat Survey Respondent Total	Repeat Survey Respondent Percent of Total
Total Surveys completed	**227**		**2**	
Origination of Players				
Number of Locals (South Lake Tahoe)	87	38%	2	100%
Number of Visitors	140	62%	0	0%
Total	**227**	**100%**	**2**	**100%**
Number of Visits per Year				
1 - 5	121	53%	0	0%
6 - 15	30	13%	1	50%
16+	70	31%	1	50%
No response	6	3%	0	0%
Total	**227**	**100%**	**2**	**100%**

Source: California State Parks, October 2007 surveys

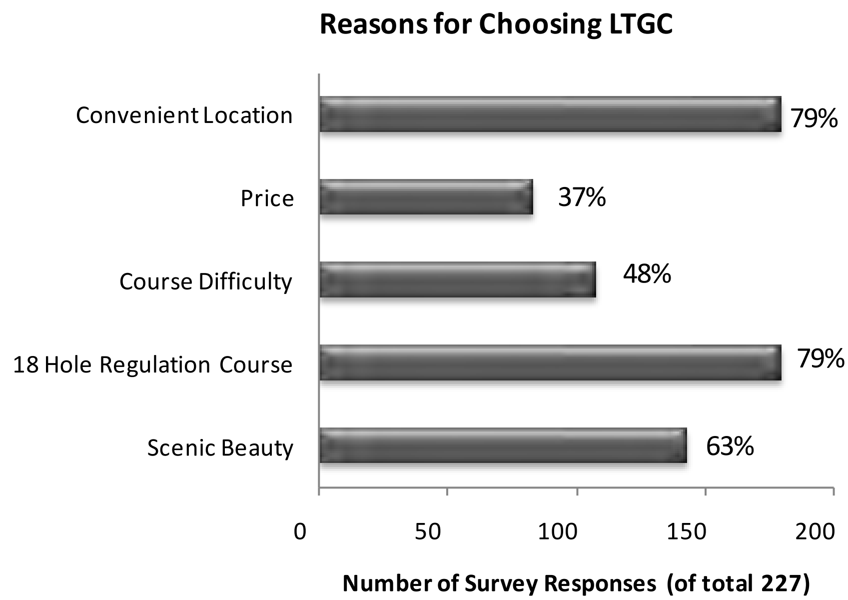
Figure 4 depicts the popularity of reasons offered in the survey for choosing to play at LTGC. The chart indicates that the survey respondents' primary reasons for playing at this golf course are convenience of the location, and playing an 18-hole regulation course. Scenic beauty was chosen by 63% of the respondents as a reason for choosing this golf course, followed by course difficulty, and price. (In a recent Northern California Golf Association 'Golf' Magazine article (Stuller, Summer 2007), location, particularly of golf courses in beautiful settings is central to determining demand for a course. In this article, aesthetic aspects are among the most important variables determining pricing).

Finally, the survey also asked players what type of golf course they would play if the course was altered due to river restoration activities. Overwhelmingly the respondents said they would play a modified 18-hole regulation course, even if some holes were relocated across the river, and that they would not play a 9-hole course or an 18-hole executive course with

[7] 'Avid' or 'Core' golfers are defined as golfers who people age 18 or older who play eight or more rounds per year.

all holes located on the clubhouse side of the river[8]. Responses to these questions are shown in pie charts in ***Figure 5***.

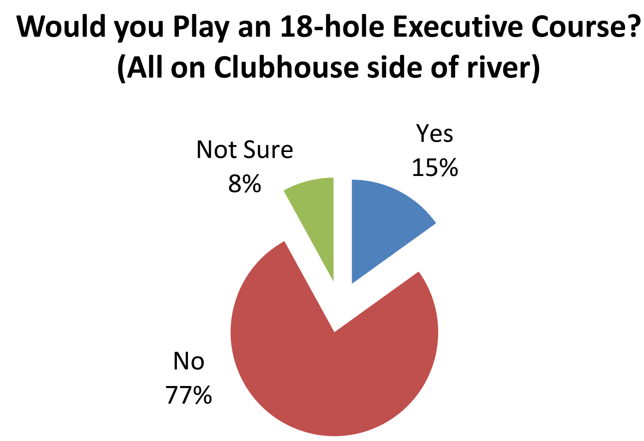
Figure 4: Survey Responses – Reasons for Choosing LTGC

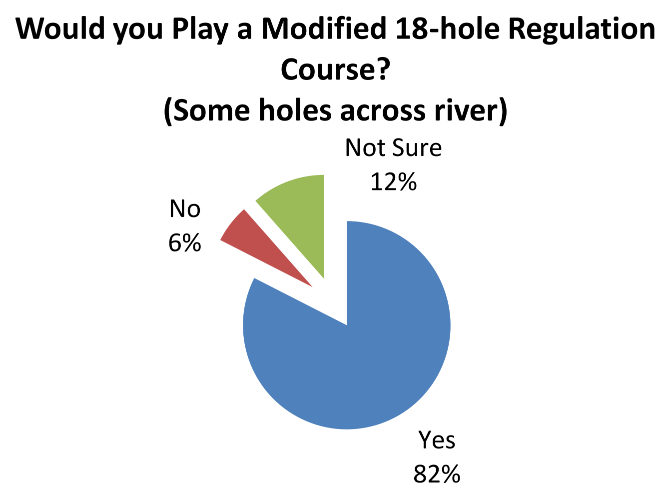


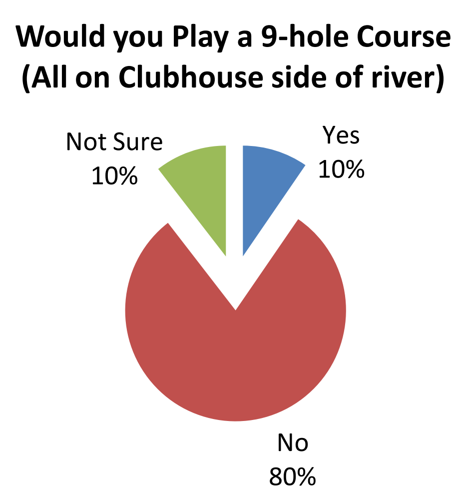
Comments and suggestions made by survey respondents were grouped together by topic area and summarized and are presented in ***Appendix B***. The comments reflect a diversity of opinions regarding the golf course and restoration of the Upper Truckee River.

[8] These survey respondents are likely to be biased regarding changes made to LTGC; a reduced-play area golf course would likely appeal to a different group of golfers.

__Figure 5: Survey Responses - Preference for Golf Course Type and Layout__







COMPETITIVE GOLF COURSES (SCENARIOS 1A AND 1B)

There are numerous golfing opportunities in the Lake Tahoe Region. ***Map 1*** displays the public 18-hole regulation courses (in black) and non-traditional length golf courses (in red) within this region.

Not all of these golf courses are considered to be competitors of LTGC, as explained below. The Tahoe interregional/intraregional transit study prepared for TRPA (LSC Consultants, 2006) reports that a 2004 survey of South Lake Tahoe visitors indicated that the summer visitor population originates from:

- The Bay Area - 21.8% (of which 76% arrive by private auto)
- Southern California – 19.8% (of which 59% arrive by private auto)
- Central California – 15.4% (of which 76% arrive by private auto)
- Other, including Nevada (43.0%) (of which 40% arrive by private auto)

If two-thirds of rounds played at LTGC are by non-locals, and the above percentages are applied to rounds played, then approximately 80% of LTGC's business arrives by automobile and approximately 20% of business arrives by air. ***Table 13*** shows this calculation.

Given this information and the fact that most visitor (non-local) players will travel to South Lake Tahoe by vehicle on US 50, this report does not consider the numerous golf courses in Truckee and around the California side of north Lake Tahoe to be in competition with LTGC. Visitors to the area arriving via Interstate 80 have no economic rationale to bypass these golf courses and continue to drive to South Lake Tahoe for golf[9].

This report considers competitive golf courses to be:

- Public 18-hole courses,

- 18-hole courses that offer a similar experience to LTGC in terms of aesthetic appeal, and

- Courses located within a 60-minute drive from South Lake Tahoe.

Map 2 shows the competitive golf courses based on these criteria.

[9] Local players may drive to the North Shore to play new courses offered in this area; however, no attempt has been made to quantify this because the bulk of golf revenues are generated by visitor players (more than 80% of golf revenues are generated during the June through September months when visitors are estimated to make up more than two-thirds of the players).

Map 1: Public Golf Courses in the Region

Table 13: Origination and Mode of Transportation of LTGC Visitors

LTGC Visitors	Percent of Total Summer Visitation	Percent of Visitors by Auto	Percent of Total Visitors arriving by Auto	Calculation	LTGC Rounds Played	Percent of Total Rounds
Origination of Visitors to South Lake Tahoe in Summer						
Bay Area	22%	87%	19%			
Southern California	19%	70%	13%			
Central California	15%	83%	13%			
Other and Out of State	44%	58%	25%			
Total	**100%**		**70%**	**a = 70%**		
Total Rounds Played at Lake Tahoe Golf Course				**b**	**33,163**	
Estimated Rounds Played by Visitors				c = b*67%	22,219	67%
Estimated Rounds Played by Locals				d = b*33%	10,944	33%
Total Rounds Played					**33,163**	**100%**
Estimated LTGC Visitor Golfers arriving by Auto				**e = a*c**	**15,651**	

Source: Hansford Economic Consulting and Tahoe Interregional/Intraregional Transit Study, prepared by LSC transportation consultants, 2006.

visit shore

Map 2: Location of Scenarios 1A and 1B Competitor Golf Courses

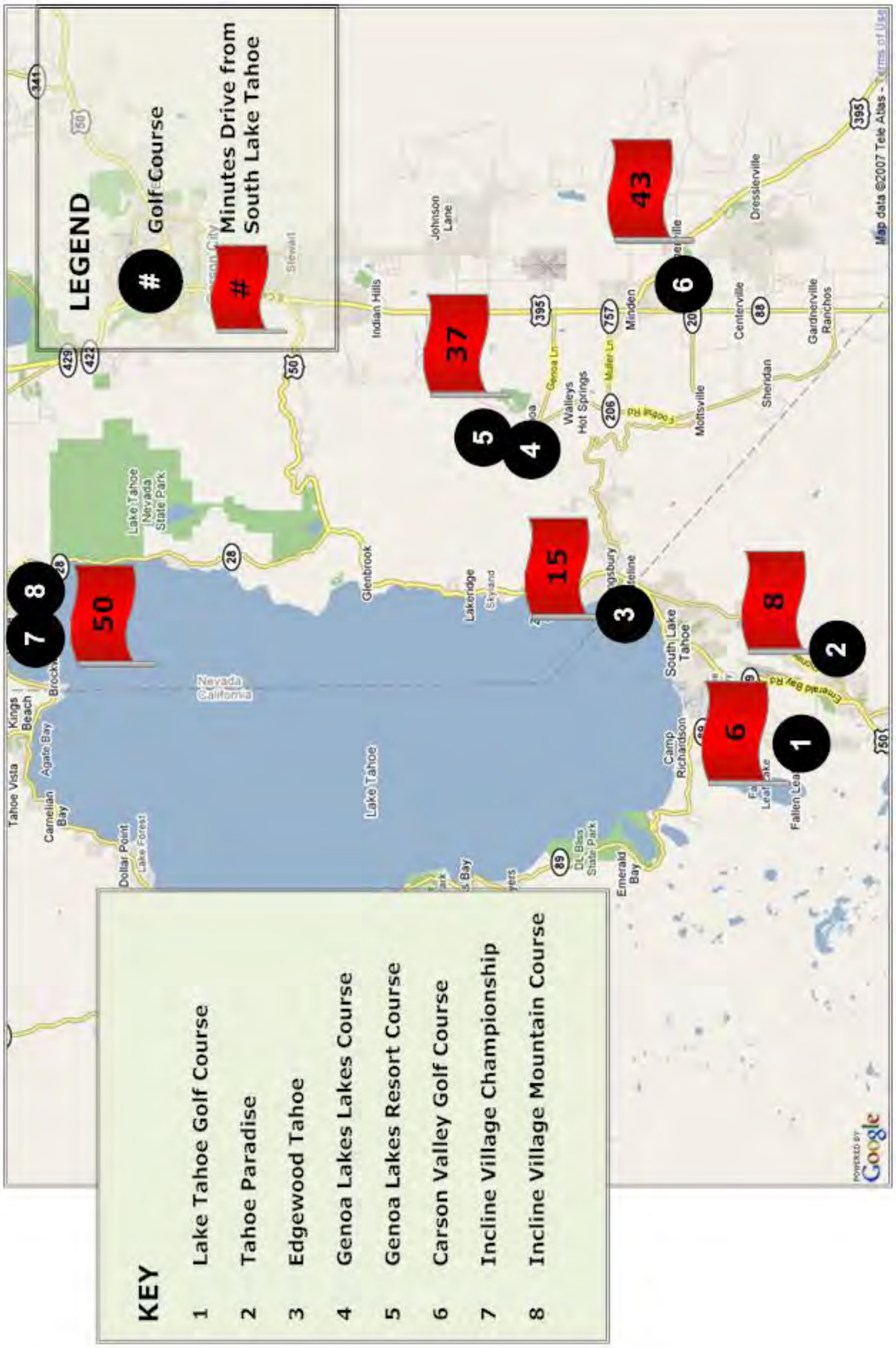


Table 14 on the following page lists attributes of competitive golf courses sorted by distance from the intersection of Emerald Bay Road and Lake Tahoe Boulevard in South Lake Tahoe. Of the seven competitive courses, two are non-traditional length 18-hole golf courses. The non-traditional length courses are Tahoe Paradise, which is also the closest golf course to LTGC, and the Mountain Course at Incline Village. Three of the golf courses are outside the Tahoe Basin but offer spectacular views of the Eastern Sierra in meadow settings, and are closer than the competitive courses on the Nevada-side north shore of Lake Tahoe. These golf courses, located in Genoa and Gardnerville, are open year-round.

Green fees for the identified competitor golf courses are shown in ***Table 15*** and represent rack rate fees for peak season weekend play with a cart. LTGC has the lowest fees of the 18-hole regulation courses with the exception of Carson Valley Golf Course. Given the caliber of Carson Valley Golf Course, this golf course is only considered to be in competition with LTGC for its share of local, rather than visitor players. Descriptions of LTGC's competitors are provided in ***Appendix C*** of this report.

Table 15: Green Fees at Competitor Public Golf Courses

Public Golf Course	Regulation (R) or Non-traditional (N) Facility	Rack Rate [1] 18 Holes	Rack Rate [1] Twilight	Cart Rental
Lake Tahoe Golf Course	R	**$80**	**$60**	Included in green fee
Tahoe Paradise	N	$58	$39	Included in green fee
Edgewood Tahoe	R	$225	$175	Included in green fee
Genoa Lakes Resort (Lakes Course)	R	$120	$85	Included in green fee
Genoa Lakes Resort Course	R	$90	$65	Included in green fee
Carson Valley Golf Course	R	$30	$25	Included in green fee
The Championship Course at Incline Village	R	$169	$99	Included in green fee
The Mountain Course at Incline Village	N	$62	$40	Included in green fee
Median Rack Rate		**$85**	**$63**	

Source: The Weekly Magazine, June 2007, individual golf course websites comp fees

[1] Peak season rates for weekend play. These rates do not reflect revenue per round realized by the golf course.

The median rack rate for LTGC's competitors is $85 for 18 holes. In 2008 the NGF reported the average cost of a round of golf at 18-hole public courses (daily fee and municipal) to be $51 indicating that the region commands higher fees that the national average.

Table 14: Competitive Courses (Scenarios 1A and 1B)

Lake Tahoe Golf Course Economic Feasibility Analysis
Competitive Public Golf Courses (Scenarios 1A and 1B)

Shown in Map 2

Golf Course	Number of Holes	Regulation (R) or Non-traditional (N) Facility	Year Opened	Estimated Number of Rounds	Tahoe Basin (TB) or Eastern Sierra (ES)	Course Length (Yards)	Par	Distance (Miles) [1]	Estimated Travel Time (Minutes) [2]	Designed By
Lake Tahoe Golf Course	**18**	**R**	**1960**	**33,163**	**TB**	**6,707**	**71**	**3**	**6**	**William Bell**
Tahoe Paradise	18	N	1960	n.a.	TB	4,028	66	5	8	Bruce Beeman
Edgewood Tahoe	18	R	1968	n.a.	TB	7,532	72	6	15	George Fazio
Genoa Lakes Resort (Lakes Course)	18	R	1993	n.a.	ES	7,263	72	20	37	Peter Jacobsen
Genoa Lakes Resort Course	18	R	1998	n.a.	ES	7,358	72	22	38	John Harbottle
Carson Valley Golf Course	18	R	1960	n.a.	ES	6,023	71	25	43	Red Swift
The Championship Course at Incline Village	18	R	1964	26,665	TB	6,932	72	30	50	Robert Trent Jones Jr and Sr
The Mountain Course at Incline Village	18	N	1968	18,739	TB	3,513	58	32	55	Robert Trent Jones Jr and Sr

Source: Google Maps, Reno Tahoe Visitor and Convention Bureau, GolfCoursesGuide.com,and Hansford Economic Consulting

competitive

[1] Distance is measured in road miles originating from the intersection of Emerald Bay Road and Lake Tahoe Boulevard in South Lake Tahoe.
[2] Travel time is estimated by Google Maps from the intersection of Emerald Bay Road and Lake Tahoe Boulevard in South Lake Tahoe.

Non-traditional Length Golf Courses (Scenario 2)

As already described more fully in ***Section 2*** of this report, a non-traditional length golf course is a 9-hole regulation course or an alternative length course, which includes par-3 courses, executive courses, pitch and putt courses, and other courses of nontraditional hole configuration.

Map 3 shows locations of non-traditional length golf courses within the wider region that may be used as comparables for Scenario 2. There are no public par 3 or pitch and putt courses in the region. Both Tahoe Paradise and The Mountain Course at Incline Village are executive 18-hole courses. Ponderosa golf course in Truckee, Old Brockway in Kings Beach, and Tahoe City golf course are the best 9-hole comparison courses. All of these 9-hole courses are of regulation length. Attributes including number of rounds played and rack rate green fees of these courses are listed in ***Table 16***.

Since this analysis does not presume a golf course layout under Scenario 2 (it could be a 9-hole course or an 18-hole executive course, or some other configuration), a low to high range of potential rounds played and green fees charged for the reduced-play area course is modeled to provide a range of potential revenues and expenditures.

Scenario 2 Potential Rounds Played

The low end of the range of number of rounds played under Scenario 2 is 15,000 rounds which is the lowest number of rounds of the comparison courses listed in ***Table 16***. The high end of the range is 25,000 rounds, which is the highest number of rounds of the comparison courses listed in ***Table 16***. Number of rounds data was provided by each of the comparison golf courses.

Scenario 2 Potential Range of Fees

The average rack rate (greens fee) to play 18-holes at the Tahoe comparable courses with a cart is $78; however, when comparing green fees per round, the median rack rate is 71% of the rack rate at LTGC. (The rack rate is the published rate charged which is greater than the actual fee charged per round). According to the NGF (National Golf Foundation, 2007), the median rack rate for a round of golf at non-traditional golf facilities (excluding resort public facilities) cost $22.00. The median rack rate for a round of golf at public 18-hole regulation facilities cost $40.00. At the national level, non-traditional facilities command 55% of the greens fees at 18-hole regulation course facilities.

The difference in the range is the rack rate as a percentage of LTGC's rack rate. At the low end of the range the rack rate is 55% of LTGC's rack rate per NGF statistics. At the high end of the range the rack rate is the median price point of the comparable Tahoe golf courses as a percentage of LTGC's rack rate (71%).

__Map 3: Location of Scenario 2 Comparison Non-traditional Length Golf Courses__

Table 16: Number of Rounds and Green Fees Data for Scenario 2 Comparison Courses

Lake Tahoe Golf Course Economic Feasibility Analysis
Comparison Courses for Scenario 2 (Non-traditional Golf Course Configuration) **Shown in Map 3**

Item	Public or Municipal	Course Type	Year Built	Number of Rounds [1]	Number of Holes	Yardage	Par (18 holes)	Rack Rates [2] Walk 9 holes	Rack Rates [2] Walk 18 holes	Rack Rates [2] 9 holes with cart	Rack Rates [2] 18 holes with cart	Cart Rental Rates 9 holes	Cart Rental Rates 18 holes
Comparison Non-traditional Length Course													
Tahoe City Golf Course	P	9-hole regulation	1917	n.a.	9	2,631	66	$35	$65	$53	$95	$18	$30
Ponderosa [3]	P	9-hole regulation	1961	15,000	9	3,022	70	$32	$52	$50	$78	$18	$26
Brockway Golf Course	P	9-hole regulation	1926	25,000	9	3,418	72	$40	$70	$57	$96	$17	$26
Tahoe Paradise	P	18-hole alternative	1960	n.a.	18	4,028	66	$30	$40	$42	$58	$12	$18
The Mountain Course [4]	P	18-hole alternative	1968	18,739	18	3,513	58	$38	$62	$38	$62		
Average of Comparison Courses				**19,580**				**$35**	**$58**	**$48**	**$78**	**$16**	**$25**
Lake Tahoe Golf Course	P	18-hole regulation	1960	33,163	18	6,707	71	$25	$55	$35	$80	$10	$25
Rate for a Round of Golf as a Percent of LTGC													
Tahoe City Golf Course										66%		72%	
Ponderosa [3]										63%		72%	
Brockway Golf Course										71%		68%	
Tahoe Paradise											73%		72%
The Mountain Course [4]											78%		
Median Rate of Tahoe Comparison Courses										**71%**		**72%**	
Median Green Fee for Non-traditional courses in the US (2006) per the NGF [5]										**55%**		**55%**	

Source: HEC telephone conversations with listed golf courses and the NGF Golf Industry Report First Quarter 2007 alt courses

[1] Number of rounds is counted as total number of players paying to tee off therefore 18 holes at the 9-hole facilities counts as one round. Estimates (rounded) and actuals provided by each golf course.
[2] 2007 Rates.
[3] In June 2008 the Truckee Tahoe Airport District (with financial assistance from the Town of Truckee, Truckee Trails Foundation and Truckee Donner Land Trust) purchased the Ponderosa Golf Course. It is now managed by the Truckee Donner Recreation and Park District and fees are anticipated to decrease. Rounds played were estimated at 23,000 in 2007 by golfcoursesguide.com; new management anticipates annual rounds to be no less than 15,000.
[4] The Mountain Course charges the same whether a cart is rented or not.
[5] Non-traditional facilities - either stand-alone 9-hole regulation or short courses (executive or par 3) green fees as a percentage of green fees for facilities with only 18 regulation holes. Green fees are peak season full rate weekend fees with cart. Cart may not be required at all courses. Full rates are rarely charged.

As of December 31, 2006, there were 904 18-hole equivalent (includes 9-hole, 18-hole, and 27-hole) golf courses in California, and 108 in Nevada (National Golf Foundation, 2007). Daily fee courses constituted 46% of total supply in California, and 61% in Nevada. Of all courses, including municipal and private, 84% were regulation length, and the remaining 16% executive or par-3 length courses in California. The share of regulation length courses is greater in Nevada. ***Table 17*** shows these statistics for California, Nevada, and the U.S. The data suggests consumer preference for regulation golf courses.

Table 17: National Golf Course Supply

Area	Total	Daily Fee	Regulation	Executive	Par 3
California	904	413	763	84	57
Percent of Total		*46%*	*84%*	*9%*	*6%*
Nevada	108	66	102	4	3
Percent of Total		*61%*	*94%*	*4%*	*2%*
US Total	14,968	8,321	13,702	724	542
Percent of Total		*56%*	*92%*	*5%*	*4%*

Source: NGF Golf Industry Report, First Quarter 2007 supply

Nationwide the current outlook for 9-hole courses is not favorable. In both 2005 and 2006 golf course closures were disproportionately short courses (National Golf Foundation, 2007). In 2007 stand-alone 9-holers or short courses (executive or par-3) accounted for 43% of total closures (20% of the US supply). This trend in short course closings is largely accounted for by higher and better economic uses of land rather than business failure. As described by the NGF (National Golf Foundation, January 2008), "Courses may be sold to developers when the underlying land has greater commercial real estate value than cash flow value as a golf course".

In a 2001 Golf 20/20 publication (Sportometrics, 2001) twelve major findings were made with regard to the feasibility of alternative golf facilities. These major findings and implications for LTGC are summarized in ***Table 18***.

Table 18: Golf 20/20 Report Findings and Implications for Scenario 2

Report Findings for Alternative (Non-traditional Length) Courses	Implication for LTGC Scenario 2
1. Golfers pay more at facilities with a full bar.	Favorable, LTGC has a full bar
2. Golfers prefer a club with a beverage cart, snack bar, and restaurant.	Favorable, all available
3. Golfers like a club that accepts tee times.	Favorable, tee times can be booked
4. Golfers pay and play more at clubs with driving ranges, and fees are higher at courses with mats.	Favorable, all available
5. Fees are higher where dress codes require a collared shirt and eliminate denim.	Golf attire preferred but not mandatory
6. Fees are slightly higher in more affluent more densely population and better-educated communities.	Not relevant, primarily a tourist-destination course
7. Rounds are higher in more affluent communities, but education appears to have no impact on rounds played.	Not relevant
8. Golfers prefer newer and longer alternative facilities.	Favorable, sufficient space at LTGC for longer alternative course
9. Fees and average rounds per day are higher in regions where courses are closed some portion of the year because of weather.	Applies to LTGC
10. 18-hole green fees are 48 percent higher than 9-hole fees, on average.	Not borne out by data in this study due to being a tourist destination
11. Green fees are just over 10 percent higher on weekends than they are during the week.	Already reflected in LTGC's pricing
12. Rounds and fees are higher at alternative facilities where there are more traditional courses.	Tahoe Paradise already captures this; may be difficult to do given proximity to this course

MARKET ANALYSIS FINDINGS

Findings

The following findings influence the demand for play (number of rounds) and green fees pricing assumptions used in the economic feasibility model for changes in the reconfiguration and operation of LTGC:

- Convenience of location and scenic beauty are the major assets of LTGC. These factors influencing demand are permanent and may even be leveraged to increase rounds played with a modified course layout if the modifications make the most of potential vistas. Seventy nine percent of LTGC golfers interviewed in 2007 said they chose to play at LTGC because it is an 18-hole regulation course, which suggests strong return golfer demand with reconfiguration of the golf course under Scenario 1B.

  The financial model assumes number of rounds played to remain the same under Scenario 1B as under the Base Case. A reconfigured 18-hole regulation length LTGC may potentially command greater greens fees; however, this analysis conservatively applies the Base Case fees to Scenario 1B.

- Given the close proximity of an executive golf course (Tahoe Paradise) to LTGC it is possible that golfers who enjoy this type of course are already being captured making an executive course less feasible than other types of reduced-play area golf courses; however, this potential assumption is not used in the analysis because the many potential configurations of a reduced-play area are not analyzed.

  The financial model does not specify the type of reduced-play area golf course under Scenario 2. The estimates of variables, including number of rounds played, affecting revenues and expenditures under Scenario 2 are based on data from comparable Tahoe non-traditional length golf courses and other sources as more fully described in the following section of this report.

- Pricing at existing non-traditional courses within the wider region may provide good indication of green fees that may be charged at a reduced-play area reconfigured LTGC; however, given uncertainty as to the configuration of this potential type of golf course, providing a range of potential green fees is more prudent.

  The financial model estimates a range of green fees that may be charged for a round of golf at a reduced-play area golf course. The low end of the range uses the median rack rate of non-traditional golf facilities across the US and the high end of the range uses the median rack rate of Tahoe comparable golf courses.

SECTION 5: FINANCIAL FEASIBILITY ANALYSIS

The financial feasibility model estimates a projection of revenues and costs under each economic scenario based on a set of general assumptions and the base data developed in ***Section 3*** of this report.

FEASIBILITY MODEL GENERAL ASSUMPTIONS

Table 19 summarizes the general assumptions used to project revenues and expenses under each economic scenario. Assumptions for each of the variables are explained in detail below and are based in part on research (already presented in ***Section 4***) and in part on discussion with American Golf Corporation and State Parks. Each of the general assumptions used in the projections of revenue and expenses under each scenario is described below.

Golf Course

LTGC continues to be an 18-hole regulation course under Scenarios 1A and 1B but is assumed to have a reduced-play area under Scenario 2. Various non-traditional length golf courses could potentially be built under Scenario 2 including an 18-hole executive course, 9-hole regulation course, and other configurations. The model does not specify which type of course would be built under Scenario 2. A four-combination approach is used to assess the full range of conditions related to the number of potential rounds and green fees (the two assumptions that most significantly affect results of the analysis).

• Low Rounds – Low Fees	• High Rounds – Low Fees
• Low Rounds – High Fees	• High Rounds – High Fees

Number of Golf Rounds

Scenario 1A reflects the average annual number of rounds played at LTGC 2003 through 2006, as previously calculated in ***Table 7***.

Extensive research into whether a modified / renovated 18-hole regulation course would increase, decrease, or have no effect on total number of rounds played yielded no definitive evidence what the outcome might be. Reconfiguration of the Championship Course in Incline Village during the 2003/04 seasons does not appear to have significantly influenced the number of rounds played at that golf course. Based on the research conducted the number of rounds under Scenario 1B is not altered from the Base Case. Ultimately, the number of rounds will be determined based on customer preferences and excellence of course design. Although number of rounds is not increased in this analysis under Scenario 1B it should be noted that there is potential for a price increase which could improve the projected revenues beyond those shown in this analysis.

The range of number of rounds played at a reduced-play area golf course under Scenario 2 is 15,000 to 25,000 rounds. Number of rounds information was obtained via telephone interview with each of the listed courses. Some golf courses declined to provide this information and some do not keep track of this information. The number of tournament rounds to total rounds is assumed to stay proportionately the same under Scenarios 1B as under Scenario 1A, and none are estimated under Scenario 2.

Number of Employees

The estimation of full and part-time jobs provided in ***Table 19*** is detailed in ***Table 20*** for each scenario. Projected number of employees under scenarios 1B, 2, and 3 are based on rounds per employee for golf-activity employees, with the exception of golf course maintenance employees (based on number of major pieces of equipment per employee), and events per employee for food and beverage employees. The estimated number of rounds is described above.

Total number of employees is estimated to increase from 76 to 80 under Scenario 1B, decrease to 60 employees under Scenario 2 (Low Rounds), 65 employees under Scenario 2 (High Rounds), and decrease to 32 employees under Scenario 3.

Green Fees

Given the difficulty of estimating green fees and other associated golf facility charges under each scenario, a ratio was used to reduce or increase prices proportionate to current fees at LTGC. It is assumed that under Scenario 1B green fees would remain at their current level.

Under Scenario 2 the green fees are estimated to range from a low of 55% of Base Case fees based on NGF data to a high of 71% of Base Case fees based on the median fee of Tahoe comparable non-traditional length courses (see ***Tables 15 and 16***).

Traditionally, golf has been considered to be an activity with elastic demand because it is considered a luxury expense rather than a necessity. Having elastic demand means that if the price is lowered then demand for play increases; however, golf is unusual in that it is not only an expense to play in terms of monetary value, but is also time-expensive because a round of golf takes four to five hours to play. Instead of increasing revenues, reducing prices can actually lower the top line and hurt the bottom line (European Golf Course Owners Association). Lacking empirical evidence, it is suggested that demand for play at LTGC is fairly inelastic since the majority of players are visitors who have already allocated leisure time to recreate, and since the locals are unlikely to be able to play twice as much even if the price is halved.

Events and Guests

The number of weddings and banquets was assumed to remain the same under each scenario.

Table 19: General Assumptions used for Projecting Revenues and Expenses

Assumptions	Scenario 1		Scenario 2 (Low Rounds)		Scenario 2 (High Rounds)		Scenario
	1A - Base Case	1B	Low Fees	High Fees	Low Fees	High Fees	3
Golf Course							
Acreage of Manicured Landscape	100	90	50	50	50	50	0
Number of Golf Carts Leased	85	85	45	45	45	45	0
Pieces of Major Maintenance Equipment	17	19	14	14	14	14	0
Employees (full and part-time)							
Golf Activity Employees	42	46	28	28	33	33	0
Event Activity Employees	31	31	31	31	31	31	31
Administration	3	3	1	1	1	1	1
Total Employees - (see Table 20)	**76**	**80**	**60**	**60**	**65**	**65**	**32**
Number of golf rounds played							
Regular Rounds	27,864	27,864	15,000	15,000	25,000	25,000	0
Tournament Rounds [1]	5,299	5,299	0	0	0	0	0
Subtotal Number of Rounds Played [2], [3]	**33,163**	**33,163**	**15,000**	**15,000**	**25,000**	**25,000**	**0**
Green Fees compared to Base Case [4]	**100%**	**100%**	**55%**	**71%**	**55%**	**71%**	**0%**
Cart Rental Rates compared to Base Case [5]	**100%**	**100%**	**55%**	**72%**	**55%**	**72%**	**0%**
Events							
Number of Weddings	29	29	29	29	29	29	29
Number of Banquets	8	8	8	8	8	8	8
Total Number of Events [6]	**37**	**37**	**37**	**37**	**37**	**37**	**37**
Guests							
Guests at Weddings	3,091	3,091	3,091	3,091	3,091	3,091	3,091
Guests at Banquets	573	573	573	573	573	573	573
Total Guests at Events [6]	**3,663**	**3,663**	**3,663**	**3,663**	**3,663**	**3,663**	**3,663**

Source: Hansford Economic Consulting

tot assumps

[1] Tournament rounds include group outings and events such as bachelor parties. No tournament rounds are projected under Scenario 2.
[2] HEC spent extensive time researching whether a modified / renovated 18-hole regulation course would increase, decrease, or have no effect on total number of rounds played. This research yielded no definitive evidence what the outcome might be. Ultimately the number of rounds will be determined based on customer preferences, and excellence of course design.
[3] Low range and high range rounds based on data from non-traditional length courses in the Tahoe region (see Table 16).
[4] Per the NGF 2006 the median green fee at non-traditional facilities in the US is 55% of the average green fee to play 18-hole facilities. The NGF's estimate accounts for a wide variety of types of courses and is used for the low range of potential fees. HEC has used the average fees of non-traditional length courses in the Tahoe region to reduce green fees for the high range of potential fees (see Table 16).
[5] Low range fees use NGF 2006 data and high range fees use data from non-traditional length courses in the Tahoe region (see Table 16).
[6] Number of events and guests assumed constant for all scenarios.

Table 20: Estimated Employees by Economic Scenario

Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Number of Employees by Economic Scenario

	2006				Scenario 1		Scenario 2 (Low		Scenario 2 (High		Scenario 3
Employees	Employees	Numerator		Multiplier	1A - Base Case	1B	Low Fees	High Fees	Low Fees	High Fees	
Number of Golf-activity Employees											
Pro Shop	11	33,163	Rounds per Employee	3,015	11	11	5	5	8	8	0
Carts [1]	7	33,163	Rounds per Employee	4,738	7	8	3	3	5	5	0
Maintenance	24	17	Major Pieces of Equipment per Employee	0.708	24	27	20	20	20	20	0
Subtotal Golf-activity Employees	**42**				**42**	**46**	**28**	**28**	**33**	**33**	**0**
Number of Event-activity Employees											
Food & Beverage	31	37	Events per Employee	1.2	31	31	31	31	31	31	31
Subtotal Event-activity Employees	**31**				**31**	**31**	**31**	**31**	**31**	**31**	**31**
Administration [2]	3	n.a.		n.a.	3	3	1	1	1	1	1
Total Employees	**76**				**76**	**80**	**60**	**60**	**65**	**65**	**32**

Source: Hansford Economic Consulting

emp est

[1] An additional employee is added under Scenario 1B to allow for increased snack cart service.
[2] Currently there are 3 administrative staff positions. HEC estimated administrative positions would reduce to 1 under Scenarios 2 and 3.

ESTIMATED REVENUES BY ECONOMIC SCENARIO

A step by step description of projection of revenues is presented here:

1. Revenue multipliers were developed for each revenue-generating activity to project revenues by economic scenario. Revenue multipliers are shown in ***Table 21*** and are derived by dividing average annual revenues from ***Table 8*** by unit for each line item.

2. All golf activities (green fees, cart rental, and driving range) revenue multipliers are based on rounds played. The revenue multiplier is revenues in 2007 dollars divided by rounds played. There is no revenue multiplier for the Nike Golf Learning Center because this no longer operates. Merchandise, food and beverage and other charges related to golf are also based on rounds played. Golf-related food and beverage revenues are also partially based on the number of cart employees to reflect snack bar sales.

3. Food and beverage related to weddings and banquets, and other revenues (such as wedding and banquet fees and service charges), are estimated on a per event basis.

4. The revenue multipliers are applied to the relevant unit for each revenue activity to estimate total revenues under each scenario. The unit assumptions (total rounds played and number of events) are taken from ***Table 19*** for each economic scenario. Green fees are multiplied by 'green fees compared to base case' ratios to account for changed pricing between the scenarios.

Resulting total revenues by activity are shown for each scenario in ***Table 22.*** Base Case total revenues are $20,000 less than in ***Table 21*** due to the omission of the Nike Golf Learning Center in the revenue projections.

Golf activity revenues are estimated to remain at $2.0 million under Scenario 1B and range from $0.5 to $1.0 million under Scenario 2. Because there is no golf course under Scenario 3, golf-activity revenues are zero. Concessions and other revenues are estimated to increase slightly from $0.78 million under Scenario 1A to $0.80 million under Scenario 1B. Under Scenario 2 (Low Rounds) these revenues decrease to $0.49 million or $0.65 million under Scenario 2 (High Rounds). Events facility only revenues are estimated at $0.26 million under Scenario 3. Winter operations are not estimated to change between scenarios except they would be eliminated along with the golf course in Scenario 3. As previously noted, winter operations are most heavily dependent on weather conditions.

Table 21: Revenue Multipliers Used to Project Revenues by Scenario

Revenues	Revenues in 2007 $s	Multiplier Basis	Unit	Revenue Multiplier
Golf Activities	**(See Table 8)**			
Green Fees	$1,368,000	33,163	Rounds Played	$41.25
Cart Rental	$517,000	33,163	Rounds Played	$15.59
Driving Range	$107,000	33,163	Rounds Played	$3.23
Nike Golf Learning Center [1]	$20,000	n.a.	No longer operating	n.a.
Subtotal Golf Activities [2]	**$2,012,000**			
Concessions/Other				
Merchandise	$181,000	33,163	Rounds Played	$5.46
Food and Beverage - Golf [2]	$285,000	33,163	50% Rounds Played	$4
[3]		7	50% cart employees	$20,357
Service charges, fees & other - Golf	$58,000	33,163	Rounds Played	$1.75
Food and Beverage - Events [2]	$212,000	37	Event	$5,691.28
Service charges, fees & other - Events	$44,000	37	Event	$1,181.21
Subtotal Concessions/Other	**$780,000**			
Total Annual Revenue	**$2,792,000**			

Source: Hansford Economic Consulting rev mult

[1] The learning center is no longer operating hence it is omitted from the revenue multipliers.
[2] LTGC estimates food and beverage revenues of $212,000 from non-golf catered events in 2008.

Table 22: Projected Revenues by Scenario

Lake Tahoe Golf Course Economic Feasibility Analysis
Projected Revenues by Economic Scenario

	Scenario 1		Scenario 2 (Low Rounds)		Scenario 2 (High Rounds)		Scenario 3
LTGC Revenues	1A - Base Case	1B	Low Fees	High Fees	Low Fees	High Fees	
Golf Activities							
Green Fees [1]	$1,368,000	$1,368,000	$340,300	$440,900	$567,200	$734,800	$0
Cart Rental [2]	$517,000	$517,000	$128,600	$128,600	$214,400	$214,400	$0
Driving Range	$107,000	$107,000	$48,400	$48,400	$80,700	$80,700	$0
Nike Golf Learning Center [1]	$0	$0	$0	$0	$0	$0	$0
Subtotal Golf Activities [2]	**$1,992,000**	**$1,992,000**	**$517,300**	**$617,900**	**$862,300**	**$1,029,900**	**$0**
Concessions/Other							
Merchandise	$181,000	$181,000	$81,900	$81,900	$136,400	$136,400	$0
Food, Beverage, Events (Golf Related)	$343,000	$363,400	$155,100	$155,100	$258,600	$258,600	$0
Food, Beverage, Events (Non-Golf Related)	$256,000	$256,000	$256,000	$256,000	$256,000	$256,000	$256,000
Subtotal Concessions/Other	**$780,000**	**$800,400**	**$493,000**	**$493,000**	**$651,000**	**$651,000**	**$256,000**
Snowmobile Lease Payments [3]	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000	$0
Total Estimated LTGC Revenues (rounded)	**$2,789,000**	**$2,809,000**	**$1,027,000**	**$1,128,000**	**$1,530,000**	**$1,698,000**	**$256,000**

Source: Hansford Economic Consulting

tot rev

[1] To estimate green fees, estimated rounds played is multiplied by the revenue multiplier in Table 21 and by the 'Green Fees compared to Base Case' multiplier shown in Table 19.
[2] To estimate cart rental revenue, estimated rounds played is multiplied by the revenue multiplier in Table 21 and by the 'Cart Rental Rates compared to Base Case' multiplier shown in Table 19.
[3] Snowmobile lease payments to American Golf Corporation primarily dependent on weather.

ECONOMIC SCENARIO 3 POTENTIAL ADDITIONAL REVENUES

Between 2003 and 2006 LTGC averaged 37 wedding and banquet events per year and hosted about 3,663 guests. In addition, other golfing-related events and tournaments were catered. These events were catered onsite at the clubhouse. LTGC's clubhouse is 7,000 square feet with about 2,000 square feet of indoor space to host events. In addition, there is a patio area of about 1,600 square feet. Total revenues generated during this time period were $599,000 in 2007 dollars[10]. With 2,000 square feet of space, this equates to sales of approximately $300 per square foot, which is a healthy figure comparable to other eating and drinking places[11]. Of the total event-generated revenue, approximately $256,000 was generated by non-golf events (weddings and banquets). The estimation of this amount is shown in ***Table 21*** (see footnote [2]). With 2,000 square feet of indoor space, non-golf events generate approximately $128 per square foot per year.

The presence of the golf course currently gives LTGC a competitive edge over many of the numerous wedding and banquet venues around Lake Tahoe. Competitors for weddings and banquets are currently Edgewood at Tahoe, Harvey's Casino, Kirkwood Resort, Genoa Lakes Resort, and The Chateau at Incline Golf Courses. With the loss of an operating golf course under Scenario 3, LTGC would no longer compete with these locations but compete with other municipally-run and non-profit operated wedding sites. The Thunderbird Lodge, Valhalla, and North Tahoe Conference Center (NTCC) would be good comparables under Scenario 3; however, of these comparables only NTCC provides catering. Outside catering is brought in for events at Valhalla and Thunderbird Lodge.

NTCC provided revenue information for weddings and banquets at their facility for the base data years (2003 through 2006) used in this analysis. Data was adjusted for inflation to provide an apples-to-apples comparison with LTGC. The data revealed that NTCC caters almost double the number of events of LTGC currently, serves approximately 6,300 guests annually, and, because there is 2,000 square feet of space used for these events, generates sales of about $194 per square foot. Although NTCC generates higher sales per square foot from weddings and events ($194 per square foot compared to $128 per square foot at LTGC), because it caters more events per year, revenue per event/party is lower than at LTGC. This data is presented in ***Table 23***.[12]

If LTGC could generate the same revenues as NTCC for non-golf related events it could capture an additional $131,000 under Scenario 3.

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[10] In comparison, the top 5% of daily fee golf courses generating $1.0 - $1.7 million annually reported an average of $603,000 in revenue (National Golf Foundation, 2002).
[11] US median for eating and drinking establishments is $280 per square foot (The Urban Land Institute, 2004).
[12] Thunderbird Lodge hosted 27 events in 2007, 10 of which were weddings. In addition, many dinners are hosted, seating about 120 guests per dinner.

Table 23: Estimated Potential Additional Event Facility Revenue

Lake Tahoe Golf Course Economic Feasibility Analysis
LTGC Event Facility Data

Event Facility	Estimated Annual Revenue Generated by Events [1]	Square Feet of Events Facility Space [2]	Estimated Annual Revenue per Square Foot	Number of Weddings / Private Parties [3]	Approximate Number of Guests [3]	Estimated Revenue per Party
	a	*b*	*c = a/b*	*d*	*e*	*f = a/d*
LTGC Total Event Revenues (see Table 21)	**$599,000**	2,000	**$300**			
LTGC Non-golf Event-related Revenues						
Food and Beverage - Events [2]	$212,000	2,000	$106			
Service charges, fees & other - Events	$44,000	2,000	$22			
Subtotal LTGC	**$256,000**	2,000	**$128**	37	3,663	$6,872
North Tahoe Conference Center (NTCC)						
Wedding and Event Related Revenue	$387,000	2,000	$194	63	6,267	$6,176
Potential Additional Revenue to LTGC	**$131,000**					

Source: North Tahoe Conference Center and American Golf Corporation. event comp

[1] Data period 2003 - 2006.
[3] Data period 2003 - 2006 for LTGC, and 2004 - 2006 for NTCC.
[2] Does not include patio space.

This study does not attempt to quantify potential other sources of revenue that may be generated if the clubhouse is no longer operated by a concessionaire. Public workshops held in 2007 stimulated the following revenue-generating activities suggestions from building rental:

- Multi-use recreation/visitor center (with features such as a rock climbing wall),
- An arts center, and
- An educational center (for holding community college courses, for example).

ESTIMATED EXPENSES BY ECONOMIC SCENARIO

As for revenues, a step by step description of projection of expenditures is presented here:

1. Expenses are estimated for each economic scenario using expense multipliers developed for each expense activity. Expense multipliers are shown in ***Table 24*** and are derived by dividing average annual expenditures from ***Table 10*** by unit for each line item.

2. Cost of goods expense is based on the historical percentage of these costs to merchandise and food and beverage sales. Payroll expenses are based on number of employees with the exception of instruction which will cost the concessionaire a flat fee of $750 per month for an 18-hole regulation course (this cost is assumed to decrease 50% for a reduced-play area golf course).

3. Operating expenses cost multipliers are based on a combination of rounds played, acres of manicured landscape, number of events, and number of facilities. General and administrative costs are calculated as a percentage of all payroll, operating expenses, leases and rentals, and equipment replacement. Telephone/TV/Internet providers costs are estimated on a per employee basis since they generate the majority of the variable costs associated with this expense activity.

4. American Golf Corporation pays possessory interest property taxes to the El Dorado County Assessor and insurance for facility structures. Because these costs are largely fixed costs, and are not controllable by the golf course concessionaire, they are estimated on a per facility basis.

Table 24: Expense Multipliers used to Project Expenses by Scenario

Expenses	Expenses in 2007 $s	Multiplier Basis	Unit	Cost Multiplier
Cost of Goods	**(See Table 10)**			
Merchandise	$108,000	60%	Percentage of Revenues [1]	60%
Food and Beverage - Golf	$62,500	18%	Percentage of Revenues [1]	18%
Food and Beverage - Events	$62,500	24%	Percentage of Revenues [1]	24%
Subtotal Cost of Goods	**$233,000**			
Payroll				
Golf and Facilities	$60,000	11	Pro Shop Employees	$5,454.55
Carts & Range	$37,000	7	Carts Employees	$5,285.71
Instruction	$20,000	1	Flat $750 / mo for instructors	$4,500.00
Course Maintenance	$232,000	24	Maintenance Employees	$9,666.67
Food and Beverage	$177,000	31	Event Employees	$5,709.68
General and Administrative	$102,000	76	Total Employees	$1,342.11
Subtotal Payroll	**$628,000**			
Operating Expenses (including Utilities)				
Golf	$7,000	33,163	Rounds Played	$0.21
Carts & Range	$14,000	33,163	Rounds Played	$0.42
Nike Golf Learning Center	$2,000		No longer operating	n.a.
Nike Golf Membership	$5,000		No longer operating	n.a.
Course Maintenance	$68,000	100	Acres of Manicured Landscape	$680.00
Food and Beverage	$18,000	37	Events	$483.22
General and Administrative	$87,000	10%	Percentage of Expenses [2]	10%
Facilities	$14,000	33,163	Rounds Played	$0.42
Water	$6,000	1	Facility (includes all structures)	$6,000.00
Power - irrigation [3]	$18,900	100	Acres of Manicured Landscape	$189.00
Power - structures [3]	$23,100	1	Facility (includes all structures)	$23,100.00
Phone / TV / Internet Providers	$10,000	76	Total Employees	$131.58
Solid Waste	$14,000	37	Events	$375.84
Subtotal Operating Expenses	**$287,000**			
Leases and Rentals, Equipment Replacement				
Carts	$60,000	85	Number of Carts	$705.88
Maintenance	$24,000	17	Major Pieces of Equipment [4]	$1,411.76
Kitchen	$5,000	1	Average Annual Cost	$5,000.00
Subtotal Leases and Rentals, Equipment Replacement	**$89,000**			
Taxes and Insurance				
Property Tax	$65,000	1	Facility Structures	$65,000.00
Insurance	$21,000	1	Facility Structures	$21,000.00
Other	($7,000)	1	Facility Structures	($7,000.00)
Subtotal Taxes and Insurance	**$79,000**			
Total Annual Expenses	**$1,316,000**			

Source: American Golf Corporation and Hansford Economic Consulting exp mult

[1] Percentage of maintenance and food and beverage revenues shown in Table 21.
[2] Percentage of payroll, operating expenses (excluding Nike golf learning center and membership), leases and rentals, and equipment replacement.
[3] Per LTGC, 53% of power bills are for the clubhouse, 6% for the maintenance building, and 41% for the pumphouse (golf course).
[4] Includes equipment such as mowers, aerators, sod cutters, front end loading tractor, and topdressers.

5. Maintenance costs are estimated on a per major piece of equipment basis since the costs of maintaining the course is dependent on variables including demand for play, acres of landscaping and difficulty of maintenance due to golf course layout. The number of major pieces of equipment reflects costs associated with these variables. The number of cart rentals is dependent on demand for play and is estimated to decrease under Scenario 2. Costs associated with the kitchen are likely to remain unchanged under any scenario since these costs are largely fixed costs associated with the ability to host events. There is no expenditure multiplier for the Nike Golf Learning Center and associated membership dues because this no longer operates at LTGC.

Cost multipliers are applied to the unit assumptions in ***Table 19*** to estimate total expense impacts generated by the economic scenarios. The results are shown in ***Table 25***.

Cost of goods is not estimated to change significantly between scenarios 1A and 1B, but is estimated to be reduced under Scenarios 2 and 3. Payroll expenses increase between Scenarios 1A and 1B, reflecting the need for additional employees for additional course maintenance and increased snack bar service. Payroll expenses decrease under Scenarios 2 and 3 because the number of employees decreases under these scenarios.

Operating expenses decrease slightly from $280,000 to $275,000 under Scenario 1B primarily due to decreased acreage of maintained landscape and power costs for irrigation. Operating expenses decrease to $194,000 under Scenario 2 (Low Rounds) or $210,000 under Scenario 2 (High Rounds), and are significantly less at $94,000 under Scenario 3. Leases and rentals costs change based on number of carts and major pieces of maintenance equipment needed. Taxes and insurance are fixed costs that are assumed to stay constant under each scenario.

FINANCIAL FEASIBILITY FINDINGS

Scenarios 1A and 1B are found to be financially feasible. Net revenues are estimated to decrease by less than $20,000 between the Base Case and Scenario 1B.

Scenario 2 is only found to be feasible under the most optimistic of circumstances where number of rounds attained is at the highest range of comparable courses in Tahoe and rack rates are the median of comparable Tahoe non-traditional length facilities. Although net revenues (golf course operations revenues less expenditures) are positive under Scenario 2, the concessionaire would have a negative cash flow after making rent and CIP payments to State Parks in all but the most optimistic of the range of revenues and expenditures under Scenario 2.

Net revenues are negative under Scenario 3.

Scenario 3 revenues include additional revenues that may potentially be generated by an increased number of events held at the clubhouse but does not include an analysis of increased expenses associated with increased events. The negative financial result produced under Scenario 3 would be exacerbated by additional expenses; concessionaire operations would cease at LTGC. Revenues and expenditures are compared in ***Table 26*** for each economic scenario.

A study of the economic impacts of golf in California (Zilberman & Templeton, 2000) made five points worthy of consideration in light of the results of the financial analysis presented in this section.

1. Revenues tend to increase with number of holes, length of course, and difficulty of access to an 18-hole regulation course.

   Revenues decrease under Scenario 2.

2. Facilities with a 9-hole regulation course do not generate more revenues, on average, than facilities with a 9-hole non-regulation course.

   Revenues projected under Scenario 2 may be reasonable for various non-traditional configurations (not just 9-hole).

3. The reported quality of an 18-hole regulation course is higher, on average, than the reported quality of an 18-hole non-regulation course and golf fees are slightly higher (this is also true for 9-hole courses with regards to fees but not quality).

   Green fees are lower on a per-round basis for non-traditional courses in the competitive market area. If perceived quality is lower, the course is less likely to capture as high percentage of visitors. Local golf player rounds may increase (as a percentage of total rounds) under Scenario 2.

4. Economic drivers of number of alternative facilities are per capita income, population density, and average green fees at both traditional courses and nontraditional facilities.

   These variables are likely to have greater impact under Scenario 2 since a greater share of players is likely to be local under this scenario.

5. Food and beverage and merchandise sales tend to increase with number of holes, length of course, and cost of a round at an 18-hole regulation course, and tend to be higher than at 18-hole non-regulation courses. Nine-hole regulation courses have greater merchandise sales than 9-hole non-regulation course.

   Food and beverage, and merchandise sales decrease under Scenario 2.

Table 25: Projected Expenditures by Economic Scenario

Lake Tahoe Golf Course Economic Feasibility Analysis
Projected Expenditures by Economic Scenario

Expenses	Scenario 1: 1A - Base Case	Scenario 1: 1B	Scenario 2 (Low Rounds): Low Fees	Scenario 2 (Low Rounds): High Fees	Scenario 2 (High Rounds): Low Fees	Scenario 2 (High Rounds): High Fees	Scenario 3
Cost of Goods							
Merchandise	$108,000	$108,000	$48,900	$48,900	$81,400	$81,400	$0
Food and Beverage - Golf	$62,500	$66,200	$28,300	$28,300	$47,100	$47,100	$0
Food and Beverage - Events	$62,500	$62,500	$62,500	$62,500	$62,500	$62,500	$62,500
Subtotal Cost of Goods	**$233,000**	**$236,700**	**$139,700**	**$139,700**	**$191,000**	**$191,000**	**$62,500**
Payroll							
Golf and Facilities	$60,000	$60,000	$27,100	$27,100	$45,200	$45,200	$0
Carts & Range	$37,000	$42,300	$16,700	$16,700	$27,900	$27,900	$0
Instruction [1]	$4,500	$4,500	$2,300	$2,300	$2,300	$2,300	$0
Course Maintenance	$232,000	$259,300	$191,100	$191,100	$191,100	$191,100	$0
Food and Beverage	$177,000	$177,000	$177,000	$177,000	$177,000	$177,000	$177,000
General and Administrative	$102,000	$107,100	$80,400	$80,400	$87,700	$87,700	$42,900
Subtotal Payroll	**$612,500**	**$650,200**	**$494,600**	**$494,600**	**$531,200**	**$531,200**	**$219,900**
Operating Expenses (including Utilities)							
Golf	$7,000	$7,000	$3,200	$3,200	$5,300	$5,300	$0
Carts & Range	$14,000	$14,000	$6,300	$6,300	$10,600	$10,600	$0
Nike Golf Learning Center	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Nike Golf Membership	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Course Maintenance	$68,000	$61,200	$34,000	$34,000	$34,000	$34,000	$0
Food and Beverage	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000
General and Administrative [2]	$87,000	$90,100	$66,100	$66,100	$70,800	$70,800	$28,200
Facilities	$14,000	$14,000	$6,300	$6,300	$10,600	$10,600	$0
Water	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000
Power - irrigation	$18,900	$17,000	$9,500	$9,500	$9,500	$9,500	$0
Power - structures	$23,100	$23,100	$23,100	$23,100	$23,100	$23,100	$23,100
Phone / TV / Internet Providers	$10,000	$10,500	$7,900	$7,900	$8,600	$8,600	$4,200
Solid Waste	$14,000	$14,000	$14,000	$14,000	$14,000	$14,000	$14,000
Subtotal Operating Expenses	**$280,000**	**$274,900**	**$194,400**	**$194,400**	**$210,500**	**$210,500**	**$93,500**
Leases and Rentals, Equipment Replacement							
Carts	$60,000	$60,000	$31,800	$31,800	$31,800	$31,800	$0
Maintenance	$24,000	$26,800	$19,800	$19,800	$19,800	$19,800	$0
Kitchen	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Subtotal Leases and Rentals, Equipment Replacement	**$89,000**	**$91,800**	**$56,600**	**$56,600**	**$56,600**	**$56,600**	**$5,000**
Taxes and Insurance							
Property Tax	$65,000	$65,000	$65,000	$65,000	$65,000	$65,000	$65,000
Insurance	$21,000	$21,000	$21,000	$21,000	$21,000	$21,000	$21,000
Other	($7,000)	($7,000)	($7,000)	($7,000)	($7,000)	($7,000)	($7,000)
Subtotal Taxes and Insurance	**$79,000**	**$79,000**	**$79,000**	**$79,000**	**$79,000**	**$79,000**	**$79,000**
Total Estimated Annual Expenses (rounded) [3]	**$1,294,000**	**$1,333,000**	**$964,000**	**$964,000**	**$1,068,000**	**$1,068,000**	**$460,000**

Source: American Golf Corporation and Hansford Economic Consulting

tot exp

[1] Assumes half the number of instructors under scenario 2.
[2] Percentage of payroll, operating expenses, leases and rentals, and equipment replacement.
[3] Some costs associated with winter operations borne by snowmobile operator are not included.

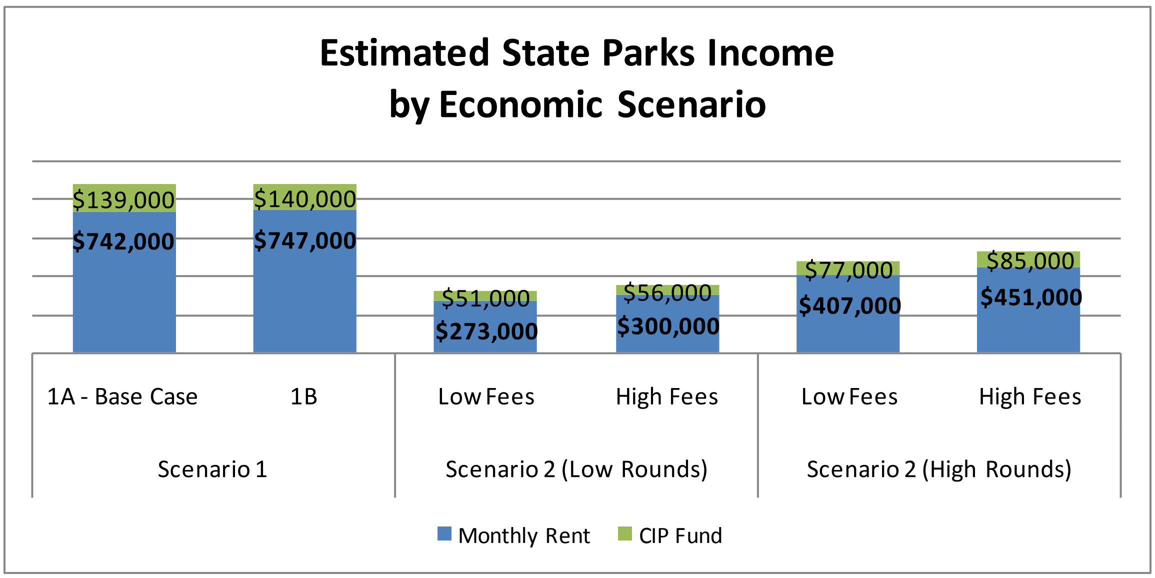
Income Impacts to State Parks and American Golf Corporation

Estimated gross receipts (revenues) determine payments to State Parks. Rent to State Parks and contributions to the CIP fund are deducted from net revenues to estimate net annual concessionaire revenues.

On an annual basis, rent payments to State Parks are estimated to increase from $742,000 to $747,000 under Scenario 1B, and decrease to $451,000 (high end of range) or $273,000 (low end of range) under Scenario 2. The CIP fund would experience a corresponding change, from $139,000 under the Base Case to $140,000 under Scenario 1B, and $85,000 (high end of range) or $51,000 (low end of range) under Scenario 2.

Estimates of revenue to State Parks under each scenario are illustrated in ***Figure 6***.

Figure 6: Estimated Income to State Parks



'Net Annual LTGC Revenues' shown in ***Table 26*** are remaining revenues to American Golf Corporation. Revenues to the concessionaire are projected to decrease from $614,000 under the Base Case to $589,000 under Scenario 1B, and be negative under Scenario 2[13] under all but the most optimistic of circumstances.

Since Scenario 3 is projected to be financially infeasible, there is no estimate of income to State Parks and American Golf Corporation resulting from closure of the golf course.

[13] Revenue estimates are based on LTGC's financial performance 2003 – 2006 which produces a more conservative estimate than using all historical data 1995 – 2006.

Table 26: Net Revenues and Payments to State Parks by Scenario

Lake Tahoe Golf Course Economic Feasibility Analysis
LTGC Revenues and Expenses by Economic Scenario

Revenue or Expense		Scenario 1: 1A - Base Case	Scenario 1: 1B	Scenario 2 (Low Rounds): Low Fees	Scenario 2 (Low Rounds): High Fees	Scenario 2 (High Rounds): Low Fees	Scenario 2 (High Rounds): High Fees	**Scenario 3**
				All Figures Rounded to nearest $1,000				
Revenues (see Table 22)								
Golf Activities	a	$1,992,000	$1,992,000	$517,000	$618,000	$862,000	$1,030,000	$0
Concessions/Other	b	$780,000	$800,000	$493,000	$493,000	$651,000	$651,000	$256,000
Snowmobile Lease Payments	c	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000	$0
Subtotal Revenues	**d = a+b+c**	**$2,789,000**	**$2,809,000**	**$1,027,000**	**$1,128,000**	**$1,530,000**	**$1,698,000**	**$256,000**
Scenario 3 Potential Event Revenues (see Table 23)	e							$131,000
Total Revenues	**f = d+e**	**$2,789,000**	**$2,809,000**	**$1,027,000**	**$1,128,000**	**$1,530,000**	**$1,698,000**	**$387,000**
Expenditures (see Table 25)								
Cost of Goods	g	$233,000	$237,000	$140,000	$140,000	$191,000	$191,000	$63,000
Payroll	h	$613,000	$650,000	$495,000	$495,000	$531,000	$531,000	$220,000
Operating Expenses (including Utilities)	i	$280,000	$275,000	$194,000	$194,000	$211,000	$211,000	$94,000
Leases and Rentals, Equipment Replacement	j	$89,000	$92,000	$57,000	$57,000	$57,000	$57,000	$5,000
Taxes and Insurance	k	$79,000	$79,000	$79,000	$79,000	$79,000	$79,000	$79,000
Total Expenditures	**l= sum(g:k)**	**$1,294,000**	**$1,333,000**	**$965,000**	**$965,000**	**$1,069,000**	**$1,069,000**	**$461,000**
Revenues less Expenditures	**m = f - l**	**$1,495,000**	**$1,476,000**	**$62,000**	**$163,000**	**$461,000**	**$629,000**	**($74,000)**
less Rent to State Parks [2]	n = f*27%	$742,000	$747,000	$273,000	$300,000	$407,000	$451,000	[1]
less Capital Improvement Fund [3]	o = f*5%	$139,000	$140,000	$51,000	$56,000	$77,000	$85,000	[1]
Subtotal Payments to State Parks [4]	**p = n+o**	**$881,000**	**$887,000**	**$324,000**	**$356,000**	**$484,000**	**$536,000**	**$0**
Net Annual LTGC Revenues [5]	**q = m - p**	**$614,000**	**$589,000**	**($262,000)**	**($193,000)**	**($23,000)**	**$93,000**	**($74,000)**

Source: Hansford Economic Consulting summ

[1] With projected negative financial returns the concessionaire would cease operations.
[2] Average annual rent as a percentage of gross revenues was 27% (see Table 6) between 2003 and 2006.
[3] Per terms of the concessionaire's contract, 5% of gross revenues are paid into a capital improvement fund.
[4] Base Case payments to State Parks does not match Table 5 ($887,339) because of the discontinuation of the Nike Learning Center and rounding of numbers.
[5] Net golf course concessionaire revenues. Net snowmobile operator revenues not evaluated.

SECTION 6: IMPACTS ON THE SOUTH LAKE TAHOE ECONOMY

An additional consideration for the river restoration project is the additional economic impacts of the different project alternatives on the South Shore economy. Additional economic impacts resulting from reconfiguration and operations changes to LTGC include visitor spending elsewhere in South Shore, sales taxes generated both at LTGC and elsewhere in South Shore, transient occupancy taxes, property taxes, and jobs and earnings associated with employment to service visitor needs.

The additional economic impacts estimated in this report are limited to additional direct spending into the local economy. Other multiplier effects, often referred to as 'indirect' and 'induced' effects[14] (or ripple effects) of travel spending on the South Shore economy are not estimated in this report because this would require extensive additional modeling and analysis. In addition, other value-added impacts such as LTGC's contribution to real estate values of surrounding properties, for example, are not estimated.

The total number of visitors generated by LTGC ranges from 3,663 guests (Base Case number of guests for events only) under Scenario 3 to 22,219 visitors under Scenario 1B. *(Note: Scenario 3 was determined to be infeasible in* ***Section 5****; Scenario 3 in this section portrays the contribution of non-golfer visitors at LTGC currently).* Spending generated by these visitors is estimated to range from $0.9 million under Scenario 3 (excludes golfers) to $7.5 million under Scenario 1B. Visitor spending is estimated to be spread fairly evenly between LTGC, lodging, retail and food and beverage, and less on other recreation.

Total employment generated by LTGC visitors is estimated to range from 44 under Scenario 3 to 172 under Scenario 1B, and associated earnings by employees are estimated to range from $493,000 under Scenario 3 to $2.7 million under Scenario 1B. These model results are summarized in ***Table 27***.

Estimated taxes generated directly by LTGC include sales tax on merchandise and food and beverage sales, and property tax. These taxes range from $82,000 under Scenario 3 to $120,000 under Scenario 1B. Taxes generated elsewhere within the South Shore economy include transient occupancy taxes and sales tax, estimated from $128,000 under Scenario 3 to $495,000 under Scenario 1B. These model results are summarized in ***Table 28***.

[14] Indirect effects refer to the intermediate inputs used to produce the final product or service (that are manufactured in South Shore). Induced effects refer to employee-purchased goods and services attributable to direct and indirect impacts. For example, employees will buy groceries in South Shore using earnings generated by visitors.

Table 27: Visitation, Spending, Earnings and Jobs by Scenario

Lake Tahoe Golf Course Economic Feasibility Analysis
Estimates of Visitation, Spending, Earnings, and Employment Generated by LTGC Visitors

Item	Scenario 1		Scenario 2		Scenario 3
	1A - Base Case	1B	Low Rounds	High Rounds	
Total Estimated Visitation and Spending	Table D-2	Table D-8	Table D-14	Table D-20	Table D-25
Estimated Number of LTGC-generated Visitors	8,942	8,942	5,048	7,192	1,832
Estimated Spending by LTGC-generated Visitors [1]	$7,476,000	$7,476,000	$3,881,000	$5,860,000	$912,000
Estimated Visitor Spending by Category	Table D-3	Table D-9	Table D-15	Table D-21	Table D-26
LTGC	$1,907,920	$1,921,588	$699,833	$1,052,103	$171,520
Lodging	$1,569,960	$1,569,960	$815,010	$1,230,600	$191,520
Other Recreation	$783,440	$769,772	$697,327	$1,057,497	$156,800
Retail	$1,644,720	$1,644,720	$853,820	$1,289,200	$200,640
Food & Beverage	$1,569,960	$1,569,960	$815,010	$1,230,600	$191,520
Total Visitor Spending Estimate	**$7,476,000**	**$7,476,000**	**$3,881,000**	**$5,860,000**	**$912,000**
Estimated Earnings and Employment	Table D-4	Table D-10	Table D-16	Table D-22	Table D-27
Estimated Direct Earnings	$2,666,133	$2,698,792	$1,667,886	$2,297,161	$493,006
Estimated Employment (Jobs)	168	172	113	139	44

Source: Hansford Economic Consulting visitor summ

[1] Estimates are based on the mid-point of a potential range of spending.

Table 28: Sales Tax, Property Tax and Transient Occupancy Taxes by Scenario

Lake Tahoe Golf Course Economic Feasibility Analysis
Estimates of Taxes Directly Generated by LTGC Visitors

Item	Scenario 1		Scenario 2		Scenario 3
	1A - Base Case	1B	Low Rounds	High Rounds	
Estimated Taxes Generated at LTGC	Table D-5	Table D-11	Table D-17	Table D-23	Table D-28
Sales Tax	$53,000	$55,000	$33,000	$45,000	$17,000
Property Tax	$65,000	$65,000	$65,000	$65,000	$65,000
Subtotal LTGC Estimated Taxes	**$118,000**	**$120,000**	**$98,000**	**$110,000**	**$82,000**
Estimated Taxes Generated elsewhere in South Shore	Table D-6	Table D-12	Table D-18	Table D-24	Table D-29
Transient Occupancy Tax	$157,000	$157,000	$82,000	$123,000	$19,000
Sales Tax	$218,000	$218,000	$114,000	$171,000	$27,000
Subtotal Taxes Generated Elsewhere in South Shore	**$375,000**	**$375,000**	**$196,000**	**$294,000**	**$46,000**
Total Estimated Taxes	**$493,000**	**$495,000**	**$294,000**	**$404,000**	**$128,000**

Source: Hansford Economic Consulting

tax sum

IMPACT ON SOUTH SHORE ECONOMY FINDINGS

- The economic impact of decommissioning LTGC and no longer providing any public services at Lake Valley SRA is approximately $7.5 million in direct visitor spending, and $0.5 million in tax, for a total of $8.0 million. A corresponding loss of about 168 full and part-time jobs in the area currently supported by LTGC visitors is estimated. The loss in earnings associated with these jobs is approximately $2.7 million, which is money no longer re-circulated within the local economy.

- The impact of reducing LTGC to a reduced-play area course is estimated to be between $1.6 million and $3.6 million in visitor spending, and between $89,000 and $199,000 in tax, for a total of $1.7 to $3.8 million. Associated job loss is estimated to be between 29 and 55 jobs with a corresponding loss of $0.4 to $1.0 million in earnings.

- Reconfiguration of the 18-hole regulation course at LTGC is not estimated to affect total visitor spending or total number of jobs in South Shore (outside LTGC); however, it is estimated to increase sales taxes by $2,000.

- The contribution made by non-golfer visitors to LTGC is estimated at $912,000 in direct spending, $128,000 in tax, 44 additional jobs in the economy, and $493,000 in earnings.

DETAILED MODEL ANALYSIS PRESENTED IN APPENDIX D

Estimates of impacts to the South Shore economy are provided in ***Appendix D*** for each economic scenario. Note that economic scenario 2 does not model low fees and high fees as in the other sections of this report because fees do not impact the South Shore economy analysis. The text below describes the analysis methodology and results for the Base Case, and directs the reader to the appropriate tables in ***Appendix D*** for results of modeling economic scenarios 1B, 2 (low rounds and high rounds), and 3.

Number of LTGC Visitor Golfers

Of the total annual average of 33,163 rounds played, approximately 22,219 rounds are made by visitors, and 10,944 rounds are made by locals. Some rounds will be played by visitors on day trips, while others will be made by vacationers or weekend visitors. See ***Appendix Tables D-1, D-7, D-13, and D-19***.

Total visitor rounds are multiplied by percent of rounds played by visitors coming to South Shore specifically to play golf at LTGC (as opposed to playing a round for pleasure while on vacation for some other reason) as a proxy for the number of LTGC golfers visiting South Shore. To estimate the number of overnight visitors the study estimated that 32% of golf rounds are made by visitors whose primary purpose is to play golf at LTGC on their trip.[15]

The total number of annual golf visitors whose primary purpose during their trip is to play golf at LTGC is estimated at 7,110. See ***Appendix Tables D-2, D-8, D-14, D-20, and D-25***.

LTGC Visitor Spending

Using two estimation methodologies, total estimated visitor spending by LTGC golfers may range between $6.1 and $8.8 million under the Base Case. This estimate only includes additional spending in South Shore; spending by local golfers is not included since they already spend their dollars in South Shore. Spending by second homeowners is included in total visitor spending. Given that the accuracy of the two methods used to estimate this range is uncertain, the study uses the mid-point of the range for purposes of this analysis. The mid-point is $7.5 million under the Base Case and is assumed to include spending by visitors coming to LTGC for events during the winter.

Travel-related spending was estimated to total $630 million in El Dorado County in 2005 (Dean Runyan and Associates, 2007). It has been estimated (RRC Associates, 2006) that South Lake Tahoe captures approximately 70% of travel-related spending in El Dorado County. Using this estimate and inflating to 2007 dollars, approximately $474 million is spent by travelers in the Tahoe portion of El Dorado County. See ***Appendix Tables D-3, D-9, D-15, D-21, and D-26***.

As visitor spending by categories lodging, recreation, retail, and food and beverage is likely to be different in the Tahoe portion of the County, visitor spending by category is adjusted using estimates prepared by Dean Runyan Associates in 2003 for North Lake Tahoe. The contribution of LTGC golfers toward this spending is $7.5 million; by applying the adjusted percentages to the estimated total spending of $7.5 million, and adjusting the recreation category to account for spending on golf at LTGC, the estimate of spending by LTGC visitors is:

- $1.9 million on golf at LTGC,
- $0.8 million on other recreation,
- $1.6 million on lodging,
- $1.6 million on retail goods, and
- $1.6 million on food and beverage.

[15] It has been estimated (SRI International, 2002) that 32% of golf trips are planned with the sole intent of playing golf.

LTGC Generated Earnings and Jobs in South Shore

Based on LTGC visitor spending in South Shore, LTGC visitor golfers are estimated to generate 168 full and part-time jobs, 76 of which at LTGC and 92 elsewhere in the local economy. See ***Appendix Tables D-4, D-10, D-16, D-22, and D-27***.

Earnings generated by visitor golfers to LTGC are estimated at $2.6 million and are comprised of $0.6 million in LTGC payroll and earnings and $2.6 million elsewhere in the local economy, using the El Dorado County average of $22,296 earnings per job. Earnings per job are $8,065 per LTGC job, and $22,296 per job elsewhere in South Shore. The discrepancy in earnings per job is attributable to the many part-time jobs at the golf course because it provides seasonal occupation.

This analysis assumes that local golfers would not generate additional earnings and employees because they would golf at another local course in South Shore if they did not golf at LTGC.

Estimated Taxes Generated by LTGC

Sales taxes are charged for food and beverage consumed at place of sale and all merchandise. Based on data provided by the golf course concessionaire, approximately 85% of food and beverage sales are taxable. Total estimated sales taxes generated are $53,000. Property taxes are paid by the golf course concessionaire for possessory interest of the property. Annual property tax payments are $65,000. LTGC generates a total of approximately $118,000 in property and sales taxes. See ***Appendix Tables D-5, D-11, D-17, D-23, and D-28***.

In addition to taxes generated by economic activity at LTGC, visitors generate additional taxes elsewhere in South Shore. Based on current tax rates additional taxes include $157,000 of transient occupancy tax, $115,000 in sales tax from retail sales (which includes other commodities such as gasoline), and $103,000 in sales tax from food and beverage sales. See ***Appendix Tables D-6, D-12, D-18, D-24, and D-29***.

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APPENDIX A

LAKE TAHOE GOLF COURSE HISTORIC FINANCIAL PERFORMANCE

SUPPORT TABLES

Table A-1
Lake Tahoe Golf Course Economic Feasibility Analysis
Monthly LTGC Gross Revenues and Rent Paid to State Parks by Fiscal Year

Date	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Gross Revenues													
July	$520,518	$535,404	$581,691	$643,078	$688,313	$696,942	$708,653	$644,595	$643,590	$682,254	$680,663	$663,068	$643,027
August	$471,482	$552,543	$587,434	$651,648	$636,449	$630,473	$653,279	$614,502	$623,793	$626,327	$613,967	$584,236	$575,784
September	$377,756	$415,831	$382,510	$412,146	$433,174	$453,055	$473,795	$415,368	$466,187	$449,594	$450,766	$427,476	$428,643
October	$142,822	$215,853	$201,660	$193,591	$200,199	$222,585	$200,053	$213,900	$189,091	$196,272	$149,123	$175,935	$146,295
November	$5,720	$3,739	$12,305	$8,708	$2,926	$12,931	$2,815	$2,789	$19,993	$11,952	$8,109	$10,054	$11,017
December	$66,567	$33,520	$8,771	$43,032	$37,194	$8,691	$8,087	$5,279	$15,321	$16,303	$21,009	$16,140	$26,523
January	$21,940	$3,783	$9,983	$31,824	$20,710	$720	$33,690	$90,360	$4,991	$9,661	$15,344	$9,576	$9,937
February	$34,875	$20,333	$12,389	$17,964	$27,230	($256)	$35,318	$31,793	$6,533	$20,041	$13,162	$9,918	$6,817
March	$19,273	$27,498	$23,676	$39,290	$27,007	$11,214	$32,844	$5,880	$12,054	$11,141	$16,981	$14,987	$5,186
April	$74,260	$68,524	$121,362	$33,818	$22,346	$75,836	$16,536	$17,042	$9,004	$19,921	$8,055	$5,263	$42,793
May	$167,036	$246,567	$265,193	$174,450	$216,823	$225,857	$213,395	$209,030	$202,947	$223,437	$120,195	$176,341	$165,741
June	$334,946	$383,998	$399,370	$440,620	$463,317	$498,259	$433,362	$444,434	$497,240	$432,193	$411,191	$441,515	$376,244
Total Gross Revenues	**$2,237,195**	**$2,507,594**	**$2,606,342**	**$2,690,169**	**$2,775,688**	**$2,836,307**	**$2,811,827**	**$2,694,971**	**$2,690,744**	**$2,699,096**	**$2,508,565**	**$2,534,510**	**$2,438,007**
Rent Payments to State Parks [1]													
July	$93,693	$133,530	$145,253	$162,083	$172,900	$175,614	$176,055	$160,269	$159,843	$169,905	$166,741	$160,683	$157,150
August	$84,867	$136,930	$146,472	$165,178	$163,126	$158,223	$162,670	$153,521	$153,381	$156,085	$153,301	$142,260	$140,253
September	$67,996	$100,521	$93,595	$101,967	$104,848	$110,234	$111,297	$101,606	$110,377	$109,004	$107,002	$101,062	$104,826
October	$25,708	$49,408	$48,286	$45,289	$46,669	$53,249	$50,720	$50,345	$43,933	$49,372	$35,058	$39,610	$33,437
November	$3,570	$3,570	$3,570	$3,750	$4,805	$3,984	$3,984	$3,984	$3,984	$3,984	$4,538	$4,538	$4,538
December	$11,982	$3,570	$3,570	$4,347	$3,637	$3,984	$3,984	$3,984	$3,984	$3,984	$4,538	$4,538	$4,538
January	$3,949	$3,570	$3,570	$3,570	$3,570	$3,984	$3,984	$9,120	$43,929	$3,984	$4,538	$4,538	$4,538
February	$6,278	$3,570	$3,570	$3,570	$3,570	$3,984	$3,984	$3,984	$59,963	$3,984	$4,538	$0	$4,538
March	$3,570	$5,753	$5,307	$6,653	$4,527	$3,984	$6,114	$3,984	$3,984	$3,984	$4,538	$4,538	$4,538
April	$17,850	$18,649	$31,482	$17,850	$19,921	$19,921	$19,921	$19,921	$19,921	$57,515	$22,690	$22,690	$22,690
May	$30,067	$61,812	$66,589	$43,820	$49,219	$54,747	$49,633	$50,448	$48,661	$56,019	$29,557	$43,042	$40,320
June	$60,290	$95,912	$100,233	$109,899	$113,225	$120,618	$107,027	$109,949	$121,515	$105,405	$97,636	$107,001	$92,265
Total Rent Payments	**$409,820**	**$616,796**	**$651,496**	**$667,977**	**$690,016**	**$712,525**	**$699,373**	**$671,115**	**$773,473**	**$723,224**	**$634,674**	**$634,500**	**$613,632**

Source: California State Parks revs

[1] Rent excludes payments to the Capital Improvement Fund (5% of gross receipts).

Table A-2
Lake Tahoe Golf Course Economic Feasibility Analysis
Monthly LTGC Gross Revenues and Rent Paid to State Parks by Fiscal Year in 2007 Dollars

Date	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Gross Revenues in 2007 Dollars [1]													
July	$731,315	$742,480	$793,144	$860,116	$902,801	$899,038	$888,219	$779,573	$748,951	$774,873	$752,877	$713,615	$667,317
August	$662,421	$766,248	$800,974	$871,580	$834,775	$813,294	$818,814	$743,178	$725,914	$711,354	$679,105	$628,773	$597,533
September	$530,738	$576,661	$521,557	$551,246	$568,157	$584,429	$593,851	$502,345	$542,506	$510,629	$498,590	$460,063	$444,835
October	$200,661	$299,338	$274,966	$258,928	$262,583	$287,129	$250,744	$258,691	$220,047	$222,917	$164,944	$189,347	$151,821
November	$8,037	$5,185	$16,778	$11,647	$3,838	$16,681	$3,528	$3,373	$23,266	$13,575	$8,969	$10,820	$11,433
December	$93,525	$46,485	$11,959	$57,556	$48,784	$11,211	$10,136	$6,384	$17,829	$18,516	$23,237	$17,371	$27,525
January	$30,425	$5,159	$13,352	$41,740	$26,715	$902	$40,744	$105,153	$5,668	$10,686	$16,514	$9,938	$9,937
February	$48,364	$27,724	$16,570	$23,562	$35,126	($321)	$42,714	$36,998	$7,420	$22,167	$14,165	$10,293	$6,817
March	$26,727	$37,494	$31,667	$51,533	$34,838	$14,056	$39,722	$6,842	$13,690	$12,323	$18,275	$15,553	$5,186
April	$102,981	$93,434	$162,322	$44,356	$28,826	$95,052	$19,998	$19,832	$10,227	$22,034	$8,669	$5,462	$42,793
May	$231,641	$336,197	$354,696	$228,810	$279,696	$283,087	$258,079	$243,250	$230,498	$247,142	$129,358	$183,002	$165,741
June	$464,492	$523,587	$534,157	$577,923	$597,667	$624,513	$524,108	$517,192	$564,743	$478,045	$442,536	$458,193	$376,244
Total Gross Revenues	**$3,131,326**	**$3,459,992**	**$3,532,142**	**$3,578,997**	**$3,623,806**	**$3,629,071**	**$3,490,658**	**$3,222,811**	**$3,110,758**	**$3,044,260**	**$2,757,240**	**$2,702,429**	**$2,507,183**
Rent Payments in 2007 Dollars [1]													
July	$131,637	$185,175	$198,054	$216,786	$226,778	$226,538	$220,665	$193,829	$186,010	$192,970	$184,431	$172,932	$163,087
August	$119,236	$189,890	$199,717	$220,925	$213,958	$204,104	$203,890	$185,668	$178,491	$177,274	$169,565	$153,104	$145,551
September	$95,533	$139,400	$127,618	$136,381	$137,520	$142,199	$139,498	$122,882	$128,447	$123,802	$118,354	$108,767	$108,786
October	$36,119	$68,518	$65,839	$60,574	$61,211	$68,690	$63,572	$60,887	$51,125	$56,074	$38,778	$42,629	$34,700
November	$5,016	$4,951	$4,868	$5,016	$6,302	$5,139	$4,994	$4,818	$4,636	$4,525	$5,019	$4,884	$4,709
December	$16,835	$4,951	$4,868	$5,814	$4,770	$5,139	$4,994	$4,818	$4,636	$4,525	$5,019	$4,884	$4,709
January	$5,477	$4,868	$4,775	$4,682	$4,605	$4,994	$4,818	$10,613	$49,893	$4,407	$4,884	$4,709	$4,538
February	$8,705	$4,868	$4,775	$4,682	$4,605	$4,994	$4,818	$4,636	$68,103	$4,407	$4,884	$0	$4,538
March	$4,951	$7,844	$7,098	$8,726	$5,839	$4,994	$7,395	$4,636	$4,525	$4,407	$4,884	$4,709	$4,538
April	$24,754	$25,429	$42,107	$23,412	$25,698	$24,969	$24,092	$23,182	$22,625	$63,617	$24,420	$23,547	$22,690
May	$41,695	$84,282	$89,062	$57,475	$63,491	$68,619	$60,026	$58,707	$55,266	$61,962	$31,810	$44,668	$40,320
June	$83,609	$130,778	$134,062	$144,145	$146,058	$151,181	$129,439	$127,949	$138,011	$116,587	$105,079	$111,043	$92,265
Total Rent Payments	**$573,565**	**$850,952**	**$882,842**	**$888,620**	**$900,836**	**$911,558**	**$868,200**	**$802,626**	**$891,768**	**$814,557**	**$697,127**	**$675,877**	**$630,432**

Source: California State Parks rents

[1] Adjusted for inflation using the California Consumer Price Index, Urban Wage Earners and Clerical Workers, All Items, Bureau of Labor Statistics.

Table A-3
Lake Tahoe Golf Course Economic Feasibility Analysis
Monthly LTGC Gross Revenues and Rent Paid to State Parks by Calendar Year

Date	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Percent of Annual Revenue
Gross Revenues													
January	$21,940	$3,783	$9,983	$31,824	$20,710	$720	$33,690	$90,360	$4,991	$9,661	$15,344	$9,576	0.8%
February	$34,875	$20,333	$12,389	$17,964	$27,230	($256)	$35,318	$31,793	$6,533	$20,041	$13,162	$9,918	0.7%
March	$19,273	$27,498	$23,676	$39,290	$27,007	$11,214	$32,844	$5,880	$12,054	$11,141	$16,981	$14,987	0.8%
April	$74,260	$68,524	$121,362	$33,818	$22,346	$75,836	$16,536	$17,042	$9,004	$19,921	$8,055	$5,263	1.5%
May	$167,036	$246,567	$265,193	$174,450	$216,823	$225,857	$213,395	$209,030	$202,947	$223,437	$120,195	$176,341	7.7%
June	$334,946	$383,998	$399,370	$440,620	$463,317	$498,259	$433,362	$444,434	$497,240	$432,193	$411,191	$441,515	16.3%
July	$535,404	$581,691	$643,078	$688,313	$696,942	$708,653	$644,595	$643,590	$682,254	$680,663	$663,068	$643,027	24.5%
August	$552,543	$587,434	$651,648	$636,449	$630,473	$653,279	$614,502	$623,793	$626,327	$613,967	$584,236	$575,784	23.1%
September	$415,831	$382,510	$412,146	$433,174	$453,055	$473,795	$415,368	$466,187	$449,594	$450,766	$427,476	$428,643	16.4%
October	$215,853	$201,660	$193,591	$200,199	$222,585	$200,053	$213,900	$189,091	$196,272	$149,123	$175,935	$146,295	7.2%
November	$3,739	$12,305	$8,708	$2,926	$12,931	$2,815	$2,789	$19,993	$11,952	$8,109	$10,054	$11,017	0.3%
December	$33,520	$8,771	$43,032	$37,194	$8,691	$8,087	$5,279	$15,321	$16,303	$21,009	$16,140	$26,523	0.8%
Total Gross Revenues	**$2,409,221**	**$2,525,072**	**$2,784,177**	**$2,736,221**	**$2,802,109**	**$2,858,313**	**$2,661,577**	**$2,756,513**	**$2,715,472**	**$2,640,030**	**$2,461,838**	**$2,488,888**	**100.0%**
Rent Payments to State Parks [1]													
January	$3,949	$3,570	$3,570	$3,570	$3,570	$3,984	$3,984	$9,120	$43,929	$3,984	$4,538	$4,538	1.1%
February	$6,278	$3,570	$3,570	$3,570	$3,570	$3,984	$3,984	$3,984	$59,963	$3,984	$4,538	$0	1.3%
March	$3,570	$5,753	$5,307	$6,653	$4,527	$3,984	$6,114	$3,984	$3,984	$3,984	$4,538	$4,538	0.7%
April	$17,850	$18,649	$31,482	$17,850	$19,921	$19,921	$19,921	$19,921	$19,921	$57,515	$22,690	$22,690	3.6%
May	$30,067	$61,812	$66,589	$43,820	$49,219	$54,747	$49,633	$50,448	$48,661	$56,019	$29,557	$43,042	7.3%
June	$60,290	$95,912	$100,233	$109,899	$113,225	$120,618	$107,027	$109,949	$121,515	$105,405	$97,636	$107,001	15.5%
July	$133,530	$145,253	$162,083	$172,900	$175,614	$176,055	$160,269	$159,843	$169,905	$166,741	$160,683	$157,150	24.1%
August	$136,930	$146,472	$165,178	$163,126	$158,223	$162,670	$153,521	$153,381	$156,085	$153,301	$142,260	$140,253	22.8%
September	$100,521	$93,595	$101,967	$104,848	$110,234	$111,297	$101,606	$110,377	$109,004	$107,002	$101,062	$104,826	15.6%
October	$49,408	$48,286	$45,289	$46,669	$53,249	$50,720	$50,345	$43,933	$49,372	$35,058	$39,610	$33,437	6.8%
November	$3,570	$3,570	$3,750	$4,805	$3,984	$3,984	$3,984	$3,984	$3,984	$4,538	$4,538	$4,538	0.6%
December	$3,570	$3,570	$4,347	$3,637	$3,984	$3,984	$3,984	$3,984	$3,984	$4,538	$4,538	$4,538	0.6%
Total Rent Payments to State Parks	**$549,533**	**$630,013**	**$693,364**	**$681,347**	**$699,320**	**$715,947**	**$664,372**	**$672,907**	**$790,306**	**$702,068**	**$616,188**	**$626,552**	**100.0%**

Source: California State Parks

finances

[1] Rent excludes payments to the Capital Improvement Fund (5% of gross receipts).

Table A-4
Lake Tahoe Golf Course Economic Feasibility Analysis
Monthly LTGC Gross Revenues and Rent Paid to State Parks by Calendar Year in 2007 Dollars

Date	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Percent of Annual Revenue
Gross Revenues in 2007 Dollars [1]													
January	$30,425	$5,159	$13,352	$41,740	$26,715	$902	$40,744	$105,153	$5,668	$10,686	$16,514	$9,938	0.8%
February	$48,364	$27,724	$16,570	$23,562	$35,126	($321)	$42,714	$36,998	$7,420	$22,167	$14,165	$10,293	0.7%
March	$26,727	$37,494	$31,667	$51,533	$34,838	$14,056	$39,722	$6,842	$13,690	$12,323	$18,275	$15,553	0.8%
April	$102,981	$93,434	$162,322	$44,356	$28,826	$95,052	$19,998	$19,832	$10,227	$22,034	$8,669	$5,462	1.6%
May	$231,641	$336,197	$354,696	$228,810	$279,696	$283,087	$258,079	$243,250	$230,498	$247,142	$129,358	$183,002	7.7%
June	$464,492	$523,587	$534,157	$577,923	$597,667	$624,513	$524,108	$517,192	$564,743	$478,045	$442,536	$458,193	16.2%
July	$742,480	$793,144	$860,116	$902,801	$899,038	$888,219	$779,573	$748,951	$774,873	$752,877	$713,615	$667,317	24.4%
August	$766,248	$800,974	$871,580	$834,775	$813,294	$818,814	$743,178	$725,914	$711,354	$679,105	$628,773	$597,533	23.1%
September	$576,661	$521,557	$551,246	$568,157	$584,429	$593,851	$502,345	$542,506	$510,629	$498,590	$460,063	$444,835	16.3%
October	$299,338	$274,966	$258,928	$262,583	$287,129	$250,744	$258,691	$220,047	$222,917	$164,944	$189,347	$151,821	7.3%
November	$5,185	$16,778	$11,647	$3,838	$16,681	$3,528	$3,373	$23,266	$13,575	$8,969	$10,820	$11,433	0.3%
December	$46,485	$11,959	$57,556	$48,784	$11,211	$10,136	$6,384	$17,829	$18,516	$23,237	$17,371	$27,525	0.8%
Total Gross Revenues	**$3,341,027**	**$3,442,972**	**$3,723,836**	**$3,588,863**	**$3,614,650**	**$3,582,583**	**$3,218,909**	**$3,207,780**	**$3,084,108**	**$2,920,120**	**$2,649,506**	**$2,582,905**	**100.0%**
Payments to State Parks in 2007 Dollars [1]													
January	$5,477	$4,868	$4,775	$4,682	$4,605	$4,994	$4,818	$10,613	$49,893	$4,407	$4,884	$4,709	1.1%
February	$8,705	$4,868	$4,775	$4,682	$4,605	$4,994	$4,818	$4,636	$68,103	$4,407	$4,884	$0	1.2%
March	$4,951	$7,844	$7,098	$8,726	$5,839	$4,994	$7,395	$4,636	$4,525	$4,407	$4,884	$4,709	0.7%
April	$24,754	$25,429	$42,107	$23,412	$25,698	$24,969	$24,092	$23,182	$22,625	$63,617	$24,420	$23,547	3.5%
May	$41,695	$84,282	$89,062	$57,475	$63,491	$68,619	$60,026	$58,707	$55,266	$61,962	$31,810	$44,668	7.3%
June	$83,609	$130,778	$134,062	$144,145	$146,058	$151,181	$129,439	$127,949	$138,011	$116,587	$105,079	$111,043	15.5%
July	$185,175	$198,054	$216,786	$226,778	$226,538	$220,665	$193,829	$186,010	$192,970	$184,431	$172,932	$163,087	24.1%
August	$189,890	$199,717	$220,925	$213,958	$204,104	$203,890	$185,668	$178,491	$177,274	$169,565	$153,104	$145,551	22.8%
September	$139,400	$127,618	$136,381	$137,520	$142,199	$139,498	$122,882	$128,447	$123,802	$118,354	$108,767	$108,786	15.6%
October	$68,518	$65,839	$60,574	$61,211	$68,690	$63,572	$60,887	$51,125	$56,074	$38,778	$42,629	$34,700	6.9%
November	$4,951	$4,868	$5,016	$6,302	$5,139	$4,994	$4,818	$4,636	$4,525	$5,019	$4,884	$4,709	0.6%
December	$4,951	$4,868	$5,814	$4,770	$5,139	$4,994	$4,818	$4,636	$4,525	$5,019	$4,884	$4,709	0.6%
Total Rent Payments to State Parks	**$762,074**	**$859,032**	**$927,375**	**$893,664**	**$902,105**	**$897,362**	**$803,490**	**$783,068**	**$897,593**	**$776,553**	**$663,160**	**$650,219**	**100.0%**

Source: California State Parks

finances 07

[1] Adjusted for inflation using the California Consumer Price Index, Urban Wage Earners and Clerical Workers, All Items, Bureau of Labor Statistics.

APPENDIX B

2007 LTGC STATE PARKS SURVEY

QUESTIONNAIRE AND INTERVIEWEE COMMENTS

Please help us with a few questions about your golf play.

This will be used to help understand golfing use of LTGC as CA State Parks considers potential changes in the course to allow for restoration of the Upper Truckee River.

Thank you.

1. In what community/town/city do you live? ___________________________

2. How many times per year do you play at LTGC? ___________________________

3. How many total times per year do play golf? ___________________________

4. Why do you choose LTGC? (check as many as apply: rate 1to x))

- Scenic beauty __________
- Full 18-hole regulation course __________
- Course difficulty __________
- Price __________
- Convenient location __________
- Other? (please note reason) ____

5. If the course changed, would you continue playing (circle yes/no/not sure for each)

-- 18 holes, with some dispersed across the river to west (Y N not sure)

-- Compact 18-hole executive course on clubhouse side of river (Y N not sure)

- 9-hole course on clubhouse side of river (Y N not sure)

6. Have you previously filled out this questionnaire? Y / N

Additional comments
____
____

If you would like to be added to the Upper Truckee Restoration Project mailing list, please indicate address below (email preferred)
____

Table B-1
Lake Tahoe Golf Course Economic Feasibility Analysis
Comments and Suggestions made by Survey Respondents regarding Course Reconfiguration and River Restoration

River Restoration Alternatives	Comments	Suggestions
Keep 18-holes (full course)	Will support modified 18-hole course so long as play is not disrupted	Construct new holes to west of river prior to restoration efforts
	Will not play on the 18 holes on west side if poor design	
	Keep a full course	Help the Lake by taking out Tahoe Keys
	Don't destroy the natural beauty of this course	
	Not in favor of modifying course for stream environment	Divert river to sediment pond at the old Elks Club property
	Leave the course, fix the river banks	
	Ecological improvements should be sufficient to allow existing course to remain	
Executive course (shorter length)	Better as a regulation course, would play less as other	
	Already have an executive course at Tahoe Paradise. Executive courses are of limited appeal.	
No golf course	Doesn't matter; the river will find its own way	
	The land needs protecting	
	Protecting the lake is more important than playing golf	

Table B-2
Lake Tahoe Golf Course Economic Feasibility Analysis
Grouped Comments and Suggestions made by Survey Respondents

Comment Groupings	Comments	Suggestions
Golf Course and Facilities	Well managed by friendly staff Beautiful views and a great course Club house looks like a barn from Hwy 50	Needs more water hazards Put the Golf Course Channel in bar area
Price	Only semi-affordable 18-hole course in SLT Golf fees too high during poor spring conditions and in the fall Only affordable course at South Shore Only affordable champion course for the working man Fair price, the only 18-hole course for South Lake unless can afford Edgewood	Lower rates for locals Have a 9-hole rate
Reasons for Playing LTGC	Not much other choice Work in SLT or has a family member who does Tournaments and Company events It's "where the locals play"	
Economic and Other	Brings in huge money to South Shore. Used by so many Californians. A regulation 18-hole course is a major attraction to this area. SLT cannot afford to lose $ to competitive areas for gas, food, rent etc (would happen if golf course goes to 9 holes) The only course of play at Tahoe for a REAL game of golf. Otherwise go to Carson City, Genoa, or Carson Valley, hinder Lake Tahoe economy As a year-round resort destination - needs a public full size 18-hole course. Already have 9-hole and 18-hole executive courses Some locals will sell and move if the course goes away	Winter visitors who are golfers can play in the Carson Valley, as the locals do

APPENDIX C

DESCRIPTIONS OF COMPETITOR COURSES FOR

SCENARIOS 1A AND 1B

TAHOE PARADISE

Drive Time from South Lake Tahoe: 8 minutes (2 minutes from LTGC)
Course Length: 4,028 yards

Although Tahoe Paradise is an executive course rather than a regulation course, it is still considered a competitor since it is an 18-hole course in a similar setting and it is the closest to LTGC. The 4,000 yard course is considered an ideal place for beginners to learn the game of golf. The course offers challenging holes bordered by pines and scenic views of Mt. Tallac. Visitors can enjoy a fun round of golf and have lunch in the snack bar. Tahoe Paradise is known locally as the place to hone your game.

EDGEWOOD TAHOE

Drive Time from South Lake Tahoe: 15 minutes
Course Length: 7,532 yards

Set along the shore of Lake Tahoe, Edgewood Tahoe is arguably one of the most scenic golf courses in the Tahoe region. Designed by George Fazio and opened in 1968, Edgewood is rated by Golf Digest Magazine as one of "America's Top Golf Courses". A challenging but fair test of golf for all ability levels, a choice of four sets of tees gives all golfers a course suitable to their game.

Despite Edgewood's relative youth, the golf course has played host to a variety of major golf events. In 1980, the United States Golf Association would host an event in the state of Nevada for the first time. The 55th annual US Public Links Championship came to Lake Tahoe and in 1985 the USGA returned to Edgewood again for the US Senior Open Championship. Most recently, Edgewood has been the annual home of the Celebrity Golf Championship. This fun-filled event features some of the biggest names in sports and television and attracts spectators from all over the country.

GENOA LAKES RESORT (THE LAKES COURSE AND RESORT COURSE)

Drive Time from South Lake Tahoe: 37 minutes
Course Lengths: 7,263 yards (Lakes Course), and
7,358 yards (Resort Course)

The Golf Club at Genoa Lakes was designed by John Harbottle and Peter Jacobsen and opened in 1993. Two miles north, John Harbottle collaborated with Johnny Miller on the design of Sierra

Nevada Golf Ranch which opened in 1998. In 2005, Mario Antioci, the owner of Genoa Lakes Golf Club, joined forces with Monterey Development Group to combine Genoa Lakes Golf Club and Sierra Nevada Golf Ranch, now known as the Genoa Lakes Golf Resort. These two courses are marketed as part of the 'Divine 9'[1], a set of 9 golf courses located in and around the Carson Valley.

Built at the base of the Sierra Nevada Mountain Range, the Lakes Course is a par 72 golf course set amidst a residential neighborhood. The course, designed by Peter Jacobsen and John Harbottle, spans 7,263 yards and offers multiple sets of tees to accommodate players of all skill levels. The facility offers a restaurant, snack bar, banquet facility, and a tennis club in addition to golf. All golf carts have recently been upgraded with GPS technology, ice chests and ball washers.

The Resort Course, formerly Sierra Nevada Golf Ranch, is located 5 minutes from Genoa Lakes Golf Club. The course is set amidst the high county desert of Nevada and offers spectacular views of the Sierra Nevada Mountains as well as the Carson Valley. The golf facility offers a world class practice area as well as a bar, grill, restaurant, banquet and pro shop areas. The Resort Course recently completed a redesign of six holes by Jack Nicklaus to incorporate a variety of challenges through native wetlands with spectacular views of the surrounding mountains[2].

CARSON VALLEY GOLF COURSE

Drive Time from South Lake Tahoe: 43 minutes
Course Length: 6,023 yards

Located two miles south of Gardnerville, Carson Valley Golf Course is the most affordable of the competitive golf courses. Arguably, this course is not in competition with LTGC for the majority of its business, however, it is a viable alternative for locals, especially those with young families, and meets the criteria for a competitive golf course in this study.

The Record Courier voted Carson Valley Golf Course the best of the Carson Valley in 2007. Carson Valley is a registered Family Course with a set of tees that the whole family can play off to avoid problems with pace of play. The cool rush of the Carson River, the natural shade of our century old cottonwood trees, and the longest golfing season in the area give this course a unique character unlike anywhere in Northern Nevada[3]. The facility hosts men's, ladies, couples, and seniors golf leagues and can be reserved for events and tournaments. Facilities include a putting green, practice facility, grill and pro shop.

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[1] www.divine9.com
[2] NCGA article by Larry Windsor, 'Coming of Age'.
[3] www.carsonvalleygolf.com

Incline Village – Championship Course

Drive Time from South Lake Tahoe: 50 minutes
Course Length: 6,932 yards

This par 72 championship course stretches over 7,000 yards from the back tees and carries a course rating of 74.1, a true test of your game in a spectacular mountain setting. The property has been described by renowned golf course architect Robert Trent Jones, Sr. as the ideal mountain layout with a challenge you won't want to miss and views you will never forget. Completely renovated in 2003/2004, the courses offers tightly cut fairways bordered by towering pines, demanding accuracy as well as distance.

The course offers a world class practice facility, 18 holes of golf, a banquet and dining facility and the new 23,000 square foot clubhouse known as the Chateau. Visitors to the property can bask in breathtaking scenery and enjoy five star service and facilities.

Incline Village – Mountain Course

Drive Time from South Lake Tahoe: 55 minutes
Course Length: 3,519 yards

The Mountain Course is touted as "The Locals Favorite", with unforgettable views of Lake Tahoe. This alternative golf facility has 18 holes of which 14 are par 3 and 4 are par 4.
With spectacular green sites and contours, the Mountain Course demands more accuracy than distance. "Shot making" skills are necessary to navigate the terrain. Tournaments and group events are welcome at the course. Facilities include a very large practice green. The Mountain Course has been named one of the top ten short courses in America in multiple years by Golf Range magazine[4].

[4] www.golfincline.com

APPENDIX D

LTGC ECONOMIC IMPACTS ON SOUTH LAKE TAHOE

SUPPORT TABLES

Table D-1
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Number of Golfers arriving by Auto at LTGC

Scenario 1A - Base Case

LTGC Visitors	Percent of Total Summer Visitation	Percent of Visitors by Auto	Percent of Total Visitors arriving by Auto	Calculation	LTGC Rounds Played	Percent of Total Rounds
Origination of Visitors to South Lake Tahoe in Summer						
Bay Area	22%	87%	19%			
Southern California	19%	70%	13%			
Central California	15%	83%	13%			
Other and Out of State	44%	58%	25%			
Total	**100%**		**70%**	**a = 70%**		
Total Rounds Played at Lake Tahoe Golf Course				**b**	**33,163**	
Estimated Rounds Played by Visitors				c = b*67%	22,219	67%
Estimated Rounds Played by Locals				d = b*33%	10,944	33%
Total Rounds Played					**33,163**	**100%**
Estimated LTGC Visitor Golfers arriving by Auto				**e = a*c**	**15,651**	

Source: Hansford Economic Consulting and Tahoe Interregional/Intraregional Transit Study, prepared by LSC transportation consultants, 2006.

visit shore

Table D-2
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated South Shore Total Direct Spending by LTGC Visitors

Scenario 1A - Base Case

LTGC Visitors	Rounds of Golf at LTGC	Percent of Rounds for Golf Trip [1]	Total Estimated LTGC Visitors	*Percent of Visitors*	Average Daily Spending (per person) [2]	Average Length of Stay (in Days) [3]	Estimated Total Direct Spending
	a	*b*	*c*		d	e	f = c*d*e
<u>Golfers [4]</u>							
<u>Method A</u>	(See Table D-1)						
Golfers arriving by Air or Charter Bus	6,568	32%	2,102	*24%*	$229	5.60	$2,698,247
Golfers arriving by Auto [5]	15,651	32%	5,008	*56%*	$161	3.10	$2,493,350
Total Estimated LTGC Visitor Golfers	**22,219**		**7,110**	***80%***			**$5,191,597**
<u>Method B</u>							
Average Spending per Person per Golf Trip (assumes no repeat trips) [6]			**7,110**		$1,116		**$7,936,222**
<u>Non-Golfers</u>							
Estimated LTGC Non-golfer Visitors (Events Only) [5],[7]			**1,832**	*20%*	$161	3.10	$911,784
Total Estimated LTGC Visitors			**8,942**	***100%***			
Range of Direct Spending						$6,103,381 to	$8,848,007
Estimated Mid-point (rounded) [8]							**$7,476,000**

Source: Hansford Economic Consulting, Dean Runyan and Associates, and Golf 20/20

ltgc spend

[1] Average daily spending estimated by Dean Runyan and Associates for North Lake Tahoe, 2003 inflated to 2007 dollars.
[2] Length of stay based on survey data for North Lake Tahoe, as utilized by Dean Runyan and Associates for the North Lake Tahoe Resort Association in 2003.
[3] The Golf Economy Report, 2002 conducted by SRI International estimates 32% of golf trips are planned with the sole intent of playing golf.
[4] Visitors whose primary purpose of visiting South Shore is to play golf at LTGC.
[5] Spending per visitor and length of stay reflects a mixture of overnight and day-trip visitors.
[6] On average, golf travelers spent $851 per person per trip in 1998, according to a NGF survey (reported by Golf 20/20). Inflated to 2007 $s in table.
[7] Number of events-only visitors to LTGC estimated by taking 50% of the total number of events guests (precise number of events visitors that are locals is unknown).
[8] Given that the accuracy of either method is unknown, the mid-point is used. This estimate includes spending by visitors for events during winter.

Table D-3
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated LTGC Visitor Spending by Category

Scenario 1A - Base Case

LTGC Visitor Spending	Estimated Share of Spending					**Total Visitor Spending**
	LTGC [1]	Lodging	Other Recreation	Retail	Food & Beverage	
El Dorado County Visitor Spending 2005		$156,900,000	$125,600,000	$179,200,000	$167,700,000	**$629,300,000**
El Dorado County Visitor Spending Inflated to 2007 $s		**$168,860,614**	**$135,174,590**	**$192,860,561**	**$180,483,907**	**$677,272,049**
Percent of El Dorado County Visitor Spending		*25%*	*20%*	*28%*	*27%*	*100%*
Tahoe Portion at 70% of El Dorado County Visitor Spending [2]		**$118,202,430**	**$94,622,213**	**$135,002,393**	**$126,338,735**	**$474,090,434**
Adjustments to Tahoe Portion [3]		21%	36%	22%	21%	100%
Adjusted Tahoe Portion of El Dorado County Visitor Spending		**$99,558,991**	**$170,672,556**	**$104,299,896**	**$99,558,991**	**$474,090,434**
Estimated Spending by LTGC Visitors	**$1,907,920**	**$1,569,960**	**$783,440**	**$1,644,720**	**$1,569,960**	**$7,476,000**
Percent of LTGC Visitor Spending	*26%*	*21%*	*10%*	*22%*	*21%*	*100%*

Source: Hansford Economic Consulting, Dean Runyan and Associates, and RRC Associates visitor spend

[1] Visitor spending at LTGC calculated as 67% of golf activities revenues, 95% of merchandise, 67% of food and beverage, and 67% of other revenues (percentages are HEC estimates).
[2] In 2006, RRC Associates estimated visitor spending in the Tahoe portion of El Dorado County to be approximately 70% of the County total visitor spending.
[3] Based on findings of the 'Economic Significance of Travel to the North Lake Tahoe Area' by Dean Runyan Associates, 2003.

Table D-4
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Earnings and Employment in South Shore Generated by LTGC

Scenario 1A - Base Case

Earnings and Employment	Direct Spending	Earnings	Employment (Jobs) [1]
Assumptions			
El Dorado County Visitor Spending, Earnings and Employment Estimates (2005)	$629,300,000	$232,100,000	10,410
Average Earnings per Job			$22,296
Jobs per $1 Million Dollars of Direct Spending			17
Estimates of Jobs and Earnings			
Payroll and Jobs at LTGC	$1,907,920	$612,500	76
Estimated South Shore Earnings and Jobs Generated by LTGC (2007 $s)	$5,568,080	$2,053,633	92
Total Estimates of Spending, Earnings, and Jobs Generated in South Shore by LTGC Visitors (2007 $s)	**$7,476,000**	**$2,666,133**	**168**

Source: Hansford Economic Consulting and Dean Runyan Associates job gen

[1] Number of jobs includes full and part-time jobs.

Table D-5
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimate of Annual Property and Sales Taxes Generated by LTGC

Scenario 1A - Base Case

LTGC Generated Tax	Sales Revenue	Percent Taxable [1]	Tax Rate	Estimated Total Sales Tax
Estimated Sales Taxes				
Merchandise	$181,000	100%	7.75%	$14,000
Food and Beverage	$599,000	85%	7.75%	$39,000
Subtotal Sales (rounded)	**$780,000**			**$53,000**
Property Taxes (rounded)				$65,000
Total Estimated Annual Sales and Property Taxes (rounded)				**$118,000**

Source: Hansford Economic Consulting, American Golf Corporation, and CA Board of Equalization taxes

[1] HEC estimate.

Table D-6
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Additional Taxes Generated by LTGC Visitors

Scenario 1A - Base Case

Estimated Taxes	Lodging	Other Recreation	Retail	Food & Beverage	**Non-LTGC Spending**
Non-LTGC Visitor Spending by LTGC Visitors (rounded)	$1,570,000	$783,000	$1,645,000	$1,570,000	**$5,568,000**
Tax Type	*Transient Occupancy Tax*	*various*	*Sales Tax*	*Sales Tax*	
Tax Factor [1]	10.00%		7.75%	7.75%	
Percentage of Total Taxed [2]	100%	n.a.	90%	85%	
Estimated Taxes by Category (rounded)	**$157,000**	**n.a.**	**$115,000**	**$103,000**	**$375,000**

Source: Hansford Economic Consulting, City of South Lake Tahoe, and RRC Associates other taxes

[1] This estimate excludes a potential additional 2% Transient Occupancy Tax at certain redevelopment sites. It also excludes the South Lake Tahoe Tourism Improvement District Fee of $2.00 per night for hotels/motels and $3.00 per night for vacation rentals and timeshares.
[2] HEC estimate based on RRC Associates "Share of Taxable Sales Analysis" prepared for the City of South Lake Tahoe, 2006.

Table D-7
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Number of Golfers arriving by Auto at LTGC

Scenario 1B

LTGC Visitors	Percent of Total Summer Visitation	Percent of Visitors by Auto	Percent of Total Visitors arriving by Auto	Calculation	LTGC Rounds Played	Percent of Total Rounds
Origination of Visitors to South Lake Tahoe in Summer						
Bay Area	22%	87%	19%			
Southern California	19%	70%	13%			
Central California	15%	83%	13%			
Other and Out of State	44%	58%	25%			
Total	**100%**		**70%**	**a = 70%**		
Total Rounds Played at Lake Tahoe Golf Course				**b**	**33,163**	
Estimated Rounds Played by Visitors				c = b*67%	22,219	67%
Estimated Rounds Played by Locals				d = b*33%	10,944	33%
Total Rounds Played					**33,163**	**100%**
Estimated LTGC Visitor Golfers arriving by Auto				**e = a*c**	**15,651**	

Source: Hansford Economic Consulting and Tahoe Interregional/Intraregional Transit Study, prepared by LSC transportation consultants, 2006.

visit shore

Table D-8
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated South Shore Total Direct Spending by LTGC Visitors

Scenario 1B

LTGC Visitors	Rounds of Golf at LTGC	Percent of Rounds for Golf Trip [1]	Total Estimated LTGC Visitors	*Percent of Visitors*	Average Daily Spending (per person) [2]	Average Length of Stay (in Days) [3]		Estimated Total Direct Spending
	a	*b*	*c*		d	e		f = c*d*e
Golfers [4]								
Method A	(See Table D-7)							
Golfers arriving by Air or Charter Bus	6,568	32%	2,102	*24%*	$229	5.60		$2,698,247
Golfers arriving by Auto [5]	15,651	32%	5,008	*56%*	$161	3.10		$2,493,350
Total Estimated LTGC Visitor Golfers	**22,219**		**7,110**	***80%***				**$5,191,597**
Method B								
Average Spending per Person per Golf Trip (assumes no repeat trips) [6]			**7,110**		$1,116			**$7,936,222**
Non-Golfers								
Estimated LTGC Non-golfer Visitors (Events Only) [5],[7]			**1,832**	*20%*	$161	3.10		$911,784
Total Estimated LTGC Visitors			**8,942**	***100%***				
Range of Direct Spending						$6,103,381	to	$8,848,007
Estimated Mid-point (rounded) [8]								**$7,476,000**

Source: Hansford Economic Consulting, Dean Runyan and Associates, and Golf 20/20

ltgc spend

[1] Average daily spending estimated by Dean Runyan and Associates for North Lake Tahoe, 2003 inflated to 2007 dollars.
[2] Length of stay based on survey data for North Lake Tahoe, as utilized by Dean Runyan and Associates for the North Lake Tahoe Resort Association in 2003.
[3] The Golf Economy Report, 2002 conducted by SRI International estimates 32% of golf trips are planned with the sole intent of playing golf.
[4] Visitors whose primary purpose of visiting South Shore is to play golf at LTGC.
[5] Spending per visitor and length of stay reflects a mixture of overnight and day-trip visitors.
[6] On average, golf travelers spent $851 per person per trip in 1998, according to a NGF survey (reported by Golf 20/20). Inflated to 2007 $s in table.
[7] Number of events-only visitors to LTGC estimated by taking 50% of the total number of events guests (precise number of events visitors that are locals is unknown).
[8] Given that the accuracy of either method is unknown, the mid-point is used. This estimate includes spending by visitors for events during winter.

Table D-9
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated LTGC Visitor Spending by Category

Scenario 1B

LTGC Visitor Spending	Estimated Share of Spending					**Total Visitor Spending**
	LTGC [1]	Lodging	Other Recreation	Retail	Food & Beverage	
El Dorado County Visitor Spending 2005		$156,900,000	$125,600,000	$179,200,000	$167,700,000	**$629,300,000**
El Dorado County Visitor Spending Inflated to 2007 $s		**$168,860,614**	**$135,174,590**	**$192,860,561**	**$180,483,907**	**$677,272,049**
Percent of El Dorado County Visitor Spending		*25%*	*20%*	*28%*	*27%*	*100%*
Tahoe Portion at 70% of El Dorado County Visitor Spending [2]		**$118,202,430**	**$94,622,213**	**$135,002,393**	**$126,338,735**	**$474,090,434**
Adjustments to Tahoe Portion [3]		21%	36%	22%	21%	100%
Adjusted Tahoe Portion of El Dorado County Visitor Spending		**$99,558,991**	**$170,672,556**	**$104,299,896**	**$99,558,991**	**$474,090,434**
Estimated Spending by LTGC Visitors	**$1,921,588**	**$1,569,960**	**$769,772**	**$1,644,720**	**$1,569,960**	**$7,476,000**
Percent of LTGC Visitor Spending	*26%*	*21%*	*10%*	*22%*	*21%*	*100%*

Source: Hansford Economic Consulting, Dean Runyan and Associates, and RRC Associates visitor spend

[1] Visitor spending at LTGC calculated as 67% of golf activities revenues, 95% of merchandise, 67% of food and beverage, and 67% of other revenues (percentages are HEC estimates).
[2] In 2006, RRC Associates estimated visitor spending in the Tahoe portion of El Dorado County to be approximately 70% of the County total visitor spending.
[3] Based on findings of the 'Economic Significance of Travel to the North Lake Tahoe Area' by Dean Runyan Associates, 2003.

Table D-10
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Earnings and Employment in South Shore Generated by LTGC

Scenario 1B

Earnings and Employment	Direct Spending	Earnings	Employment (Jobs) [1]
Assumptions			
El Dorado County Visitor Spending, Earnings and Employment Estimates (2005)	$629,300,000	$232,100,000	10,410
Average Earnings per Job			$22,296
Jobs per $1 Million Dollars of Direct Spending			17
Estimates of Jobs and Earnings			
Payroll and Jobs at LTGC	$1,921,588	$650,200	80
Estimated South Shore Earnings and Jobs Generated by LTGC (2007 $s)	$5,554,412	$2,048,592	92
Total Estimates of Spending, Earnings, and Jobs Generated in South Shore by LTGC Visitors (2007 $s)	**$7,476,000**	**$2,698,792**	**172**

Source: Hansford Economic Consulting and Dean Runyan Associates job gen

[1] Number of jobs includes full and part-time jobs.

Table D-11
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimate of Annual Property and Sales Taxes Generated by LTGC

Scenario 1B

LTGC Generated Tax	Sales Revenue	Percent Taxable [1]	Tax Rate	Estimated Total Sales Tax
Estimated Sales Taxes				
Merchandise	$181,000	100%	7.75%	$14,000
Food and Beverage	$619,400	85%	7.75%	$41,000
Subtotal Sales (rounded)	**$800,000**			**$55,000**
Property Taxes (rounded)				$65,000
Total Estimated Annual Sales and Property Taxes (rounded)				**$120,000**

Source: Hansford Economic Consulting, American Golf Corporation, and CA Board of Equalization taxes

[1] HEC estimate.

Table D-12
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Additional Taxes Generated by LTGC Visitors

Scenario 1B

Estimated Taxes	Lodging	Other Recreation	Retail	Food & Beverage	**Non-LTGC Spending**
Non-LTGC Visitor Spending by LTGC Visitors (rounded)	$1,570,000	$770,000	$1,645,000	$1,570,000	**$5,555,000**
Tax Type	*Transient Occupancy Tax*	*various*	*Sales Tax*	*Sales Tax*	
Tax Factor [1]	10.00%		7.75%	7.75%	
Percentage of Total Taxed [2]	100%	n.a.	90%	85%	
Estimated Taxes by Category (rounded)	**$157,000**	**n.a.**	**$115,000**	**$103,000**	**$375,000**

Source: Hansford Economic Consulting, City of South Lake Tahoe, and RRC Associates

other taxes

[1] This estimate excludes a potential additional 2% Transient Occupancy Tax at certain redevelopment sites. It also excludes the South Lake Tahoe Tourism Improvement District Fee of $2.00 per night for hotels/motels and $3.00 per night for vacation rentals and timeshares.
[2] HEC estimate based on RRC Associates "Share of Taxable Sales Analysis" prepared for the City of South Lake Tahoe, 2006.

Table D-13
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Number of Golfers arriving by Auto at LTGC

Scenario 2 - Low Rounds

LTGC Visitors	Percent of Total Summer Visitation	Percent of Visitors by Auto	Percent of Total Visitors arriving by Auto	Calculation	LTGC Rounds Played	Percent of Total Rounds
Origination of Visitors to South Lake Tahoe in Summer						
Bay Area	22%	87%	19%			
Southern California	19%	70%	13%			
Central California	15%	83%	13%			
Other and Out of State	44%	58%	25%			
Total	**100%**		**70%**	**a = 70%**		
Total Rounds Played at Lake Tahoe Golf Course				**b**	**15,000**	
Estimated Rounds Played by Visitors				c = b*67%	10,050	67%
Estimated Rounds Played by Locals				d = b*33%	4,950	33%
Total Rounds Played					**15,000**	**100%**
Estimated LTGC Visitor Golfers arriving by Auto				**e = a*c**	**7,079**	

Source: Hansford Economic Consulting and Tahoe Interregional/Intraregional Transit Study, prepared by LSC transportation consultants, 2006.

visit shore

Table D-14
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated South Shore Total Direct Spending by LTGC Visitors

Scenario 2 - Low Rounds

LTGC Visitors	Rounds of Golf at LTGC	Percent of Rounds for Golf Trip [1]	Total Estimated LTGC Visitors	*Percent of Visitors*	Average Daily Spending (per person) [2]	Average Length of Stay (in Days) [3]	Estimated Total Direct Spending
	a	*b*	*c*		d	e	f = c*d*e
<u>Golfers [4]</u>							
<u>Method A</u>	(See Table D-13)						
Golfers arriving by Air or Charter Bus	2,971	32%	951	*19%*	$229	5.60	$1,220,448
Golfers arriving by Auto [5]	7,079	32%	2,265	*45%*	$161	3.10	$1,127,770
Total Estimated LTGC Visitor Golfers	**10,050**		**3,216**	***64%***			**$2,348,218**
<u>Method B</u>							
Average Spending per Person per Golf Trip (assumes no repeat trips) [6]			**3,216**		$1,116		**$3,589,643**
<u>Non-Golfers</u>							
Estimated LTGC Non-golfer Visitors (Events Only) [5],[7]			**1,832**	*36%*	$161	3.10	$911,784
Total Estimated LTGC Visitors			**5,048**	***100%***			
Range of Direct Spending						$3,260,002 to	$4,501,428
Estimated Mid-point (rounded) [8]							**$3,881,000**

Source: Hansford Economic Consulting, Dean Runyan and Associates, and Golf 20/20 ltgc spend

[1] Average daily spending estimated by Dean Runyan and Associates for North Lake Tahoe, 2003 inflated to 2007 dollars.
[2] Length of stay based on survey data for North Lake Tahoe, as utilized by Dean Runyan and Associates for the North Lake Tahoe Resort Association in 2003.
[3] The Golf Economy Report, 2002 conducted by SRI International estimates 32% of golf trips are planned with the sole intent of playing golf.
[4] Visitors whose primary purpose of visiting South Shore is to play golf at LTGC.
[5] Spending per visitor and length of stay reflects a mixture of overnight and day-trip visitors.
[6] On average, golf travelers spent $851 per person per trip in 1998, according to a NGF survey (reported by Golf 20/20). Inflated to 2007 $s in table.
[7] Number of events-only visitors to LTGC estimated by taking 50% of the total number of events guests (precise number of events visitors that are locals is unknown).
[8] Given that the accuracy of either method is unknown, the mid-point is used. This estimate includes spending by visitors for events during winter.

Table D-15
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated LTGC Visitor Spending by Category

Scenario 2 - Low Rounds

LTGC Visitor Spending	Estimated Share of Spending					**Total Visitor Spending**
	LTGC [1]	Lodging	Other Recreation	Retail	Food & Beverage	
El Dorado County Visitor Spending 2005		$156,900,000	$125,600,000	$179,200,000	$167,700,000	**$629,300,000**
El Dorado County Visitor Spending Inflated to 2007 $s		**$168,860,614**	**$135,174,590**	**$192,860,561**	**$180,483,907**	**$677,272,049**
Percent of El Dorado County Visitor Spending		*25%*	*20%*	*28%*	*27%*	*100%*
Tahoe Portion at 70% of El Dorado County Visitor Spending [2]		**$118,202,430**	**$94,622,213**	**$135,002,393**	**$126,338,735**	**$474,090,434**
Adjustments to Tahoe Portion [3]		21%	36%	22%	21%	100%
Adjusted Tahoe Portion of El Dorado County Visitor Spending		**$99,558,991**	**$170,672,556**	**$104,299,896**	**$99,558,991**	**$474,090,434**
Estimated Spending by LTGC Visitors	**$699,833**	**$815,010**	**$697,327**	**$853,820**	**$815,010**	**$3,881,000**
Percent of LTGC Visitor Spending	*18%*	*21%*	*18%*	*22%*	*21%*	*100%*

Source: Hansford Economic Consulting, Dean Runyan and Associates, and RRC Associates visitor spend

[1] Visitor spending at LTGC calculated as 67% of golf activities revenues, 95% of merchandise, 67% of food and beverage, and 67% of other revenues (percentages are HEC estimates).
[2] In 2006, RRC Associates estimated visitor spending in the Tahoe portion of El Dorado County to be approximately 70% of the County total visitor spending.
[3] Based on findings of the 'Economic Significance of Travel to the North Lake Tahoe Area' by Dean Runyan Associates, 2003.

Table D-16
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Earnings and Employment in South Shore Generated by LTGC

Scenario 2 - Low Rounds

Earnings and Employment	Direct Spending	Earnings	Employment (Jobs) [1]
Assumptions			
El Dorado County Visitor Spending, Earnings and Employment Estimates (2005)	$629,300,000	$232,100,000	10,410
Average Earnings per Job			$22,296
Jobs per $1 Million Dollars of Direct Spending			17
Estimates of Jobs and Earnings			
Payroll and Jobs at LTGC	$699,833	$494,600	60
Estimated South Shore Earnings and Jobs Generated by LTGC (2007 $s)	$3,181,167	$1,173,286	53
Total Estimates of Spending, Earnings, and Jobs Generated in South Shore by LTGC Visitors (2007 $s)	**$3,881,000**	**$1,667,886**	**113**

Source: Hansford Economic Consulting and Dean Runyan Associates

job gen

[1] Number of jobs includes full and part-time jobs.

Table D-17
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimate of Annual Property and Sales Taxes Generated by LTGC

Scenario 2 - Low Rounds

LTGC Generated Tax	Sales Revenue	Percent Taxable [1]	Tax Rate	Estimated Total Sales Tax
Estimated Sales Taxes				
Merchandise	$81,900	100%	7.75%	$6,000
Food and Beverage	$411,100	85%	7.75%	$27,000
Subtotal Sales (rounded)	**$493,000**			**$33,000**
Property Taxes (rounded)				$65,000
Total Estimated Annual Sales and Property Taxes (rounded)				**$98,000**

Source: Hansford Economic Consulting, American Golf Corporation, and CA Board of Equalization taxes

[1] HEC estimate.

Table D-18
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Additional Taxes Generated by LTGC Visitors

Scenario 2 - Low Rounds

Estimated Taxes	Lodging	Other Recreation	Retail	Food & Beverage	**Non-LTGC Spending**
Non-LTGC Visitor Spending by LTGC Visitors (rounded)	$815,000	$697,000	$854,000	$815,000	**$3,181,000**
Tax Type	*Transient Occupancy Tax*	*various*	*Sales Tax*	*Sales Tax*	
Tax Factor [1]	10.00%		7.75%	7.75%	
Percentage of Total Taxed [2]	100%	n.a.	90%	85%	
Estimated Taxes by Category (rounded)	**$82,000**	**n.a.**	**$60,000**	**$54,000**	**$196,000**

Source: Hansford Economic Consulting, City of South Lake Tahoe, and RRC Associates other taxes

[1] This estimate excludes a potential additional 2% Transient Occupancy Tax at certain redevelopment sites. It also excludes the South Lake Tahoe Tourism Improvement District Fee of $2.00 per night for hotels/motels and $3.00 per night for vacation rentals and timeshares.
[2] HEC estimate based on RRC Associates "Share of Taxable Sales Analysis" prepared for the City of South Lake Tahoe, 2006.

Table D-19
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Number of Golfers arriving by Auto at LTGC

Scenario 2 - High Rounds

LTGC Visitors	Percent of Total Summer Visitation	Percent of Visitors by Auto	Percent of Total Visitors arriving by Auto	Calculation	LTGC Rounds Played	Percent of Total Rounds
Origination of Visitors to South Lake Tahoe in Summer						
Bay Area	22%	87%	19%			
Southern California	19%	70%	13%			
Central California	15%	83%	13%			
Other and Out of State	44%	58%	25%			
Total	**100%**		**70%**	**a = 70%**		
Total Rounds Played at Lake Tahoe Golf Course				**b**	**25,000**	
Estimated Rounds Played by Visitors				c = b*67%	16,750	67%
Estimated Rounds Played by Locals				d = b*33%	8,250	33%
Total Rounds Played					**25,000**	**100%**
Estimated LTGC Visitor Golfers arriving by Auto				**e = a*c**	**11,799**	

Source: Hansford Economic Consulting and Tahoe Interregional/Intraregional Transit Study, prepared by LSC transportation consultants, 2006.

visit shore

Table D-20
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated South Shore Total Direct Spending by LTGC Visitors

Scenario 2 - High Rounds

LTGC Visitors	Rounds of Golf at LTGC	Percent of Rounds for Golf Trip [1]	Total Estimated LTGC Visitors	*Percent of Visitors*	Average Daily Spending (per person) [2]	Average Length of Stay (in Days) [3]		Estimated Total Direct Spending
	a	*b*	*c*		d	e		f = c*d*e
Golfers [4]								
Method A	(See Table D-19)							
Golfers arriving by Air or Charter Bus	4,951	32%	1,584	*22%*	$229	5.60		$2,034,080
Golfers arriving by Auto [5]	11,799	32%	3,776	*53%*	$161	3.10		$1,879,617
Total Estimated LTGC Visitor Golfers	**16,750**		**5,360**	***75%***				**$3,913,697**
Method B								
Average Spending per Person per Golf Trip (assumes no repeat trips) [6]			**5,360**		$1,116			**$5,982,739**
Non-Golfers								
Estimated LTGC Non-golfer Visitors (Events Only) [5],[7]			**1,832**	*25%*	$161	3.10		$911,784
Total Estimated LTGC Visitors			**7,192**	***100%***				
Range of Direct Spending						$4,825,481	to	$6,894,523
Estimated Mid-point (rounded) [8]								**$5,860,000**

Source: Hansford Economic Consulting, Dean Runyan and Associates, and Golf 20/20 ltgc spend

[1] Average daily spending estimated by Dean Runyan and Associates for North Lake Tahoe, 2003 inflated to 2007 dollars.
[2] Length of stay based on survey data for North Lake Tahoe, as utilized by Dean Runyan and Associates for the North Lake Tahoe Resort Association in 2003.
[3] The Golf Economy Report, 2002 conducted by SRI International estimates 32% of golf trips are planned with the sole intent of playing golf.
[4] Visitors whose primary purpose of visiting South Shore is to play golf at LTGC.
[5] Spending per visitor and length of stay reflects a mixture of overnight and day-trip visitors.
[6] On average, golf travelers spent $851 per person per trip in 1998, according to a NGF survey (reported by Golf 20/20). Inflated to 2007 $s in table.
[7] Number of events-only visitors to LTGC estimated by taking 50% of the total number of events guests (precise number of events visitors that are locals is unknown).
[8] Given that the accuracy of either method is unknown, the mid-point is used. This estimate includes spending by visitors for events during winter.

Table D-21
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated LTGC Visitor Spending by Category

Scenario 2 - High Rounds

LTGC Visitor Spending	Estimated Share of Spending					Total Visitor Spending
	LTGC [1]	Lodging	Other Recreation	Retail	Food & Beverage	
El Dorado County Visitor Spending 2005		$156,900,000	$125,600,000	$179,200,000	$167,700,000	**$629,300,000**
El Dorado County Visitor Spending Inflated to 2007 $s		**$168,860,614**	**$135,174,590**	**$192,860,561**	**$180,483,907**	**$677,272,049**
Percent of El Dorado County Visitor Spending		*25%*	*20%*	*28%*	*27%*	*100%*
Tahoe Portion at 70% of El Dorado County Visitor Spending [2]		**$118,202,430**	**$94,622,213**	**$135,002,393**	**$126,338,735**	**$474,090,434**
Adjustments to Tahoe Portion [3]		21%	36%	22%	21%	100%
Adjusted Tahoe Portion of El Dorado County Visitor Spending		**$99,558,991**	**$170,672,556**	**$104,299,896**	**$99,558,991**	**$474,090,434**
Estimated Spending by LTGC Visitors	**$1,052,103**	**$1,230,600**	**$1,057,497**	**$1,289,200**	**$1,230,600**	**$5,860,000**
Percent of LTGC Visitor Spending	*18%*	*21%*	*18%*	*22%*	*21%*	*100%*

Source: Hansford Economic Consulting, Dean Runyan and Associates, and RRC Associates

visitor spend

[1] Visitor spending at LTGC calculated as 67% of golf activities revenues, 95% of merchandise, 67% of food and beverage, and 67% of other revenues (percentages are HEC estimates).
[2] In 2006, RRC Associates estimated visitor spending in the Tahoe portion of El Dorado County to be approximately 70% of the County total visitor spending.
[3] Based on findings of the 'Economic Significance of Travel to the North Lake Tahoe Area' by Dean Runyan Associates, 2003.

Table D-22
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Earnings and Employment in South Shore Generated by LTGC

Scenario 2 - High Rounds

Earnings and Employment	Direct Spending	Earnings	Employment (Jobs) [1]
Assumptions			
El Dorado County Visitor Spending, Earnings and Employment Estimates (2005)	$629,300,000	$232,100,000	10,410
Average Earnings per Job			$22,296
Jobs per $1 Million Dollars of Direct Spending			17
Estimates of Jobs and Earnings			
Payroll and Jobs at LTGC	$1,052,103	$531,200	65
Estimated South Shore Earnings and Jobs Generated by LTGC (2007 $s)	$4,807,897	$1,773,261	80
Total Estimates of Spending, Earnings, and Jobs Generated in South Shore by LTGC Visitors (2007 $s)	**$5,860,000**	**$2,304,461**	**145**

Source: Hansford Economic Consulting and Dean Runyan Associates job gen

[1] Number of jobs includes full and part-time jobs.

Table D-23
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimate of Annual Property and Sales Taxes Generated by LTGC

Scenario 2 - High Rounds

LTGC Generated Tax	Sales Revenue	Percent Taxable [1]	Tax Rate	Estimated Total Sales Tax
Estimated Sales Taxes				
Merchandise	$136,400	100%	7.75%	$11,000
Food and Beverage	$514,600	85%	7.75%	$34,000
Subtotal Sales (rounded)	**$651,000**			**$45,000**
Property Taxes (rounded)				$65,000
Total Estimated Annual Sales and Property Taxes (rounded)				**$110,000**

Source: Hansford Economic Consulting, American Golf Corporation, and CA Board of Equalization taxes

[1] HEC estimate.

Table D-24
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Additional Taxes Generated by LTGC Visitors

Scenario 2 - High Rounds

Estimated Taxes	Lodging	Other Recreation	Retail	Food & Beverage	**Non-LTGC Spending**
Non-LTGC Visitor Spending by LTGC Visitors (rounded)	$1,231,000	$1,057,000	$1,289,000	$1,231,000	**$4,808,000**
Tax Type	*Transient Occupancy Tax*	*various*	*Sales Tax*	*Sales Tax*	
Tax Factor [1]	10.00%		7.75%	7.75%	
Percentage of Total Taxed [2]	100%	n.a.	90%	85%	
Estimated Taxes by Category (rounded)	**$123,000**	**n.a.**	**$90,000**	**$81,000**	**$294,000**

Source: Hansford Economic Consulting, City of South Lake Tahoe, and RRC Associates

other taxes

[1] This estimate excludes a potential additional 2% Transient Occupancy Tax at certain redevelopment sites. It also excludes the South Lake Tahoe Tourism Improvement District Fee of $2.00 per night for hotels/motels and $3.00 per night for vacation rentals and timeshares.
[2] HEC estimate based on RRC Associates "Share of Taxable Sales Analysis" prepared for the City of South Lake Tahoe, 2006.

Table D-25
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated South Shore Total Direct Spending by LTGC Visitors

Scenario 3

LTGC Visitors	Rounds of Golf at LTGC	Percent of Rounds for Golf Trip [1]	Total Estimated LTGC Visitors	*Percent of Visitors*	Average Daily Spending (per person) [2]	Average Length of Stay (in Days) [3]	Estimated Total Direct Spending
	a	*b*	*c*		d	e	f = c*d*e
Golfers [4]							
Method A							
Golfers arriving by Air or Charter Bus	0	32%	0	*0%*	$229	5.60	$0
Golfers arriving by Auto [5]	0	32%	0	*0%*	$161	3.10	$0
Total Estimated LTGC Visitor Golfers	**0**		**0**	***0%***			**$0**
Method B							
Average Spending per Person per Golf Trip (assumes no repeat trips) [6]			**0**		$1,116		**$0**
Non-Golfers							
Estimated LTGC Non-golfer Visitors (Events Only) [5],[7]			**1,832**	*100%*	$161	3.10	$911,784
Total Estimated LTGC Visitors			**1,832**	***100%***			
Range of Direct Spending						$911,784 to	$911,784
Estimated Mid-point (rounded) [8]							**$912,000**

Source: Hansford Economic Consulting, Dean Runyan and Associates, and Golf 20/20

ltgc spend

[1] Average daily spending estimated by Dean Runyan and Associates for North Lake Tahoe, 2003 inflated to 2007 dollars.
[2] Length of stay based on survey data for North Lake Tahoe, as utilized by Dean Runyan and Associates for the North Lake Tahoe Resort Association in 2003.
[3] The Golf Economy Report, 2002 conducted by SRI International estimates 32% of golf trips are planned with the sole intent of playing golf.
[4] Visitors whose primary purpose of visiting South Shore is to play golf at LTGC.
[5] Spending per visitor and length of stay reflects a mixture of overnight and day-trip visitors.
[6] On average, golf travelers spent $851 per person per trip in 1998, according to a NGF survey (reported by Golf 20/20). Inflated to 2007 $s in table.
[7] Number of events-only visitors to LTGC estimated by taking 50% of the total number of events guests (precise number of events visitors that are locals is unknown).
[8] Given that the accuracy of either method is unknown, the mid-point is used. This estimate includes spending by visitors for events during winter.

Table D-26
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated LTGC Visitor Spending by Category

Scenario 3

LTGC Visitor Spending	Estimated Share of Spending					Total Visitor Spending
	LTGC [1]	Lodging	Other Recreation	Retail	Food & Beverage	
El Dorado County Visitor Spending 2005		$156,900,000	$125,600,000	$179,200,000	$167,700,000	**$629,300,000**
El Dorado County Visitor Spending Inflated to 2007 $s		**$168,860,614**	**$135,174,590**	**$192,860,561**	**$180,483,907**	**$677,272,049**
Percent of El Dorado County Visitor Spending		*25%*	*20%*	*28%*	*27%*	*100%*
Tahoe Portion at 70% of El Dorado County Visitor Spending [2]		**$118,202,430**	**$94,622,213**	**$135,002,393**	**$126,338,735**	**$474,090,434**
Adjustments to Tahoe Portion [3]		21%	36%	22%	21%	100%
Adjusted Tahoe Portion of El Dorado County Visitor Spending		**$99,558,991**	**$170,672,556**	**$104,299,896**	**$99,558,991**	**$474,090,434**
Estimated Spending by LTGC Visitors	**$171,520**	**$191,520**	**$156,800**	**$200,640**	**$191,520**	**$912,000**
Percent of LTGC Visitor Spending	*19%*	*21%*	*17%*	*22%*	*21%*	*100%*

Source: Hansford Economic Consulting, Dean Runyan and Associates, and RRC Associates

visitor spend

[1] Visitor spending at LTGC calculated as 67% of golf activities revenues, 95% of merchandise, 67% of food and beverage, and 67% of other revenues (percentages are HEC estimates).
[2] In 2006, RRC Associates estimated visitor spending in the Tahoe portion of El Dorado County to be approximately 70% of the County total visitor spending.
[3] Based on findings of the 'Economic Significance of Travel to the North Lake Tahoe Area' by Dean Runyan Associates, 2003.

Table D-27
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Earnings and Employment in South Shore Generated by LTGC

Scenario 3

Earnings and Employment	Direct Spending	Earnings	Employment (Jobs) [1]
Assumptions			
El Dorado County Visitor Spending, Earnings and Employment Estimates (2005)	$629,300,000	$232,100,000	10,410
Average Earnings per Job			$22,296
Jobs per $1 Million Dollars of Direct Spending			17
Estimates of Jobs and Earnings			
Payroll and Jobs at LTGC	$171,520	$219,900	32
Estimated South Shore Earnings and Jobs Generated by LTGC (2007 $s)	$740,480	$273,106	12
Total Estimates of Spending, Earnings, and Jobs Generated in South Shore by LTGC Visitors (2007 $s)	**$912,000**	**$493,006**	**44**

Source: Hansford Economic Consulting and Dean Runyan Associates job gen

[1] Number of jobs includes full and part-time jobs.

Table D-28
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimate of Annual Property and Sales Taxes Generated by LTGC

Scenario 3

LTGC Generated Tax	Sales Revenue	Percent Taxable [1]	Tax Rate	Estimated Total Sales Tax
Estimated Sales Taxes				
Merchandise	$0	100%	7.75%	$0
Food and Beverage	$256,000	85%	7.75%	$17,000
Subtotal Sales (rounded)	**$256,000**			**$17,000**
Property Taxes (rounded)				$65,000
Total Estimated Annual Sales and Property Taxes (rounded)				**$82,000**

Source: Hansford Economic Consulting, American Golf Corporation, and CA Board of Equalization taxes

[1] HEC estimate.

Table D-29
Lake Tahoe Golf Course Economic Feasibility Analysis
Estimated Additional Taxes Generated by LTGC Visitors

Scenario 3

Estimated Taxes	Lodging	Other Recreation	Retail	Food & Beverage	**Non-LTGC Spending**
Non-LTGC Visitor Spending by LTGC Visitors (rounded)	$192,000	$157,000	$201,000	$192,000	**$742,000**
Tax Type	*Transient Occupancy Tax*	*various*	*Sales Tax*	*Sales Tax*	
Tax Factor [1]	10.00%		7.75%	7.75%	
Percentage of Total Taxed [2]	100%	n.a.	90%	85%	
Estimated Taxes by Category (rounded)	**$19,000**	**n.a.**	**$14,000**	**$13,000**	**$46,000**

Source: Hansford Economic Consulting, City of South Lake Tahoe, and RRC Associates other taxes

[1] This estimate excludes a potential additional 2% Transient Occupancy Tax at certain redevelopment sites. It also excludes the South Lake Tahoe Tourism Improvement District Fee of $2.00 per night for hotels/motels and $3.00 per night for vacation rentals and timeshares.
[2] HEC estimate based on RRC Associates "Share of Taxable Sales Analysis" prepared for the City of South Lake Tahoe, 2006.

APPENDIX F

Water Quality Data Tables

Upper Truckee River		TMDL Results				Project Analysis						Cumulative Projects Analysis			
RGA Station Locations		by Tier:	Channel Restoration	MIXED Treatment	Bank Protection	Upper Truckee River Restoration and Golf Course Reconfiguration Project									
(km)	(ft)	Existing Load of fines (CUBIC YARSDS)	Maximum Treatment Bank Erosion of Fines (CUBIC YARDS)	Maximum Treatment Bank Erosion of Fines (CUBIC YARDS)	Maximum Treatment Bank Erosion of Fines (CUBIC YARDS)	Alternative 1		Alternatives 2, 3, 5		Alternative 4		With UTRGC Alt. 1		With UTRGC Alts. 2, 3, 5	With UTRGC Alt. 4
		No Treatment	All reaches treated	All reaches treated	All reaches treated	Existing	Subtotals	Restored	Subtotals	Protected	Subtotals	Complete treat all proposed	Subtotals	Subtotals	Subtotals
24.19	79,364														
23.01	75,492	3.8	1.8	3.8	0.6	4	641	4	641	4	641	4	641	641	641
22.54	73,950	2.2	1.0	2.2	0.3	2		2		2		2			
21.77	71,424	2.6	1.2	2.6	0.4	3		3		3		3			
21.40	70,210	0.7	0.3	0.7	0.1	1		1		1		1			
20.75	68,077	2.2	1.0	2.2	0.3	2		2		2		2			
19.94	65,420	145.3	67.1	57.0	22.8	145		145		145		145			
19.26	63,189	179.0	82.7	70.3	28.1	179		179		179		179			
18.57	60,925	181.6	83.9	71.3	28.5	182		182		182		182			
17.99	59,022	10.7	5.0	10.7	1.7	11		11		11		11			
17.78	58,333	30.8	14.2	4.8	4.8	31		31		31		31			
16.90	55,446	12.4	5.7	12.4	2.0	12		12		12		12			
16.40	53,806	6.3	2.9	6.3	1.0	6		6		6		6			
15.78	51,772	6.1	2.8	6.1	1.0	6		6		6		6			
15.277	50,121	57.0	26.3	9.0	9.0	57		57		57		57			
14.77	48,458	246.4	113.8	90.9	38.7	246	1,228	246	793	246	546	246	1,228	793	546
14.10	46,260	23.2	10.7	23.2	3.6	23		23		23		23			
13.52	44,357	413.3	190.9	64.9	64.9	413		191		65		413			
13.15	43,143	173.7	80.3	64.1	27.3	174		80		27		174			
12.07	39,600	24.8	11.4	24.8	3.9	25		11		4		25			
11.21	36,778	197.2	91.1	72.8	31.0	197		91		31		197			
10.84	35,564	149.2	68.9	70.6	23.4	149		149		149		149			
10.04	32,940	19.0	8.8	19.0	3.0	19	2,451	19	2,451	19	2,451	9	1,132	1,132	1,132
8.46	27,756	982.3	453.8	362.5	154.2	982		982		982		454			
7.14	23,425	718.4	331.9	265.1	112.8	718		718		718		332			
5.84	19,160	24.9	11.5	24.9	3.9	25		25		25		12			
5.06	16,601	149.4	69.0	58.6	23.5	149		149		149		69			
4.10	13,451	19.0	8.8	19.0	3.0	19		19		19		9			
2.94	9,646	333.4	154.0	52.3	52.3	333		333		333		154			
1.96	6,414	197.7	91.3	73.0	31.0	198		198		198		91			
1.63	5,344	3.9	1.8	3.9	0.6	4		4		4		2			
0.00	-	3.1	1.4	3.1	0.5	3		3		3		1			
SUMS															
24.19	**79,364**	**4,319.7**	**1,995.7**	**1,552.1**	**678.2**	**4,320**	**4,320**	**3,885**	**3,885**	**3,638**	**3,638**	**3,001**	**3,001**	**2,566**	**2,319**

UTRGC Project Reaches
Results from TMDL Phase II Stream Channel Erosion Study.

Streambank Fine Sediment Source Information (Simon and others 2003; Simon 2006)											Existing Loads: Stream Average Percent Fines			Existing Loads: Specific Percent Fines		Reduced Loads: Channel Restoration		
RGA River Station (km)	river station (ft)	Bank Erosion (Left)	Bank Erosion (Right)	Bank Instability Percent (Left)	Bank Instability Percent (Right)	Combined Bank Percent Failing (%)	Unit Length (km)	Distributed Average Percent Failing (%)	Length-Weighted Percent Failing (%)	Relative Contribution of Fines from Banks (H, M, L)	"High" Existing Bank Erosion of Fines (m3) *	"Moderate" Existing Bank Erosion of Fines (m3)	"Severity Rated" Existing Bank Erosion of Fines (m3)	Typical Bank Percent Fines (%)	"Reach Specific" Existing Bank Erosion of Fines (m3)	Maximum Treatment Bank Erosion of Fines (m3)	Focused Treatment Bank Erosion of Fines (m3)	Combined H&M Treatment Bank Erosion of Fines (m3)
																All reaches treated	Only "High" reaches treated	"High & Moderate" reaches treated
24.19	79,364	Fluvial	Fluvial	0-10%	0-10%	5.0%												
23.01	75,492	None	Fluvial	0-10%	11-25%	11.5%	1.18	8.3%	9.7%	L	185	68	6.8	6.1%	2.9	1.4	2.9	2.9
22.54	73,950	None	Mass Wasting	0-10%	11-25%	11.5%	0.47	11.5%	5.4%	L	103	38	3.8	6.3%	1.7	0.8	1.7	1.7
21.77	71,424	None	None	0-10%	0-10%	5.0%	0.77	8.3%	6.4%	L	121	44	4.4	6.3%	2.0	0.9	2.0	2.0
21.40	70,210	Fluvial	Fluvial	0-10%	0-10%	5.0%	0.37	5.0%	1.9%	L	35	13	1.3	6.3%	0.6	0.3	0.6	0.6
20.75	68,077	Mass Wasting	Mass Wasting	0-10%	11-25%	11.5%	0.65	8.3%	5.4%	L	102	38	3.8	6.5%	1.7	0.8	1.7	1.7
19.94	65,420	Mass Wasting	Fluvial	51-75%	0-10%	34.0%	0.81	22.8%	18.4%	M	351	129	129.0	12.3%	111.1	51.3	111.1	51.3
19.26	63,189	Fluvial	Mass Wasting	0-10%	26-50%	21.5%	0.68	27.8%	18.9%	M	359	132	132.1	14.8%	136.8	63.2	136.8	63.2
18.57	60,925	None	Mass Wasting	0-10%	51-75%	34.0%	0.69	27.8%	19.1%	M	365	134	134.0	14.8%	138.9	64.2	138.9	64.2
17.99	59,022	Fluvial	Fluvial	0-10%	0-10%	5.0%	0.58	19.5%	11.3%	L	215	79	7.9	14.8%	8.2	3.8	8.2	8.2
17.78	58,333	None	Mass Wasting	0-10%	25-50%	21.5%	0.21	13.3%	2.8%	M	53	19	19.5	17.3%	23.5	10.9	23.5	10.9
16.90	55,446	Fluvial	Fluvial	11-25%	0-10%	11.5%	0.88	16.5%	14.5%	L	277	102	10.2	13.4%	9.5	4.4	9.5	9.5
16.40	53,806	Fluvial	Fluvial	11-25%	11-25%	18.0%	0.50	14.8%	7.4%	L	140	52	5.2	13.4%	4.8	2.2	4.8	4.8
15.78	51,772	None	None	0-10%	0-10%	5.0%	0.62	11.5%	7.1%	L	136	50	5.0	13.4%	4.7	2.2	4.7	4.7
15.277	50,121	None	Fluvial	0-10%	26-50%	21.5%	0.50	13.3%	6.7%	M	127	47	46.7	13.4%	43.6	20.1	43.6	20.1
14.77	48,458	None	Mass Wasting	0-10%	76-100%	46.5%	0.51	34.0%	17.2%	H	328	121	328.4	9.4%	188.4	87.0	87.0	87.0
14.10	46,260	Fluvial	None	0-10%	0-10%	5.0%	0.67	25.8%	17.3%	L	329	121	12.1	21.0%	17.8	8.2	17.8	17.8
13.52	44,357	None	Mass Wasting	0-10%	76-100%	46.5%	0.58	25.8%	14.9%	H	285	105	284.5	18.2%	316.0	146.0	146.0	146.0
13.15	43,143	None	Mass Wasting	0-10%	50-75%	34.0%	0.37	40.3%	14.9%	M	284	104	104.2	18.2%	132.8	61.4	132.8	61.4
12.07	39,600	None	Mass Wasting	0-10%	0-10%	5.0%	1.08	19.5%	21.1%	L	401	147	14.7	18.4%	18.9	8.7	18.9	18.9
11.21	36,778	Fluvial	Mass Wasting	0-10%	51-75%	34.0%	0.86	19.5%	16.8%	M	319	117	117	18.4%	150.8	69.7	150.8	69.7
10.84	35,564	Mass Wasting	Fluvial	51-75%	0-10%	34.0%	0.37	34.0%	12.6%	M	240	88	88.1	18.5%	114.0	52.7	114.0	52.7
10.04	32,940	None	Fluvial	0-10%	11-25%	11.5%	0.80	22.8%	18.2%	L	347	127	12.7	16.3%	14.5	6.7	14.5	14.5
8.46	27,756	None	Mass Wasting	0-10%	76-100%	46.5%	1.58	29.0%	45.8%	H	873	321	872.9	14.1%	751.0	347.0	347.0	347.0
7.14	23,425	None	Mass Wasting	0-10%	0-10%	27.5%	1.32	37.0%	48.8%	M	930	342	341.9	23.0%	549.2	253.7	549.2	253.7
5.84	19,160	None	None	0-10%	0-10%	5.0%	1.30	16.3%	21.1%	L	402	148	14.8	18.4%	19.1	8.8	8.8	19.1
5.06	16,601	Fluvial	Mass Wasting	26-50%	26-50%	38.0%	0.78	21.5%	16.8%	M	319	117	117.4	13.9%	114.2	52.8	114.2	52.8
4.10	13,451	Fluvial	Fluvial	0-10%	0-10%	5.0%	0.96	21.5%	20.6%	L	393	144	14.4	14.4%	14.6	6.7	14.6	14.6
2.94	9,646	Mass Wasting	None	51-75%	0-10%	34.0%	1.16	19.5%	22.6%	M	431	158	158	23.0%	254.9	117.8	254.9	117.8
1.96	6,414					20.0%	0.99	27.0%	26.6%	M	507	186	186	11.6%	151.2	69.8	151.2	69.8
1.63	5,344					12.0%	0.33	16.0%	5.2%	L	99	37	3.7	11.6%	3.0	1.4	3.0	3.0
0.00	-					5.0%	1.63	8.5%	13.8%	L	264	97	9.7	3.5%	2.4	1.1	2.4	2.4
	-																	
24.19	79,364						**24.19**		**20.2%**	**Volume (m3)**	**9322**	**3425**	**3191**		**3303**	**1526**	**2617**	**1594**
										Weight (kN)**	161267	59258	55203		57136	26397.0	45274	27572
										Weight (MT)	**16449**	**6044**	**5631**		**5828**	**2692.5**	**4618**	**2812**
										Volume/Kilometer (m3/km)	385	142	132		137	63.1	108	66
										Metric Ton/Kilometer (MT/km)	680	250	233		241	111.3	191	116
										Treated Length (km)						24.2	2.7	11.4
										Percent Total Load Reduction (%)						53.8%	20.8%	51.7%
										Cost of Treatment ($)								
										Cost per Metric Ton Reduced Load (%/MT)								

* Uses 1905 m3/km [average eroded fines for 4.51 km, no veg (1470 m3/km) and 13.1 km (2340 m3/km)].

** Uses average bulk unit weight of bank sediment from Simon and others 2003 (17.3 kN/m3)

Average Percent Reduction for Treatment	53.8
Slope Reduction from BSTEM	0.462

APPENDIX G

Aquatic Resources Technical Memorandum

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Technical Memorandum

Date:	November 22, 2009
To:	Cindy Walck, State Parks
From:	Chris Fitzer, EDAW-AECOM
Subject:	Aquatic Resources Technical Memorandum for the Upper Truckee River Restoration and Golf Course RelocationProject

Distribution:

1 INTRODUCTION

This technical memorandum summarizes aquatic biological assessments conducted as part of the proposed Upper Truckee River Restoration and Golf Course Relocation Project. The characterization of current conditions provides insight into current aquatic ecological health and provides a baseline against which future monitoring can be measured. Adequate, accurate monitoring and assessment are the cornerstones to preserving, enhancing, and restoring watershed functions and values. The information gathered from monitoring activities is critical to the effort to protect the beneficial uses of water, protect sensitive resources, and determine the effects of watershed development and protection, restoration, and enhancement programs.

The federal Clean Water Act (CWA) gives states and territories the primary responsibility for implementing programs to protect and restore water quality. CWA Section 106(e)(1) requires the U.S. Environmental Protection Agency (EPA) to determine that a state is monitoring the quality of navigable waters and compiling and analyzing data on water quality. To meet those CWA requirements and provide comprehensive information on the status of beneficial uses of California's surface waters, the State Water Resources Control Board and the regional water quality control boards introduced the Surface Water Ambient Monitoring Program (SWAMP) in 2001. The SWAMP provides the impetus to implement a better-organized, standardized program of biological assessment and monitoring throughout the state.

Biological assessments of aquatic communities, also referred to as bioassessments, are rapidly becoming a preferred tool for aquatic ecosystem monitoring. Bioassessments are gaining popularity among scientists, resource managers, and decision makers alike and have been adopted as a primary assessment method as part of the SWAMP. Standardized bioassessment procedures, combined with stream habitat typing and snorkel surveys (protocols developed by California Department of Fish and Game [CDFG]), were employed as primary assessment methods to characterize current conditions of existing aquatic resources in the Upper Truckee River (UTR).

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1.1 BACKGROUND ON BIOASSESSMENT

Aquatic benthic macroinvertebrates (BMIs) are common inhabitants of the stream bottom environment. Insects are the main types present, and commonly include mayflies, stoneflies, caddisflies, and true flies. Non-insect BMIs include snails, leeches, worms, and scuds. Aquatic insects and other BMIs are central to the proper ecological functioning of streams and surrounding terrestrial environments. These BMIs consume decomposing organic matter (e.g., detritus, wood and leaf debris) and attached algae, and in turn become an important food resource to fish and birds. In addition to their role in the food web, BMIs have varying degrees of ability to withstand environmental degradation; thus they may be used as indicators of water quality and habitat condition. For example, sediments from erosion and/or pollutants from runoff may decrease the variety of insects and other BMIs that are able to survive, which may indicate a degradation of biological health.

Use of the stream BMI fauna to gauge the biological health of a stream is known as bioassessment. Bottom-dwelling (or benthic) organisms are collected to detect changes in stream health based on the number of different types present (diversity) and their level of tolerance of environmental impacts and pollution (sensitivity). Monitoring stream BMIs in comparison to reference sites (areas having little or no impact but a similar physical setting) and/or over time at targeted sites provides a method to estimate the amount of degradation of aquatic systems or level of recovery in response to changing land uses. Bioassessment may be used together with other, more traditional methods of stream channel and riparian monitoring to measure the response of stream life to habitat changes. When pollution does not originate from a single point, it can be difficult to accurately characterize the source using chemical methods alone, because this type of pollution usually does not occur continuously and therefore may not be detected in a given water sample. Problems may also exist upstream of a location and not be reflected in the channel or riparian conditions at that site. The advantage of using stream BMIs is that because they live in the stream, they incorporate and embody changes in water quality that occur in both local and upstream areas of the watershed. Another advantage of bioassessment is that once baseline conditions (over a period of years and locations) have been established, repeated sampling can be done with less frequency to document future changes.

To fully understand the concept of bioassessments, it is important not only to know what they are, but also to understand the rationale for conducting them and how they can be used as a decision-making tool. The following text describes the rationale for conducting bioassessments, including the role of bioassessment in water quality determination and the utility of bioassessment as a decision-making tool.

1.1.1 THE ROLE OF BIOASSESSMENT IN WATER QUALITY DETERMINATION

State and tribal water resource agencies in the United States have developed bioassessment protocols that have added an important dimension of ecological understanding to their overburdened and underfunded monitoring programs (Barbour 1997). The central purpose of assessing the biological condition of aquatic communities is to determine how well a water body supports aquatic life (Barbour et al. 1996). Biological communities integrate the effects of different pollutant stressors such as excess nutrients, toxic chemicals, increased temperature, and excessive sediment loading; thus they provide an overall measure of the aggregate impact of the stressors. Use of information about ambient biological communities, assemblages, and populations to protect, manage, and exploit water resources has been developing for the past 150 years (Davis 1995). Despite this long history, it has only been in the last decade that a widely accepted technical

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framework has evolved for using biological assemblage data for assessment of the water resource (Barbour et al. 1996).

1.1.2 UTILITY OF BIOASSESSMENT AS A DECISION-MAKING TOOL

Bioassessment provides important information for monitoring aquatic systems and managing watersheds. Bioassessment serves four primary functions or uses for assessing existing conditions all of which are relevant to the UTR:

1. Initial assessment of conditions
2. Characterizing the magnitude of impairment
3. Assisting in the diagnosis of causes to impairment (e.g., sedimentation, contaminants)
4. Monitoring of temporal trends to evaluate improvements or further degradation

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2 METHODS

This section provides a discussion on the methodologies used to conduct bioassessments in the UTR. Field surveys took place during fall 2006, and included stream habitat typing, snorkel surveys, and bioassessment. Stream habitat typing was conducted throughout the study area, snorkel surveys were conducted in selected deep-water habitats in each of the three main river reaches identified within the study area, and bioassessment surveys were conducted at two sites representative of study reaches 1 and 2. Aquatic habitat types, study reaches, and bioassessment locations are shown in Exhibit 1.

2.1 BIOASSESSMENT

Biologists and ecologists trained in conducting bioassessments performed the bioassessment sampling. This monitoring includes collection of BMIs, assessment of physical habitat characteristics, and general water quality measurements.

2.1.1 BENTHIC MACROINVERTEBRATE SAMPLING

Two different BMI sampling protocols were followed for comparison purposes. Field sampling for the UTR followed the Standard Operating Procedure of the California Stream Bioassessment Procedure (CSBP) for multihabitat sampling and targeted riffle composites of low-gradient streams developed by the CDFG’s Aquatic Bioassessment Laboratory (ABL).

The multihabitat method (MH) can be used to sample any wadeable stream reach, since it does not target specific habitat types. It calls for the identification of a stream reach of 150 meters (m). For each reach, 11 cross-stream transects along the reach were identified at 15-m intervals. Starting at the most downstream transect, benthic samples were collected alternating from the left, center, and right end of the transect using a standard D-frame kick net with 0.5 millimeter (mm) mesh. Organisms were dislodged from the benthic substrate to a depth of 4–6 inches from within a 1 square-foot area of the benthic habitat (e.g., riffle, pool/glide, woody debris, vegetated banks, or submerged macrophytes) immediately upstream of the net. For each sample, the material retained in the net was immediately transferred into appropriately labeled 500-milliliter (mL) plastic wide-mouth jars containing 95% ethanol to preserve any organisms. A consistent amount of time was allocated to sampling each habitat type so as to not bias the BMI data generated during the study. Upon completion of the sample collection from a given transect, the next transect sample was collected in a similar fashion, and the collected material was placed into the same jar containing the material(s) from the previous transect(s). This sampling approach continued until all 11 transects were sampled.

The targeted riffle composite (TRC) method is designed for sampling BMIs in wadeable streams that contain fast-water (riffle-run) habitats and is not appropriate for waterbodies without fastwater habitats (ABL 2006). Riffles are the preferred habitat for TRC sampling, but other fast water habitats are acceptable for sampling if riffles are sparse (ABL 2006). A TRC sample is a composite of 8 individual kick samples of 1 ft^2 of substrate each that are randomly distributed among fast water habitats within the 150 m reach, giving preference to riffles where possible. If fewer than 8 riffles are present in a reach, more than one sample can be taken from a single riffle, especially if riffles are large. Net placement was determined by generating a pair of random numbers between 0 and 9. The first number (multiplied by 10) represents the percent upstream along the habitat unit’s length; the second number (multiplied by 10) represents the percent of the riffle width from right bank. This position is the center of the 1 square foot sampling quadrant for that riffle. A standard D-framed kick net with 500 µ mesh was placed downstream of the sampling quadrant and after dislodging the

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substrate to a depth of 4-6 inches within the 1 square -foot; organisms were carried into the net by the current. Materials collected in the net mesh were deposited in the net were placed into appropriately labeled 500 mL plastic wide-mouth jars filled with 95% ethanol.

The preserved samples were transported, under chain of custody, to the ABL where they were stored at room temperature until sorting and organism identification was performed.

2.1.2 Physical Habitat Assessment

A physical habitat assessment was performed for each reach sampled. The physical habitat assessment methods included a reachwide scoring evaluation, and measurements and observations for transects and intertransects.

The reachwide evaluation included three physical habitat metrics: epifaunal substrate cover, sediment deposition, and channel alteration. Each metric was given a maximum score of 20, with greater values representing a better habitat for BMI; the combined habitat metric score for any site could not be greater than 60. Each metric was assigned to one of four categories of physical condition: optimal (20–16), suboptimal (15–11), marginal (10–6), and poor (5–0). Where possible, discharge was also measured for each reach. U.S. Geological Survey (USGS) gauge data were recorded where available.

Transect measurements and observations included the following attributes: photographs at select transects, wetted width, bankfull width, bankfull height, transect substrates (i.e., size class, depth, and embeddedness), bank stability, human influence, riparian vegetation, instream habitat complexity, and canopy cover. Intertransect attributes included wetted width, flow habitats, and substrates. Photographs were taken at the first transect (upstream [one photo]), the middle transect (upstream and downstream [two photos]), and at the last transect (downstream [one photo]).

A GARMIN Geko 201 global positioning system (GPS) was used to record latitude and longitude coordinates for each sampling site. Reach and transect length were measured using a tape measure. Wetted and bankfull widths and substrate depths were measured using a stadia rod. Canopy was measured using a spherical densiometer. Flow rate (discharge) was determined by reviewing gage data during the survey period. Copies of the field forms are provided in Attachment A.

2.1.3 Water Quality Sampling

The following water quality parameters were measured once upon arrival at each stream reach: temperature, pH, alkalinity, dissolved oxygen (DO), electrical conductivity (EC), and total dissolved solids (TDS). The following equipment was used to measure these water quality parameters:

- Temperature and DO were measured using a YSI Model 55 multi-meter.
- pH, EC, and TDS were measured using a Hanna Combo Model HI 98129 multi-meter.
- Alkalinity was measured using a LaMotte Model WAT-DR field test kit.

2.2 BMI Laboratory Procedures

The CDFG ABL was contracted to perform all BMI laboratory procedures. A discussion of these procedures is provided below.

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2.2.1 Sample Sorting

All sample sorting was performed at the ABL laboratory. Following the removal of alcohol from the 500-mL plastic wide-mouth jars, each sample was placed into a 0.5-mm mesh sieve and rinsed using deionized water. Each item was examined carefully for the presence of BMIs, then large debris (e.g., twigs, rocks) was removed from the sample. The remaining material was then evenly spread across a gridded tray. Following the random selection of a grid (using a random number generator), the materials from within the selected grid were transferred into a petri dish. Using a dissecting microscope, BMIs were removed from the dish during a systematic sorting of the sample. The BMIs were counted and then placed into 50-mL vials containing 70% ethanol/glycerin. This process was repeated grid by grid until 500 BMIs were collected.

Once 500 BMIs were collected, the remaining materials in the last grid being sorted were placed into an additional 50-mL vial labeled with the appropriate sample code. The remaining materials from all of the previously sorted grids were collected into a 500-mL plastic wide-mouth jar containing 70% ethanol/glycerin, and labeled with the sample code and identified as “sorted”; as a quality control measure, sorted materials from 20% of the samples were resorted by a different scientist, with the target of finding no more than 25 uncollected BMIs (5% of the overall number removed for identification). The remaining unsorted materials in the gridded tray were placed back into the original 500-mL plastic wide-mouth jar containing 70% ethanol/glycerin and the original sample label. This process was repeated for all of the samples collected.

2.2.2 Taxonomic Identification

A CSBP Level 2 taxonomic effort was approved for this study, whereby most organisms were taxonomically identified to family, with Chironomidae being identified to genus. This was achieved by removing the BMIs from the 50-mL vials, transferring them to a Petri dish, and identifying each organism using standard taxonomic keys (Harrington and Born 2000). A 10-mL vial with 70% ethanol/glycerin and a specimen label containing the sample identification number and family name was prepared for each taxonomic group, and each identified organism was transferred into the appropriate vial. Once an organism was identified, and before the scientist proceeded to another specimen, the Petri dish was searched for additional organisms of the same family, which were added to the vial for that family. A push-button counter was used to maintain an accurate count of the various organisms; the data from the push-button counter were then transferred to a Level 2 Taxonomic Effort Worksheet. This process continued until all organisms were identified.

2.3 Bioassessment Data Analysis/Management

2.3.1 Data Analysis

The data from the identification of the sorted BMIs for each sample were used to generate biological metrics that allow for an assessment of the biological condition of the reach at each sampling location. These biological metrics define a characteristic of the BMI assemblage that may change in some predictable way with increased human disturbance and/or ecological restoration. The biological metrics are classified into four categories: richness measures, composition measures, tolerance/intolerance measures, and trophic measures. Those specified in the CSBP are listed below.

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Richness Measures

- Taxa Richness
- EPT Taxa
- Plecoptera Taxa
- Trichoptera Taxa
- Ephemeroptera Taxa

Composition Measures

- EPT Index
- Sensitive EPT Index
- Percent Hydropsychidae
- Percent Baetidae

Tolerance/Intolerance Measures

- Tolerance Value
- Percent Dominant Taxa
- Percent Tolerant Organisms
- Percent Intolerant Organisms

Trophic Measures

- Percent Collectors
- Percent Filterers
- Percent Scrapers
- Percent Predators
- Percent Shredders

Richness Measures

Measures of richness reflect the diversity of the aquatic assemblage, where increasing diversity correlates with increasing health of the assemblage; decreasing richness correlates with increasing disturbance. The richness measures used in this study were taxa richness (the total number of individual taxa) and EPT taxa (number of families in the Ephemeroptera [mayfly], Plecoptera [stonefly], and Trichoptera [caddisfly] insect orders).

Composition Measures

Measures of composition reflect the relative contribution of the population of individual taxa to the total fauna and are based on the ecological patterns and environmental requirements of certain organism groups, such as those taxa considered to be environmentally sensitive, or alternatively, those considered to be a nuisance species. The composition measures used in this study were EPT index (percent composition of mayfly, stonefly, and caddisfly larvae); sensitive EPT index (percent composition of EPTs with low tolerance values); percent Hydropsychidae (percent of caddisflies in the more tolerant family Hydropsychidae); and percent Baetidae (a composition measure for a tolerant family of mayflies).

Tolerance/Intolerance Measures

Tolerance/intolerance measures are metrics that reflect the relative sensitivity of the community to aquatic disturbances. Although the taxa used are usually “pollutant tolerant” or “intolerant,” they are not specific to the type of stressor. For example, these metric values typically also vary with increasing fine particulate organic matter and sedimentation. The tolerance/intolerance measures used in this study were tolerance value [values between 0 and 10 weighted for abundance of

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individuals that are pollutant tolerant (higher values) and intolerant (lower values)]; percent intolerant organisms (percent of organisms that are considered highly intolerant to impairment as indicated by tolerance values of 0, 1, or 2); percent tolerant organisms (percent of organisms that are considered highly tolerant to impairment as indicated by tolerance values of 8, 9, or 10); and percent dominant taxa (percent composition of the single most abundant taxa).

Trophic Measures

Trophic measures are metrics that provide information on the balance of feeding strategies in the aquatic assemblage. An imbalance of the functional feeding groups reflects unstable food dynamics and indicates stressed conditions. The trophic measures included in this assessment were percent collector-filterers (percent of BMIs that collect, gather, and filter fine particulate matter); percent collector-gatherers (percent of BMIs that collect and gather particulate matter); percent scrapers (percent of BMIs that graze upon periphyton); percent predators (percent of BMIs that feed on other organisms); and percent shredders (percent of BMIs that shred coarse particulate organic matter). Those BMIs that did not clearly fit into one of the defined trophic measures were grouped into percent other functional feeding groups (FFGs).

Abundance

Abundance is one additional metric that provides information on the total number of organisms in a given sampling area. Abundance is calculated by dividing the total number of organisms collected by the area sampled. The abundance data represent the total number of organisms sampled per unit of measure.

These metrics were quantified for each site to characterize the parameter ranges for each portion of the watershed. General trends in biological metrics associated with disturbance are presented in Table 1. The data will be maintained for a future assessment of year-to-year trends. For the purposes of this technical memorandum, the BMI data and physical habitat data are presented and compared qualitatively, with overall watershed characteristics noted.

Table 1
Trends in Biological Metrics Associated with Disturbance

Biological Metrics	Response to Disturbance
Richness Measures	
Taxa Richness	Decrease
EPT Taxa	Decrease
Composition Measures	
EPT Index	Decrease
Sensitive EPT Index	Decrease
Percent Hydropsychidae	Increase
Percent Baetidae	Increase
Tolerance/Intolerance Measures	
Tolerance Value	Increase
Percent Intolerant Organisms	Decrease
Percent Tolerant Organisms	Increase
Percent Dominant Taxa	Increase
Trophic Measures	
Percent Collectors	Increase
Percent Filterers	Increase
Percent Scrapers	Increase
Percent Predators	Increase
Percent Shredders	Decrease

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2.4 AQUATIC HABITAT TYPING AND SNORKEL SURVEYS

Aquatic habitat typing and snorkel surveys were conducted using methods described in the California Stream Habitat Restoration Manual (Flosi and Reynolds 1998). The aquatic habitat typing was conducted to document habitat types throughout the study reaches. The snorkel survey was conducted to determine and evaluate fish species presence and distribution.

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3 RESULTS AND DISCUSSION

This section provides a discussion on the results of bioassessments, habitat typing, and snorkel surveys conducted on September 21, 2006.

3.1 BIOASSESSMENT

3.1.1 PHYSICAL HABITAT ASSESSMENT

Photo documentation of the study sites is presented in Exhibits 2a through 3b. Several trends in the habitat condition were recorded during the physical habitat assessment of the study sites (Tables 2 and 3 and Exhibits 4–13). The UTR sites ranked from optimal to marginal in habitat quality with physical habitat scores for UTR-1 and UTR-2 (32 and 46, respectively). UTR-1 showed suboptimal epifaunal substrate suited for colonization, some deposition of new gravel affecting a substantial percentage of the bottom, and evidence of channelization disrupting a majority of the stream. UTR-2 provided higher quality habitat overall with optimal epifaunal substrate for colonization, limited increase in bar formation, and no evidence of channelization.

Table 2
Physical Habitat Characteristics of the UTR (Reachwide Scores)

Physical Habitat Parameters	Sampling Sites	
	UTR-1	UTR-2
Epifaunal Substrate/Cover	12	16
Sediment Deposition	11	14
Channel Alteration	9	16
Total Habitat Score	**32**	**46**

Substrate class sizes recorded at UTR-1 included fines, sand, fine gravel, and coarse gravel, cobble, and boulders; with fine gravel being the most dominant class recorded (34%). Substrates in UTR-2 were similarly dominated by fine gravels (34%), however course gravel made up a large percentage (27%) and hardpan was present instead of boulders.

The amount and type of human influence on each reach varied dramatically. Logging was the sole human influence found in UTR-2 and at only 55% of transects. UTR-1 exhibited more urban/suburban influences with parks or lawns present in 91% of the reach, walls, rip-rap, or dams in 64%, and other urban influences such as trash and pipes found in 9% of the reach. Pasture or rangelands border all of the UTR-2 reach.

Bank stability varied substantially between the two reaches and was influenced mainly by logging and grazing. UTR-1 banks were mainly labeled as “vulnerable” (86%), with the remaining banks (14%) classified as “stable.” The vulnerability of UTR-1 banks may likely be influenced by pasture and rangelands along the reach. The bank conditions within UTR-2 proved to be both more stable and degraded with 41% eroded, 50% stable, and 9% vulnerable. Evidence of logging operations in 55% of the reach has most-likely caused bank erosion, however the majority of the reach remains stable. No other human influences were noted within the UTR-2 reach.

The dominant form of instream habitat complexity at both UTR-1 and UTR-2 was filamentous algae; however, many other forms of habitat structures were noted within the reaches. The extensive growth of filamentous algae could perhaps be attributed to the presence of cattle (and associated feces) that can lead to nutrient loading in the creek. However, while pasture/rangelands were found along all of UTR-1, they were not present along UTR-2; therefore the cause of filamentous algae growth in UTR-2 must be distinct or cattle-related inputs must come from elsewhere upstream. Another potential cause of nutrient loading is fertilizer and other runoff from the neighboring golf course. Other habitat areas in UTR-1 were provided by aquatic macrophytes, boulders, woody

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debris and overhanging vegetation. In UTR-2 the habitats included woody debris, undercut banks, overhanging vegetation, and live tree roots. Flow habitats in both reaches were dominated by glides, riffles as the second most dominant, and runs and pools.

Table 3
Physical Habitat Characteristics of the UTR

Physical Habitat Parameters	Sampling Sites	
	UTR-1	UTR-2
Channel Dimensions		
Wetted Width (m)	8.6	10.50
Depth (cm)	34.7	29.6
Bankfull Width (m)	14.32	25.45
Bankfull Height (m)	1.74	1.78
Mean for all 11 transects		
Substrate Size Class (% of reach)		
Large Boulder (1–4 m)	4%	0%
Small Boulder (0.25-1m)	6%	0%
Coarse Gravel (16–64 mm)	18%	27%
Fine Gravel (2–16 mm)	34%	34%
Sand (0.25–2 mm)	27%	22%
Fines (<0.25 mm)	9%	4%
Hardpan (Consol. Fines)	0%	11%
Cobble	2%	2%
Mean for all 11 transects		
Embeddedness (% substrate class ≥ gravel)	37.4%	29.6%
Mean for all 11 transects		
Bank Stability (% of reach)		
Eroded	0%	41%
Vulnerable	86%	9%
Stable	14%	50%
Average between transects for both banks (right and left)		
Human Influence (% of reach)		
Walls/Riprap/Dams	64%	0%
Buildings	0%	0%
Pavement/Cleared Lot	0%	0%
Road/Railroad	0%	0%
Pipes (Inlet/Outlet)	9%	0%
Landfill/Trash	9%	0%
Park/Lawn	91%	0%
Row Crops	0%	0%
Pasture/Rangeland	100%	0%
Logging Operations	0%	55%
Mining Activity	0%	0%
Average between transects		
Riparian Vegetation		
Upper Canopy (>5 m high)	0.52	2.45
Lower Canopy (<5 m high)	2.91	1.68
Ground Cover—Shrubs, Grasses	2.45	3.00
Ground Cover—Bare Soil	1.18	1.09
Mean for all 11 transects 0 = Absent (0%), 1 = Sparse (<10%), 2 = Moderate (10-40%), 3 = Heavy (40-75%), 4 = Very Heavy (>75%)		

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Table 3
Physical Habitat Characteristics of the UTR

Physical Habitat Parameters	Sampling Sites	
	UTR-1	UTR-2
Instream Habitat Complexity		
Filamentous Algae	2.60	2.45
Aquatic Macrophytes	0.90	0.09
Boulders	1.20	0.00
Large Woody Debris	0.00	0.55
Small Woody Debris	0.50	0.55
Undercut Banks	0.10	0.64
Overhanging Vegetation	0.40	0.45
Live Tree Roots	0.00	0.27
Artificial Structures	0.10	0.00
Mean for all 11 transects 0 = Absent (0%), 1 = Sparse (<10%), 2 = Moderate (10-40%), 3 = Heavy (40-75%), 4 = Very Heavy (>75%)		
Flow Habitats (% of reach)		
Riffle	11	18.5
Rapid	0	0
Run	14	8
Glide	67	73
Pool	10	0.5
Cascade/ Fall	0	0
Dry	0	0
Mean for all transects		

3.1.2 Water Quality Assessment Modify for UTR

Results of field water quality measurements are presented in Table 4. Discharge was measured to be 9.9 cubic feet per second (cfs) at both sites (USGS 2006). Temperature was lower at UTR-2 (8.3°C) than at UTR-1 (12.8°C), likely due to the time of day that the recording was made (9:20 am versus 1:20 pm). DO, pH, electrical conductivity, salinity, and alkalinity were all found to be similar at both sites.

Table 4
Water Quality Characteristics for the UTR

Water Quality Parameters	Sampling Sites	
	UTR-1	UTR-2
Discharge (cfs)	9.9	9.9
Temperature (^{o}C)	12.8	8.3
Dissolved Oxygen (mg/L)	7.86	8.18
pH (standard pH units)	7.31	7.58
Electrical Conductivity (µs)	78	80
Salinity (PPT)	38	40
Alkalinity (mg/L as $CaCO_3$)	25	25
[1] Reading from the USGS gauge located on the Upper Truckee River above Meyers, CA (USGS 103366092 Upper Truckee River at hwy 50 above Meyers CA)		

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3.1.3 Benthic Macroinvertebrate Biological Metrics

Results of the biological metrics for BMIs collected in the UTR are provided in Table 5 and Exhibits 14–18. A discussion of each of the metrics is provided below. The BMI taxa list is provided in Attachment B.

Multi-Habitat

Richness Measures

Richness measures include taxa richness and EPT taxa. Taxa richness was the same for both reaches sampled with 55 taxa groups found. EPT taxa were sampled throughout both reaches with 20 taxa found in UTR-1 and 26 in UTR-2.

As discussed above, richness measures reflect the diversity of the aquatic assemblage where increasing diversity correlates with increasing health of the assemblage and suggests that niche space, habitat, and food sources are adequate to support survival and propagation of particular species.

Composition Measures

Composition measures include EPT index, sensitive EPT index, percent Hydropsychidae, and percent Baetidae. More EPT were found in UTR-2 (26) than in UTR-1 (20) and similarly both the EPT and sensitive EPT indexes were higher for UTR-2. The percentage of Baetid and Hydropsychid taxa sampled ranged from 1-2 % in both reaches, demonstrating a lack of domination by tolerant EPT taxa.

Composition metrics reflect the relative contribution of the population of individual taxa to the total fauna. Choice of a relevant taxon is based on knowledge of the individual taxa and their associated ecological patterns and environmental requirements, such as those that are environmentally sensitive or a nuisance species. Percent Hydropsychidae and Baetidae (two tolerant families) are regional metrics that have evolved to be particularly useful in California streams. The metric values usually increase as the effects of pollution in the form of fine particulate organic matter and sedimentation increase.

Tolerance/Intolerance Measures

Tolerance/intolerance measures include the tolerance value, percent intolerant organisms, percent tolerant organisms, and percent dominant taxa. Both reaches had high values of intolerant taxa sampled with 26.8% in UTR-1 and 37.3% in UTR-2. Tolerant taxa were less abundant with values of 7.7% in UTR-1 and 8.7% in UTR-2. Percent dominant taxon was 17.6% in UTR-1 and 20.1% in UTR-2.

Tolerance/intolerance measures reflect the relative sensitivity of the community to aquatic disturbances. The taxa used are usually pollution tolerant and intolerant, but are generally nonspecific to the type of pollution or stressors. High percentages of intolerant taxa in both reaches demonstrate healthy stream conditions.

Trophic Measures

Trophic measures include percent collectors-filterers, percent scrapers, percent predators, and percent shredders. Both UTR-1 and UTR-2 were dominated by collector-gatherers and scrapers,

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with predators being the next most prominent feeding group. UTR-1 had 29.8% collector gatherers and 28.8% scrapers, and UTR-2 had 33.3% collector-gatherers and 29.6% scrapers.

Trophic measures (i.e., functional feeding group measures) provide information on the balance of feeding strategies in the aquatic assemblage. The composition of the functional feeding group (FFG) is a surrogate for complex processes of trophic interaction, production, and availability of food sources. An imbalance of the functional feeding groups can reflect unstable food dynamics and can indicate a stressed condition. Although dominated by collectors and scrapers, both UTR-1 and UTR-2 contain diversity in functional feeding groups, demonstrating stream health.

Abundance

Abundance provides a measure of density of individuals collected over a fixed area. Because the abundance of individuals can be dominated by a single taxon and/or tolerant taxa, this measure does not necessarily reflect ecological health, function, or value. Nevertheless, abundance is a useful measure to document increases and/or decreases in the aquatic population over a given area.

UTR-1 had a higher abundance per square foot of individuals with 284. UTR-2 had a slightly lower abundance at 241. The relatively high abundance at UTR-1 can likely be attributed to more diverse and favorable substrate conditions, including higher concentrations of boulders and the lack of hardpan substrate.

Table 5
Biological Metrics for BMIs Collected in the UTR

Biological Metric	Sampling Sites			
	UTR-1		UTR-2	
	Multi-habitat	Targeted riffle	Multi-habitat	Targeted riffle
Richness Measures				
Taxa Richness	55	38	55	46
EPT Taxa	20	23	26	24
Composition Measures				
EPT Index	40.4	67.7	47.9	58.9
Sensitive EPT Index	27.2	58.1	37.9	46.8
Percent Hydropsychidae	2.0	3.8	1.2	3.2
Percent Baetidae	1.4	1.2	1.0	2.0
Tolerance/ Intolerance Measures				
Tolerance Value	4.2	2.4	3.6	3.1
Percent Intolerant Organisms	26.8	59.9	37.3	49.0
Percent Tolerant Organisms	7.7	2.2	8.7	3.0
Percent Dominant Taxa	17.6	20.2	20.1	20.4
Trophic Measures				
Percent Collectors-Filterers	6.1	4.4	2.8	5.7
Percent Collectors-Gatherers	29.8	29.4	33.3	43.3
Percent Scrapers	28.8	39.1	29.6	23.3
Percent Predators	17.8	19.4	18.1	19.4
Percent Shredders	8.1	6.0	9.3	5.3
Abundance (per square foot)	284.5	669	240.8	192

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Targeted Riffle Composite

Richness Measures

Richness measures include taxa richness and EPT taxa. Taxa richness was 38 for UTR-1 and 46 for UTR-2. EPT taxa were sampled throughout both reaches with 23 taxa found in UTR-1 and 24 in UTR-2.

As discussed above, richness measures reflect the diversity of the aquatic assemblage where increasing diversity correlates with increasing health of the assemblage and suggests that niche space, habitat, and food sources are adequate to support survival and propagation of particular species.

Composition Measures

Composition measures include EPT index, sensitive EPT index, percent Hydropsychidae, and percent Baetidae. About the same number of EPT were found in UTR-2 (24) and UTR-1 (23). The EPT index was 67.7% for UTR-1 and 58.9 for UTR-2. The sensitive EPT index was 58.1% for UTR-1 and 46.8% for UTR-2 demonstrating stream health. The percentage of Hydropsychid taxa sampled was 3.8% in UTR-1 and 3.2% in UTR-2. The percent Baetid taxa was 1.2% for UTR-1 and 2.0% for UTR-2. Low percentages of tolerant Baetids and Hydropsychids show the ability of intolerant EPT taxa to survive in the river.

Composition metrics reflect the relative contribution of the population of individual taxa to the total fauna. Choice of a relevant taxon is based on knowledge of the individual taxa and their associated ecological patterns and environmental requirements, such as those that are environmentally sensitive or a nuisance species. Percent Hydropsychidae and Baetidae (two tolerant families) are regional metrics that have evolved to be particularly useful in California streams. The metric values usually increase as the effects of pollution in the form of fine particulate organic matter and sedimentation increase. Low composition values indicate that all of the reaches of stream are currently limited in their ability to support sensitive EPT species.

Tolerance/Intolerance Measures

Tolerance/intolerance measures include tolerance value, percent intolerant organisms, percent tolerant organisms, and percent dominant taxa. Both reaches had high values of intolerant taxa sampled with 59.9% in UTR-1 and 49.0% in UTR-2. Tolerant taxa were less abundant with values of 2.2% in UTR-1 and 3.0% in UTR-2. Percent dominant taxon was 20.2% in UTR-1 and 20.4% in UTR-2. Both reaches demonstrate high abundance of intolerant taxa and taxonomic diversity, thus demonstrating the health of aquatic habitat.

Tolerance/intolerance measures reflect the relative sensitivity of the community to aquatic disturbances. The taxa used are usually pollution tolerant and intolerant, but are generally nonspecific to the type of pollution or stressors.

Trophic Measures

Trophic measures include percent collectors-filterers, percent scrapers, percent predators, and percent shredders. Both UTR-1 and UTR-2 were dominated by collector-gatherers and scrapers, with predators being the next most prominent feeding group. UTR-1 had 29.4% collector gatherers and 39.1 scrapers and UTR-2 had 43.3% collector-gatherers and 23.3% scrapers. Despite the high

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abundance of collector-gatherers, various other FFGs were found within the UTR-1 and UTR-2 reaches.

Trophic measures (i.e., functional feeding group measures) provide information on the balance of feeding strategies in the aquatic assemblage. The composition of the functional feeding group is a surrogate for complex processes of trophic interaction, production, and availability of food sources. An imbalance of the functional feeding groups can reflect unstable food dynamics and can indicate a stressed condition.

Abundance

Abundance provides a measure of density of individuals collected over a fixed area. Because the abundance of individuals can be dominated by a single taxon and/or tolerant taxa, this measure does not necessarily reflect ecological health, function, or value. Nevertheless, abundance is a useful measure to document increases and/or decreases in the aquatic population over a given area.

UTR-1 had a higher abundance per square foot of individuals with 669. UTR-2 had a drastically lower abundance at 192. The relatively high abundance at UTR-1 can likely be attributed to more diverse and favorable substrate conditions, including higher concentrations of boulders and the lack of hardpan substrate. Fewer individuals collected in UTR-2 could be related to logging activities in the reach and the erosion of the river banks.

3.2 Aquatic Habitat Typing and Snorkel Surveys

3.2.1 Aquatic Habitat Typing

A total of four different habitat types were noted throughout the 3 study reaches in the project study area (see Exhibit 1). Different habitat types serve a variety of functions for fish and BMIs. Habitat diversity has important influences on the aquatic community. Habitat types are often categorized by flow relationships. The four flow-related habitats documented within the study area are described below.

- **Riffles**—Riffles are shallow sections in a stream, where water breaks over rocks or other partially submerged organic debris and produces surface agitation. Riffles are typically higher gradient than other habitat types, and substrates in these sections are usually dominated by larger particle sizes (e.g., coarse gravel, cobble, and boulders). Riffles exhibit conditions conducive to spawning for certain fish species, improve water quality (e.g., turbulence increases dissolved oxygen), and often are productive areas for the BMI community.

- **Runs**—Runs are swiftly flowing reaches with little surface agitation and no major flow obstructions. They often appear as flooded or fully inundated riffles. Typical substrate in this habitat type consists of gravel, cobble, and boulders. Runs frequently are formed on the downstream end of riffles and provide many of the same functions. They meet varying habitat requirements for different species or different size class individuals.

- **Glides**—Glides are wide, relatively homogenous habitat types with uniform channel bottoms. Flows typically exhibit low to moderate velocities, lacking pronounced turbulence. Substrate usually consists of smaller particle sizes (sand, gravel, and cobble). Glides provide important transitional habitats between riffles, runs, and pools. Glides with adequate cover (in the form of substrate or woody debris, as described below) provide important rearing habitat for juvenile fish species.

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- **Pools**—Pools are deep habitat types, formed and maintained by hydraulic forces that create a scouring effect. Pools can be found in various locations, depending on the dominant processes associated with the formation. Pool habitat is important because they provide velocity refugia (i.e., shelter) during high winter and spring flows, and they are an especially supportive habitat during the summer low-flow period as well as during periodic droughts. Adults of many aquatic species, including rainbow trout, mountain whitefish, and Tahoe sucker, rely heavily on pool habitat. Deeper pools with good shelter characteristics provide important habitat (Bjornn and Reiser 1979).

The extent and quality of glide and pool habitats can be greatly influenced by the health of riparian vegetation, which provides important structure and shelter components.

Throughout the study area, habitat type diversity varies longitudinally along the river, with a pattern of decreasing diversity from upstream to downstream. Habitat in Reach 1, the furthest downstream reach, is least diverse in the study area, dominated by long, homogeneous glides with a few deep holes. Reach 2 also includes several long glides; however, these habitats are more frequently broken by small riffles and pools. Reach 3 has the largest relative length of habitat types classified as riffles (see Exhibit 1).

3.2.2 Snorkel Survey

Background

Seven native fish species (Table 6) are known to occur in the UTR (Murphy and Knopp 2000, Moyle 2002, Dill and Cordone 1997, Schlesinger and Romsos 2000). The general abundance of the native fish community has declined considerably since the arrival of the first Euro-Americans in the Tahoe Basin in the 1840s. Several factors are believed to have contributed to the decline or extinction of native fish and the degradation of fish habitat in the UTR as well as throughout the greater Tahoe Basin. Logging, water diversions, grazing, commercial harvest, road building, and the introduction of nonnative fish and other aquatic organisms have contributed cumulatively to the change in the Tahoe Basin's fisheries composition and degradation of fish habitat (Murphy and Knopp 2000). Since the Comstock Era (circa 1860), 20 additional species of nonnative fish have been introduced into Tahoe Basin aquatic communities, and at least six (Table 6) are known to occur in the UTR (Murphy and Knopp 2000, Moyle 2002, Dill and Cordone 1997, Schlesinger and Romsos 2000). The variety of nonnative fish introduced into the Tahoe Basin is the result of numerous attempts by State agencies and anglers to establish sustainable commercial and recreational fisheries. The introduction of nonnative fish has greatly influenced the native fish community.

Native Fish Species

The Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) is the only salmonid native to lakes and streams in the Tahoe Basin. In the late 1800s and early 1900s, this species supported a commercial fishery in the Tahoe basin. The fishery declined in the 1920s, and it collapsed in the early 1930s (Cordone and Frantz 1966). By 1939, the Lahontan cutthroat trout was extirpated in the Tahoe Basin, from overharvesting, habitat degradation, and the introduction of nonnative fishes (Moyle 2002). Numerous attempts have been made to reintroduce this native trout. Between 1956 and 1964, Lahontan cutthroat trout was planted annually in headwater streams of the UTR (Cordone and Frantz 1966). In 1970, the species was Federally listed as endangered, but was reclassified as threatened in 1975 (40 *Federal Register* 29864, July 16, 1975), to facilitate its management and allow angling.

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Numerous efforts have been made to restore Lahontan cutthroat trout populations in streams and small lakes, including the upper reaches of the UTR. Reintroduction efforts in the Tahoe Basin have been hampered by the presence of nonnative trout (see below), which compete with, predate on, and/or hybridize with Lahontan cutthroat trout (Moyle 2002). For reintroduction of Lahontan cutthroat trout to be successful, nonnative salmonids must first be removed.

Large numbers of Lahontan cutthroat trout were stocked into lakes in the UTR watershed between 1996 and 2001. In 2001, CDFG curtailed planting all trout (including Lahontan cutthroat trout) in backcountry lakes and streams in the Sierra Nevada above 5,000 feet elevation because of concerns over their effects on native amphibians, particularly the Sierra Nevada yellow-legged frog (*Rana sierrae*) (Knutson, pers. comm., 2005 and Lehr, pers. comm., 2005). Lahontan cutthroat trout are presently confined to headwater tributaries of the UTR and are not present in the study area.

The mountain whitefish (*Prosopium williamsoni*) is native to lakes and streams of western North America, including the Tahoe Basin. Adults spawn in the fall or early winter among gravel, cobble, and boulders, in riffles of tributary streams. Mountain whitefish favor stream bottoms and feed mainly on aquatic insect larvae. Their current distribution throughout the Tahoe Basin is poorly documented, and they generally are believed to be less abundant and less widely distributed relative to historic levels. The reason for decline is unclear; construction of dams and predation on whitefish fry by nonnative trout species are believed to be possible causes (Moyle 2002). Mountain whitefish were not observed in the study area during snorkel surveys.

The Tahoe sucker (*Catostomus tahoensis*) is native to lakes and streams in the Tahoe Basin. This fish may spawn in Lake Tahoe or its tributary streams, including the UTR. In streams, spawning generally occurs in runs or areas of small gravel in pools. Juveniles prefer pools and deep runs with abundant cover (Moyle 2002). Tahoe sucker was observed in the study area during snorkel surveys.

The Paiute sculpin (*Cottus beldingi*) is the only sculpin native to the UTR watershed. This species inhabits streams with slight to moderate current and is found in riffle areas among rubble or large gravel. It also occurs in lakes, including Lake Tahoe. Its diet includes a variety of aquatic invertebrates. The Paiute sculpin is an important prey item for some species of trout (Moyle 2002) and it has been documented in the study area. However, Paiute sculpin were not observed in the study area during snorkel surveys.

The speckled dace (*Rhinichthyes osculus*) is the most widely distributed fish in western North America. Lahontan speckled dace (*R. o. robustus*) occurs throughout streams and lakes in the Tahoe Basin and is the only dace subspecies native to the UTR. Lahontan speckled dace may spawn among gravel areas in riffles in tributary streams. In streams, fry (i.e., early life stage, postlarval) speckled dace concentrate in warm shallows, particularly between large rocks or among emergent vegetation. Adults prefer large substrates (i.e., material on the channel bottom; gravel, cobbles, boulders) with interstitial spaces, shallow rocky riffles and runs, and submerged vegetation or tree roots (Moyle 2002). Speckled dace were not observed in the study area during snorkel surveys.

The Lahontan redside (*Richardsonius egregious*) is native to streams and lakes in the Tahoe Basin, including the UTR watershed. Spawning occurs in the littoral zone (less than 3 feet deep) in lakes or among gravel and cobble substrate in tributary streams. In small streams, adults associate with high-velocity water along the stream margin or in backwater areas (Moyle 2002). Lahontan redsides were observed in the study area during snorkel surveys.

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The tui chub (*Gila bicolor*) is native to streams and lakes in the Tahoe Basin. Two subspecies of tui chub have been reported to occur in the Tahoe Basin: the Lahontan lake tui chub (*G. b. pectinifer*) and the Lahontan stream tui chub (*G. b. obesa*). The lake form is a pelagic fish that feeds on zooplankton in the open waters of Lake Tahoe. The stream form is a benthic fish that feeds on bottom invertebrates in Lake Tahoe and tributary streams. The two forms are difficult to distinguish because of slight variations in morphology and are more readily indentified by their different habitat preferences. Both generally spawn over sandy bottoms or at the mouths of tributaries. Larvae of both forms eventually move out of nursery areas and into their respective habitats (Moyle 2002). No tui chubs, lake nor stream, were observed during snorkel surveys.

Nonnative Fish Species

Rainbow trout (*Oncorhynchus mykiss*) were first introduced into Lake Tahoe in the late 1800s. Large numbers of domestic, hatchery-raised rainbow trout are currently planted annually into Lake Tahoe. Rainbow trout have also been occasionally stocked in an irrigation pond (hole 9 pond) on the golf course. In the recent past, rainbow trout from the hole 9 pond have been transplanted into the UTR (with approval by CDFG) before the pond was drained to make repairs. Rainbow trout have the potential to threaten Lahontan cutthroat trout through competition, predation, and hybridization. Rainbow trout were observed in the study area during snorkel surveys.

Brown trout (*Salmo trutta*) were first introduced into eastern North America, and then into California in 1893 (Dill and Cordone 1997). This fish likely was introduced into the Tahoe Basin shortly after its first planting in other parts of California. Brown trout are fall spawners and have the potential to threaten cutthroat trout through predation and competition. Brown trout were not observed during snorkel surveys; however, they have been documented within the UTR watershed.

Brook trout (*Salvelinus fontinalis*) are native to eastern North America and were first brought to California in 1871 (Dill and Cordone 1997). They were planted in numerous streams and lakes throughout California. However, the timing of the first introduction of brook trout into the Tahoe Basin is undocumented. Large numbers of brook trout reportedly were planted into Lake Tahoe between 1953 and 1958 (Cordone and Frantz 1968). Brook trout introductions can fundamentally change alpine lake and stream ecosystems. Brook trout have eliminated yellow-legged frogs, other amphibians, and large invertebrates through predation. Brook trout also have been documented to contribute to elimination of native cutthroat trout through competitive interactions (Moyle 2002). Brook trout were not observed during snorkel surveys in the study area; however, they have been documented within the UTR watershed.

Several warm-water species—bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*M. dolomieu*), and brown bullhead catfish (*Ictalurus nebulosus*)—have been introduced into Lake Tahoe and some tributary streams (Moyle 2002). Their influence on the aquatic ecosystem is unknown; however, their introduction likely has had an adverse effect on native fishes. Bluegill was observed during the fall 2006 snorkel surveys in the study area, while largemouth bass, smallmouth bass, and brown bullhead catfish were not.

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Table 6
Fish Species in the Upper Truckee River

Common Name	Scientific Name	Observed in the Study Area during Fall 2006 Snorkel Survey
Native Fish Species		
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	
Mountain whitefish	*Prosopium williamsoni*	
Tahoe sucker	*Catostomus tahoensis*	X
Paiute sculpin	*Cottus beldingi*	
Lahontan speckled dace	*Rhinichthyes osculus robustus*	
Lahontan redside	*Richardsonius egregious*	X
Tui chub	*Gila bicolor*	
Nonnative Fish Species		
Rainbow trout	*Oncorhynchus mykiss*	X
Brown trout	*Salmo trutta*	X
Brook trout	*Salvelinus fontinalis*	
Kokanee salmon	*Oncohynchus nerka*	
Bluegill	*Lepomis macrochirus*	X
Brown bullhead catfish	*Ictalurus nebulosus*	

Source: Moyle 2002, Dill and Cordone 1997, Schlesinger and Romsos 2000, data compiled by EDAW in 2009

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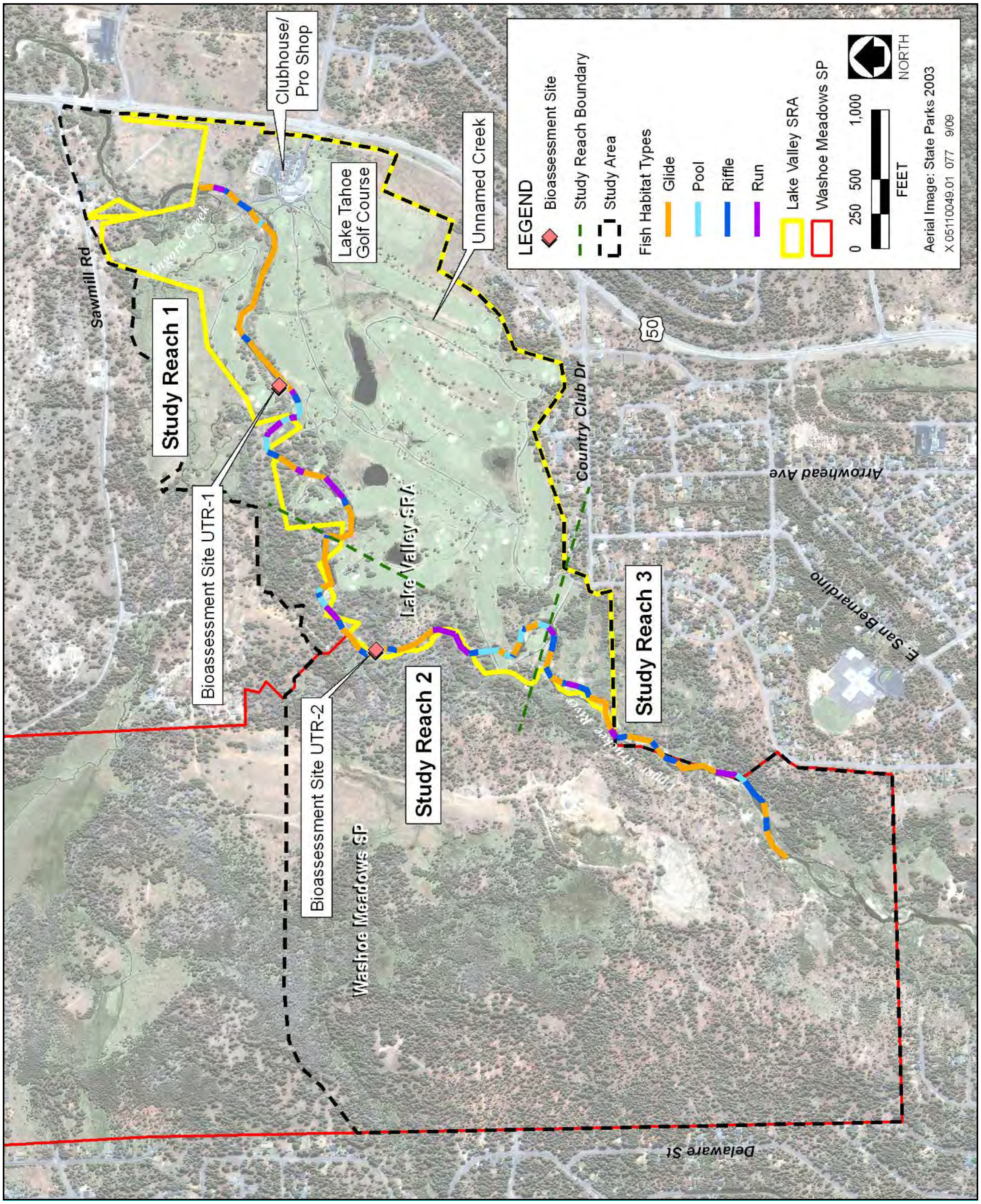

Source: Data compiled by EDAW in 2009

Fish Habitat and Bioassessment Survey Sites **Exhibit 1**

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UTR-1, Transect A (upstream)

UTR-1, Transect F (upstream)

Photodocumentation of Upper Truckee River (Reach UTR-1) (09/21/06) **Exhibit 2a**

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UTR-1, Transect F (downstream)

UTR-1, Transect K (downstream)

Photodocumentation of Upper Truckee River (Reach UTR-1) (09/21/06) **Exhibit 2b**

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UTR-2, Transect A (upstream)

UTR-2, Transect F (upstream)

Photodocumentation of Upper Truckee River (Reach UTR-2) (09/21/06) **Exhibit 3a**

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UTR-2, Transect F (downstream)

UTR-2, Transect K (upstream)

Photodocumentation of Upper Truckee River (Reach UTR-2) (09/21/06) **Exhibit 3b**

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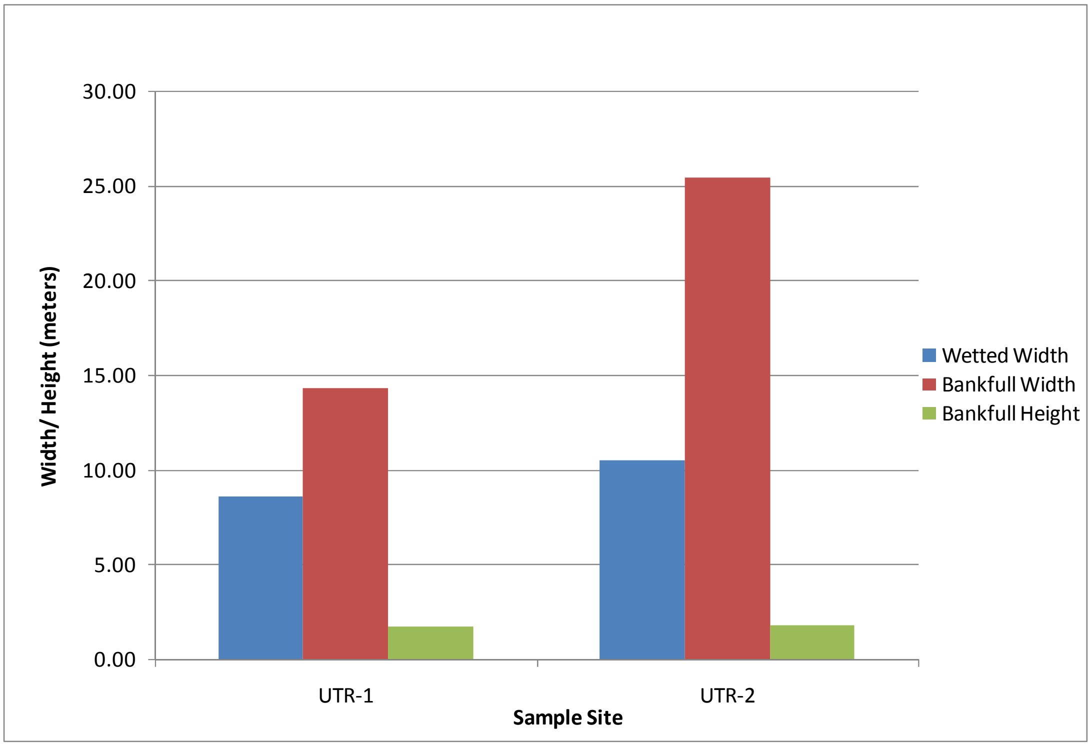
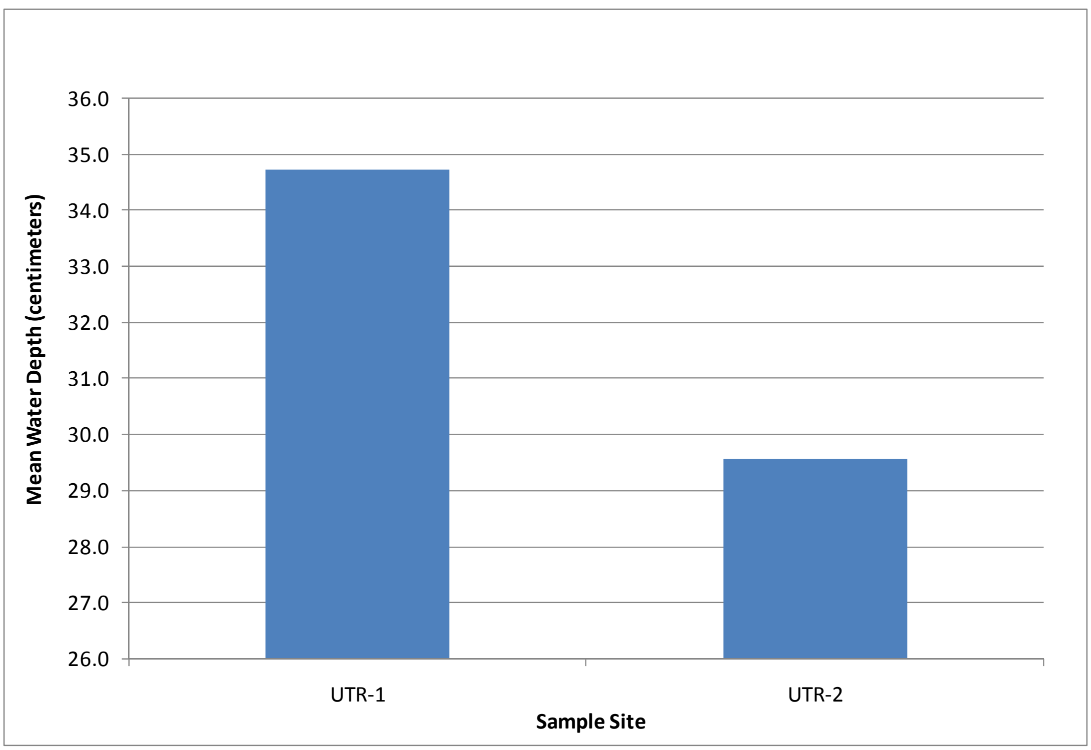


Mean Channel Dimensions by Reach **Exhibit 4**



Mean Water Depth by Reach **Exhibit 5**

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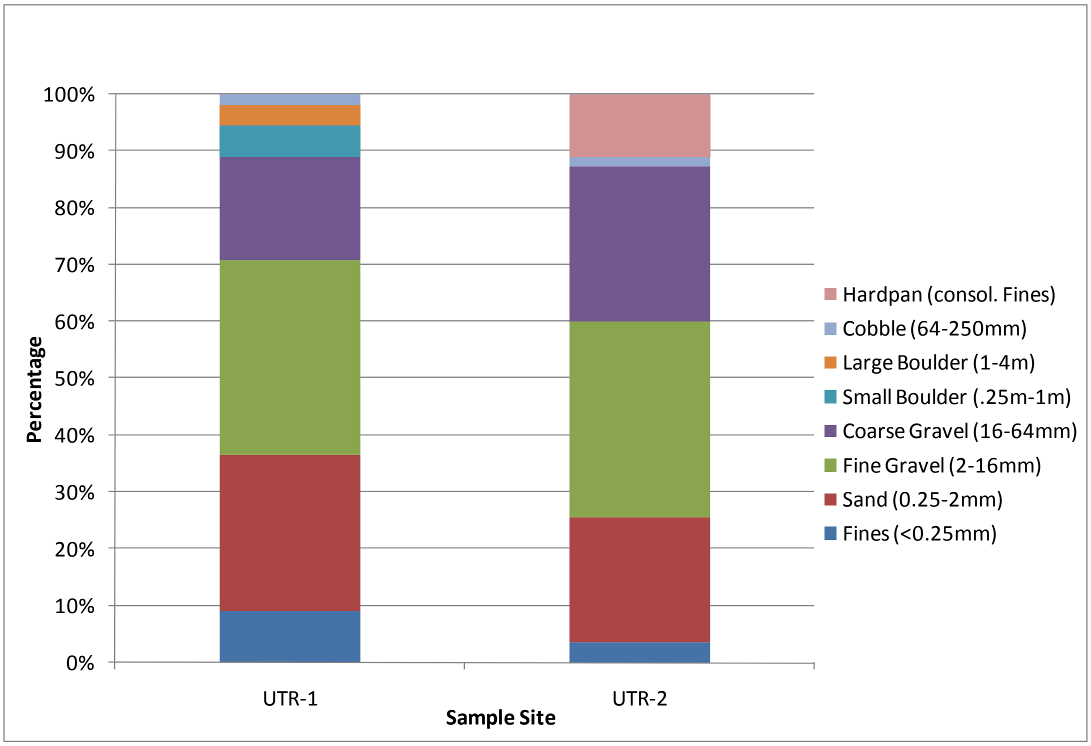
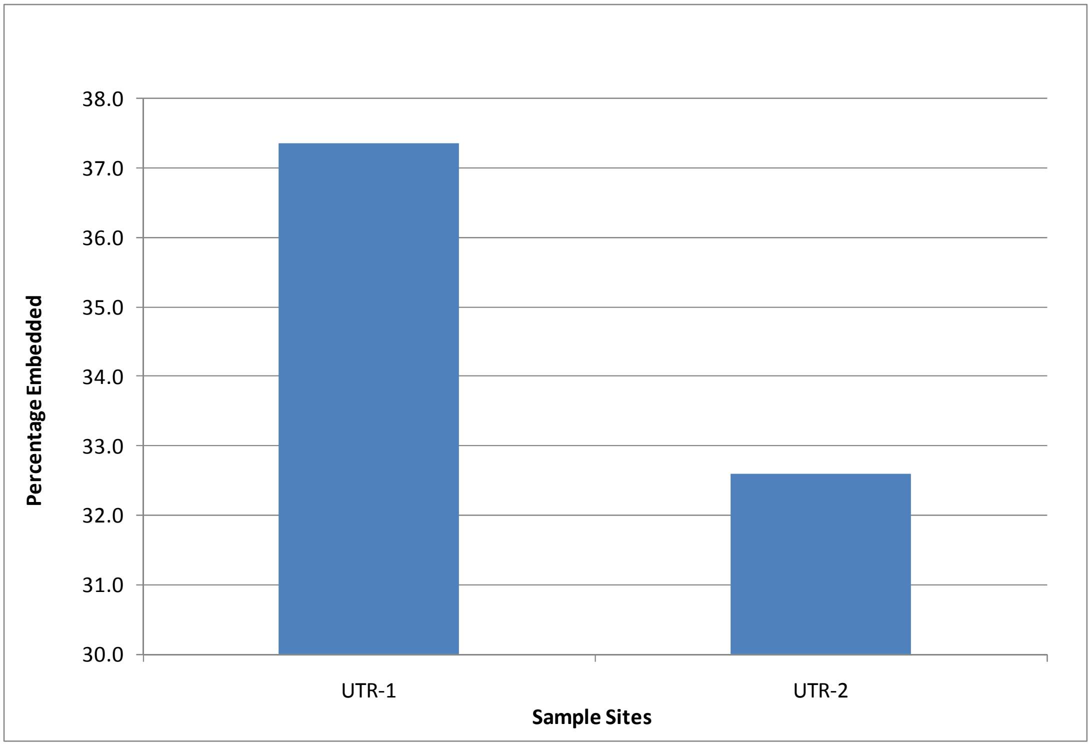


Substrate Size Class Abundance by Reach **Exhibit 6**



Cobble Embeddedness by Reach **Exhibit 7**

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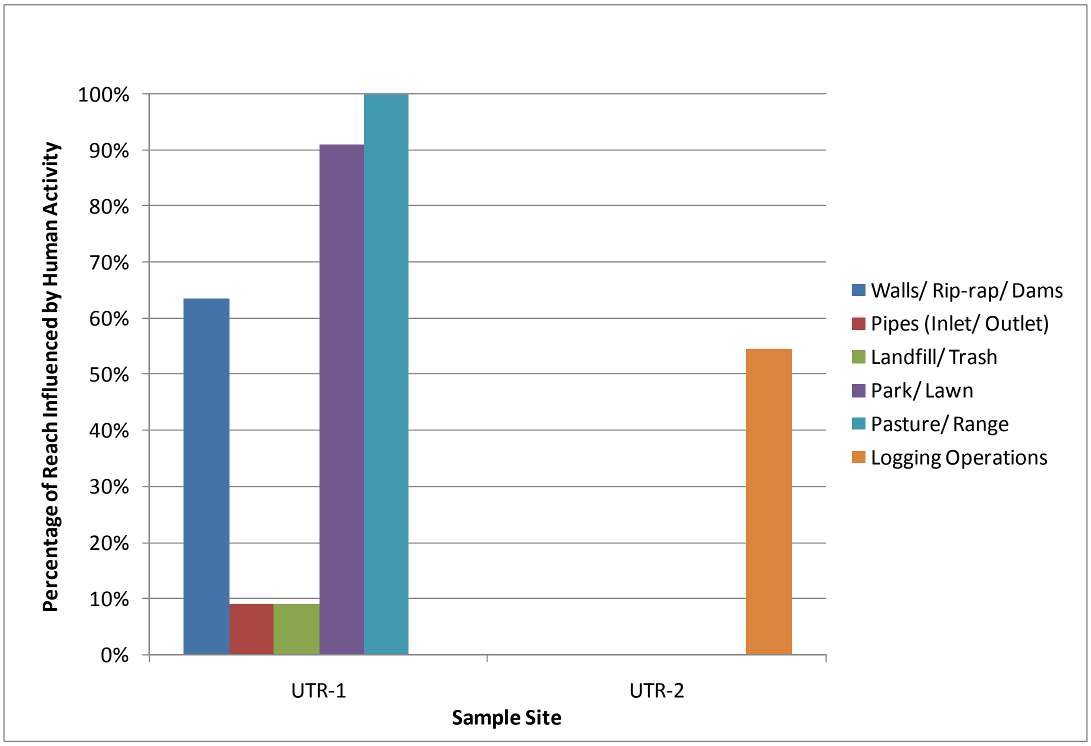
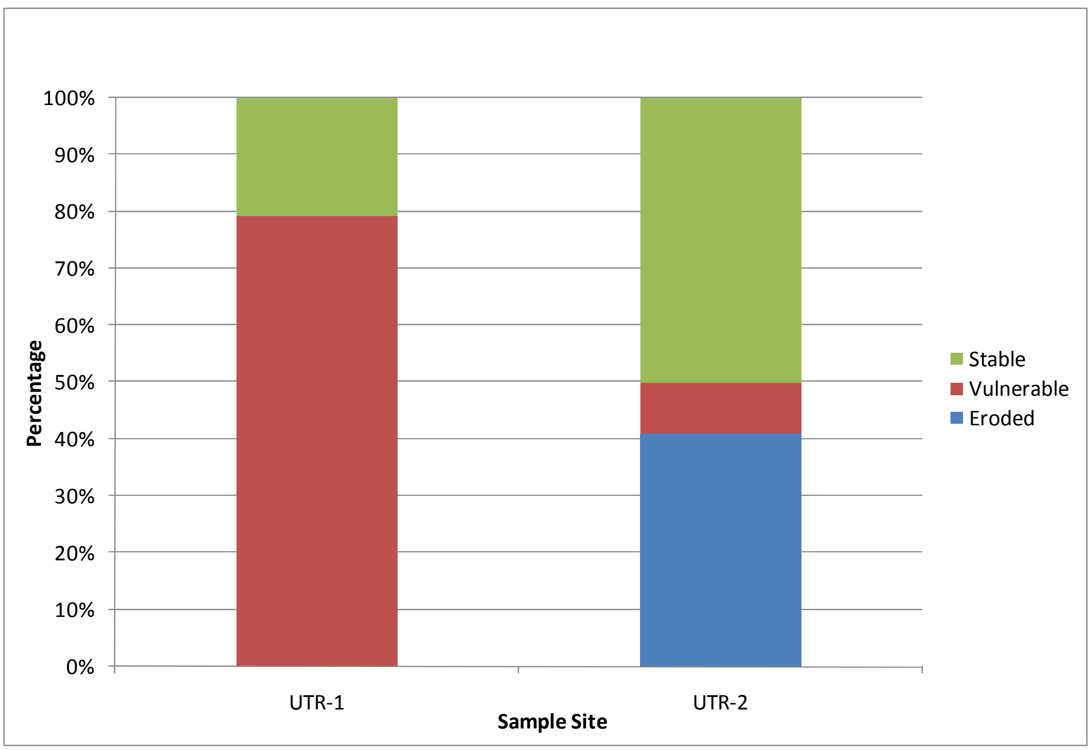


Human Influence by Reach **Exhibit 8**



Bank Stability by Reach **Exhibit 9**

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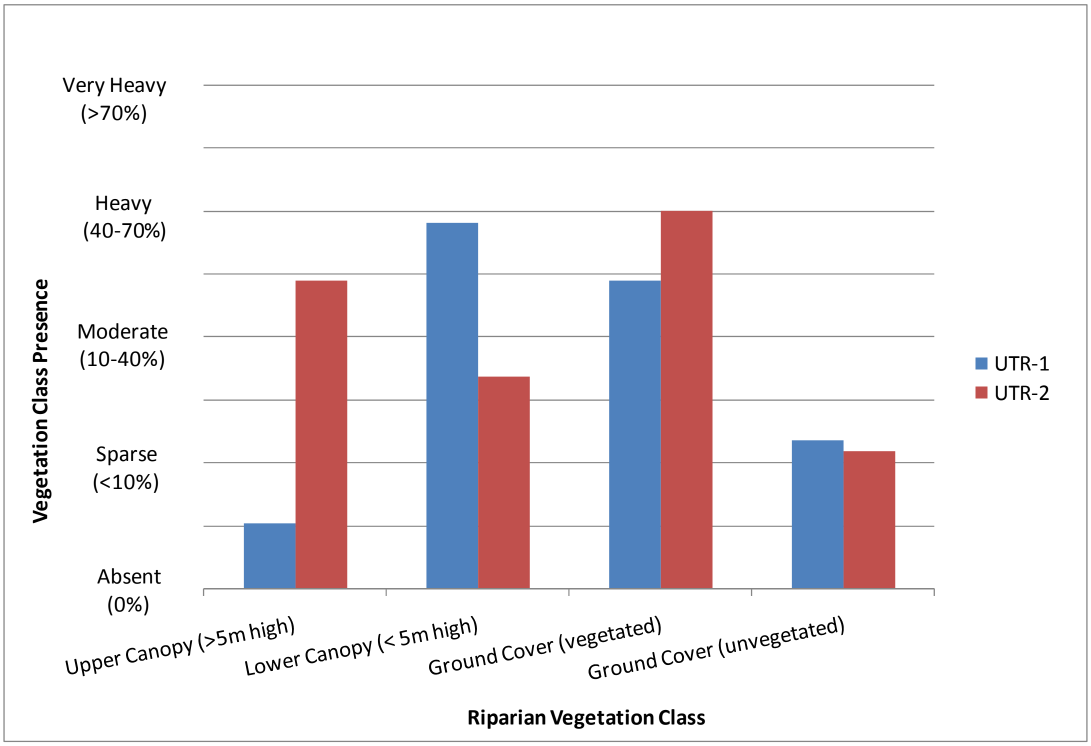
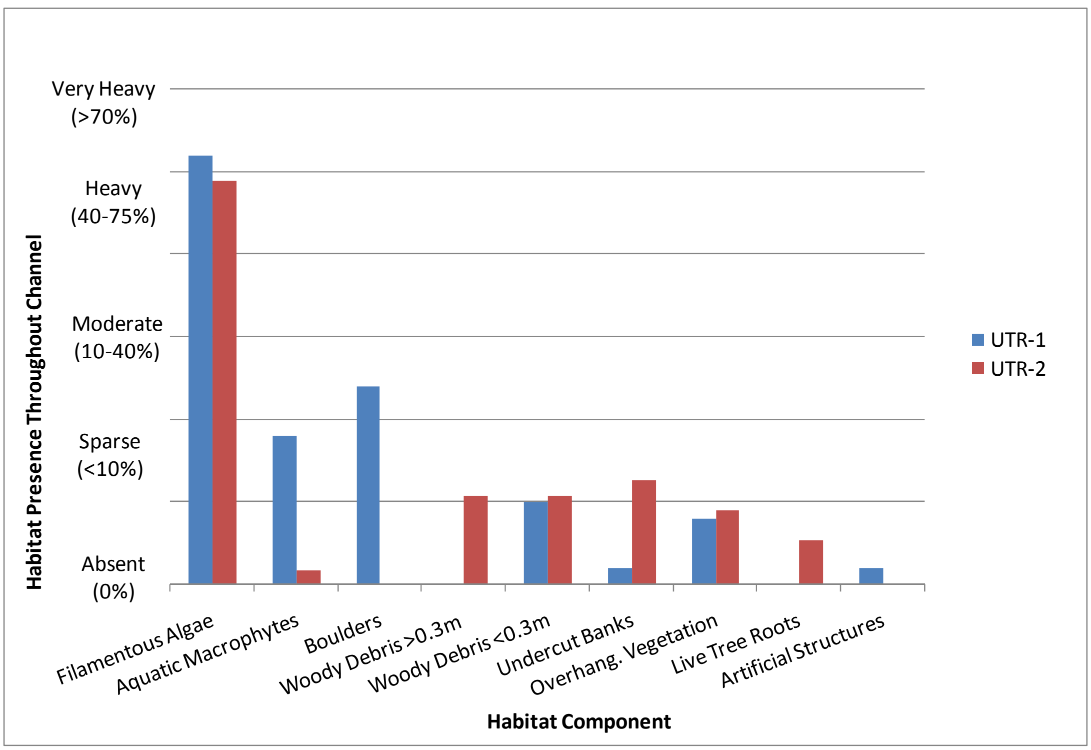


Riparian Vegetation Class by Reach **Exhibit 10**



Instream Habitat Complexity by Reach **Exhibit 11**

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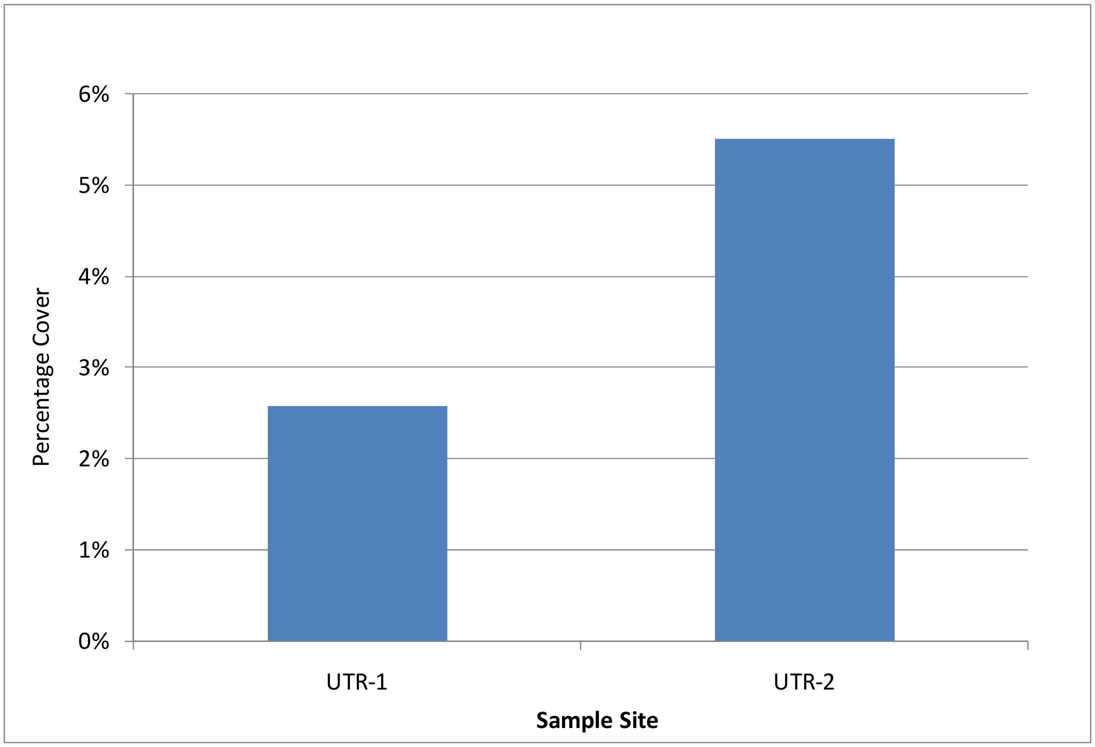
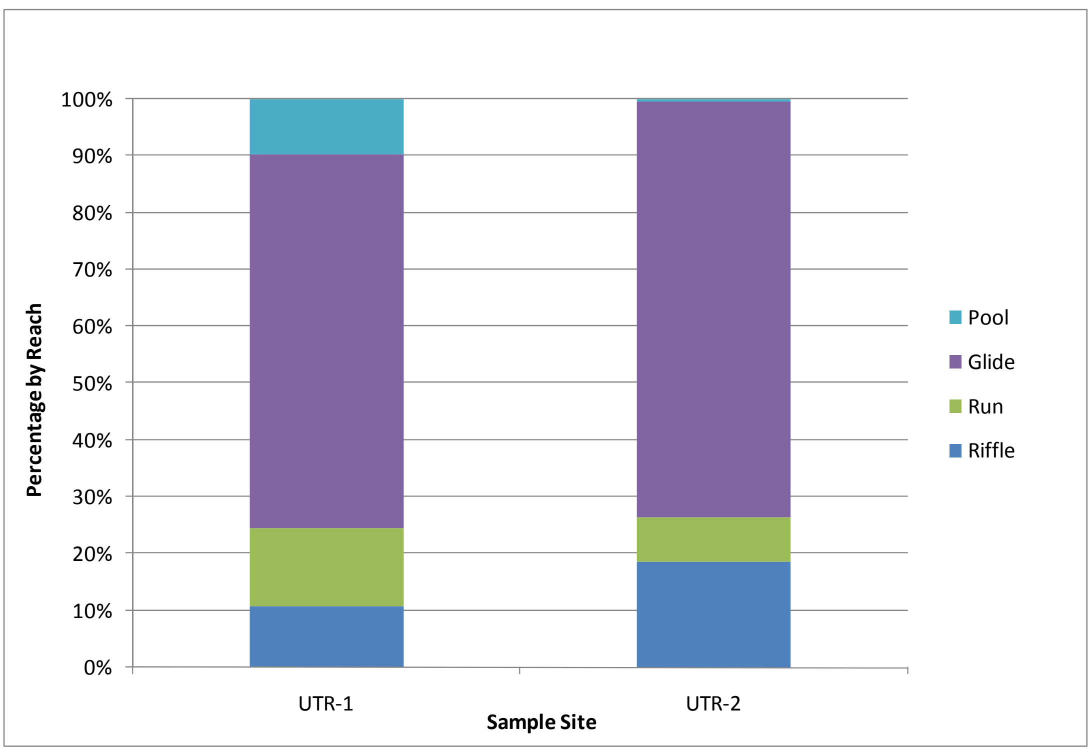


Riparian Canopy Cover by Reach **Exhibit 12**



Flow Habitats by Reach **Exhibit 13**

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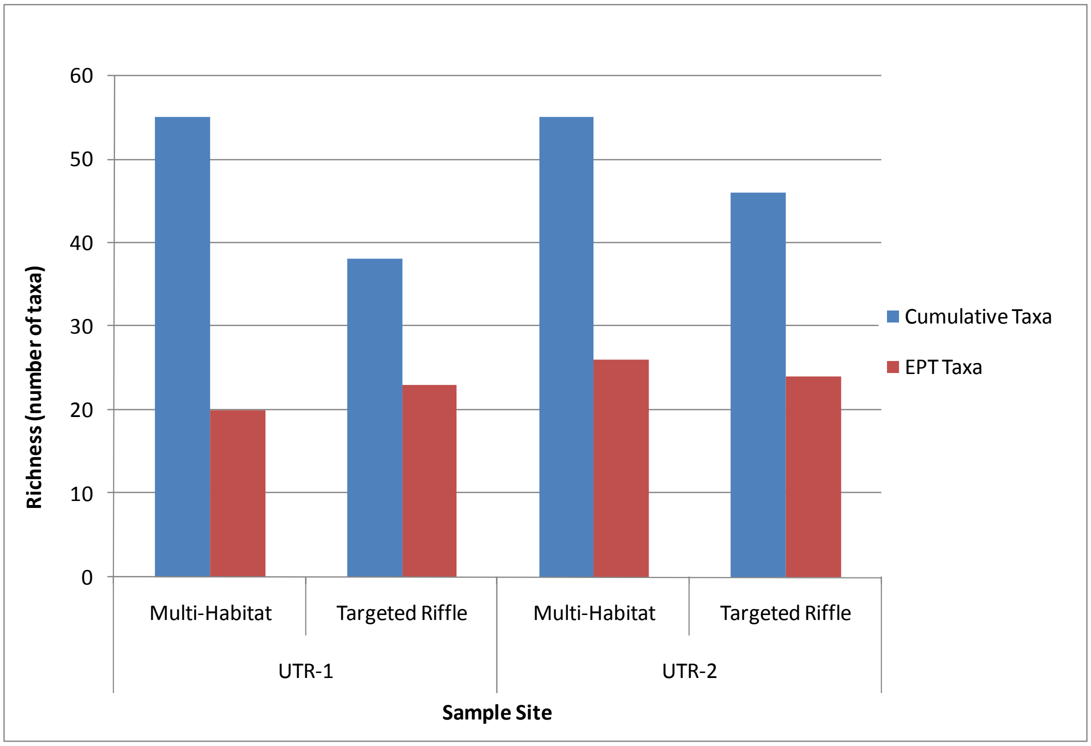
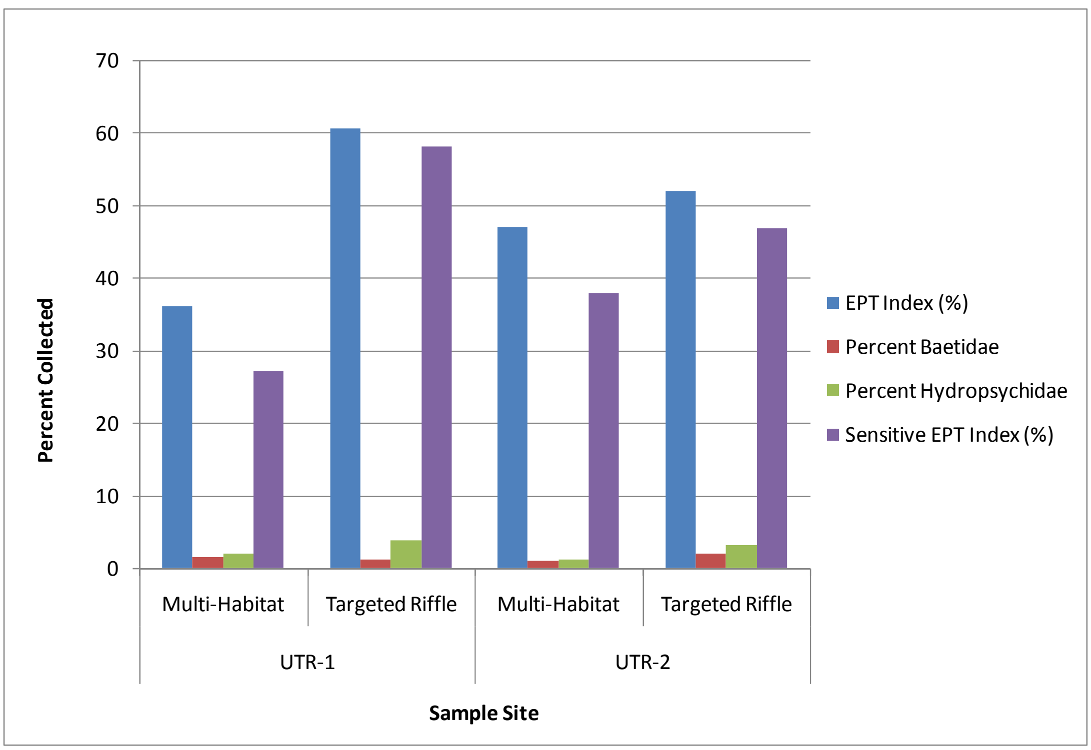


BMI Richness Measures by Reach **Exhibit 14**



BMI Composition Measures by Reach **Exhibit 15**

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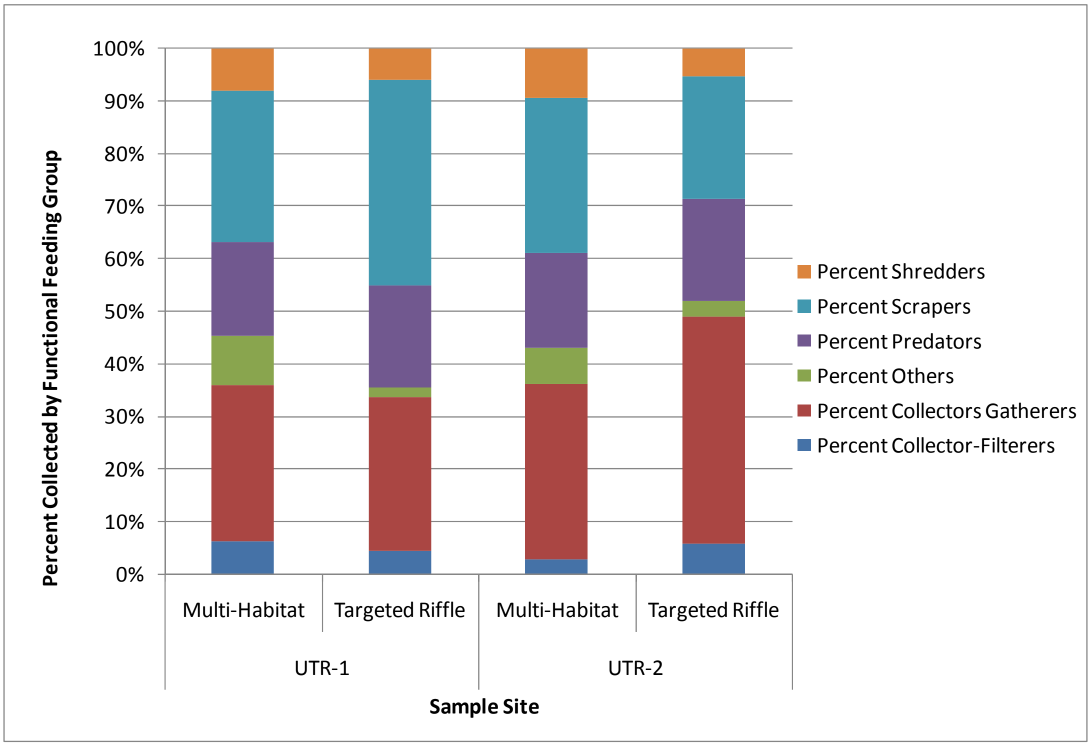
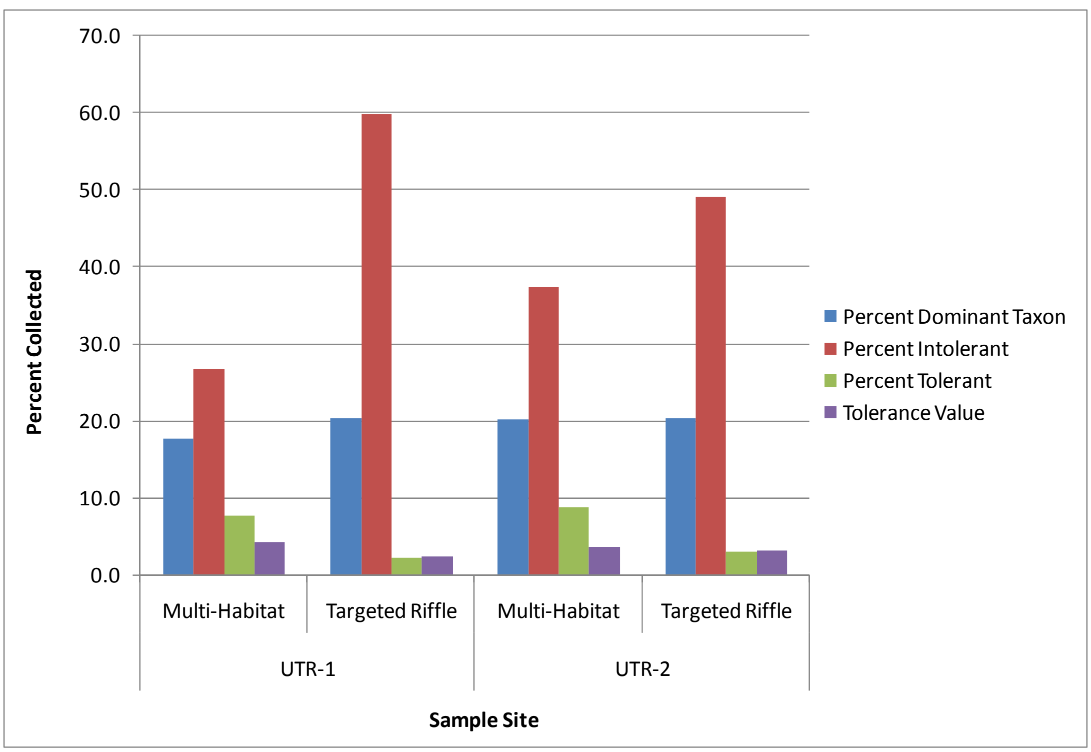


BMI Tolerance/Intolerance Measures by Reach **Exhibit 16**



BMI Trophic Measures by Reach **Exhibit 17**

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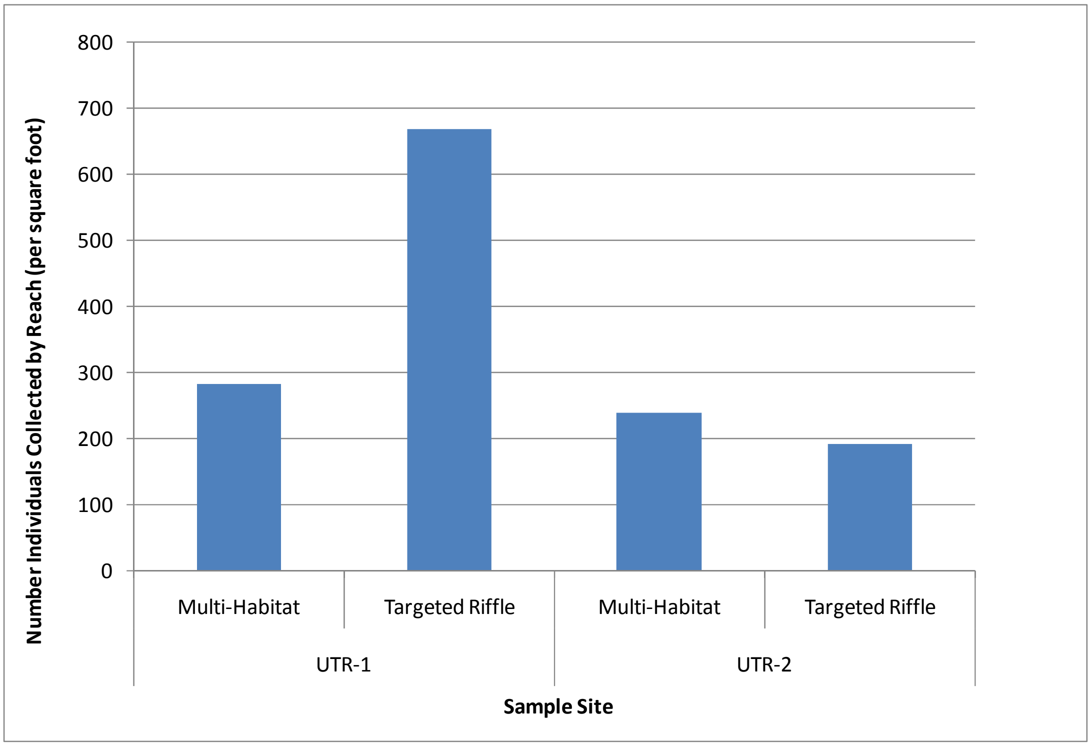

BMI Abundance by Reach **Exhibit 18**

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Attachment A

Bioassessment Forms

Aquatic Bioassessment Laboratory
Water Pollution Control Laboratory
California Department of Fish and Game

ABL Stream Habitat Characterization Form

FULL VERSION *Revision date: March 17, 2006*

REACH DOCUMENTATION Standard Reach Length = 150 m Distance between transects = 15 m		
Project Name:	Date:	Time:
Stream Name:	Site Name:	
Site Code:	Crew Members:	
Latitude: ºN	datum: **NAD27** **NAD83**	
Longitude: ºW		

AMBIENT WATER QUALITY MEASUREMENTS							
Temperature (°C)		pH		Alkalinity (mg/L)		Turbidity (optional)	
Dissolved O_2 (mg/L)		Specific Cond. (µs)		Salinity (ppt)		Silica (optional)	

REACH LENGTH			
150 m		Other	
Actual Length (m)			
Explanation:			

PHOTOGRAPHS:	**A (up):** ☐	**F (up):** ☐	**F (down):** ☐	**K (down):** ☐
Additional Photographs (optional):				

DISCHARGE MEASUREMENTS (first measurement = left bank) **check if measurement not possible** ☐

VELOCITY AREA METHOD (preferred)				**Transect Width:**			
	Distance from Bank (cm)	Depth (cm)	Velocity (m/sec)		Distance from Bank (cm)	Depth (cm)	Velocity (m/sec)
1				11			
2				12			
3				13			
4				14			
5				15			
6				16			
7				17			
8				18			
9				19			
10				20			

BOUYANT OBJECT METHOD			
	Float 1	Float 2	Float 3
Distance			
Float Time			
Float Reach Cross Section			
width (m) depth (cm)	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

NOTABLE FIELD CONDITIONS (check one box per topic)						
Evidence of recent rainfall (enough to increase surface runoff)	NO		minimal		>10% flow increase	
Evidence of fires in reach or immediately upstream (<500 m)	NO		< 1 year		< 5 years	
Dominant landuse/ landcover in area surrounding reach	Agriculture		Forest		Rangeland	
	Urban/ Indus		Suburb/Town		Other	

Site Code:	Date: __ __ / __ __ / **2005**	**FULL FORM**

SLOPE and BEARING FORM (transect based- for Full PHAB only)

Transect	Main Segment			Supplemental Segment 1			Supplemental Segment 2		
	Slope (degrees)	Bearing (0º-359º)	Proportion (%)	Slope (degrees)	Bearing (0º-359º)	Proportion (%)	Slope (degrees)	Bearing (0º-359º)	Proportion (%)
K-J									
J-I									
I-H									
H-G									
G-F									
F-E									
E-D									
D-C									
C-B									
B-A									

SLOPE MEASUREMENTS (use the fewest segments necessary, record as percent slope not degrees slope) BASIC ONLY

Segment Number	Segment Length	Percent Slope	Segment Number	Segment Length	Percent Slope	Segment Number	Segment Length	Percent Slope	Segment Number	Segment Length	Percent Slope
1			4			7			10		
2			5			8			11		
3			6			9			12		

ADDITIONAL HABITAT CHARACTERIZATION

Parameter	Optimal	Suboptimal	Marginal	Poor
Epifaunal Substrate/ Cover	Greater than 70% of substrate favorable for epifaunal colonization	40-70% mix of stable habitat; well-suited for colonization	20-40% mix of stable habitat; substrate frequently disturbed	Less than 20% stable habitat; lack of habitat is obvious
Score:	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected	Moderate deposition of new gravel, sand or fine sediment on bars; 30-50% of the bottom affected	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently
Score:	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, (e.g. bridge abutments; recent channelization not present.	Channelization or shoring structures present on both banks; 40 to 80% of stream reach disrupted	Over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed
Score:	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Site Code:	Date: __ __ / __ __ / 2006	Take PHOTOGRAPH Upstream
Wetted Width (m):	Bankfull Width (m):	Bankfull Height: **Transect: A**

TRANSECT SUBSTRATES				Cobble Embed (%)
Position	mm or Size Class	Depth (cm)	CPOM	
L Bank			P A	
LeftCtr			P A	
Center			P A	
RightCtr			P A	
R Bank			P A	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

0 = Not Present CH - Within Channel B = On Bank
C = Within 10m of Channel P = >10m and <50m of Channel

HUMAN INFLUENCE	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	0 B C P	CH	0 B C P
Buildings	0 B C P	CH	0 B C P
Pavement/ Cleared Lot	0 B C P		0 B C P
Road/ Railroad	0 B C P	CH	0 B C P
Pipes (Inlet/ Outlet)	0 B C P	CH	0 B C P
Landfill/ Trash	0 B C P	CH	0 B C P
Park/ Lawn	0 B C P		0 B C P
Row Crops	0 B C P		0 B C P
Pasture/ Range	0 B C P		0 B C P
Logging Operations	0 B C P		0 B C P
Mining Activity	0 B C P	CH	0 B C P

RIPARIAN VEGETATION (downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy>75%)
2 = Moderate (10-40%) **circle one**

Riparian estimates are made 5m above and 5m below the transect and 10m to the side starting at the bank.

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m to 5m high)		
Shrubs and saplings 0.5m to 5m high	0 1 2 3 4	0 1 2 3 4
Ground Cover (<0.5 m high)		
Shrubs and saplings, herbs/ grasses	0 1 2 3 4	0 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 4	0 1 2 3 4

INSTREAM HABITAT COMPLEXITY	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)
Filamentous Algae	0 1 2 3 4
Aquatic Macrophytes	0 1 2 3 4
Boulders	0 1 2 3 4
Woody Debris >0.3m	0 1 2 3 4
Woody Debris <0.3m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

DENSIOMETER READINGS (0-17) *count covered dots*	
Left Bank	
Center Upstream	
Center Downstream	
Right Bank	

Inter-transect: A-B Wetted Width (m):

FLOW HABITATS (% between transects, T=100%)	
Channel Type	%
Riffle	
Rapid	
Run	
Glide	
Pool	
Cascade/ Fall	
Dry	

INTER-TRANSECT SUBSTRATES (measure in mm or use size classes)			
Position (%)	mm or Size Class	Depth (cm)	CPOM
L Bank			P A
LeftCtr			P A
Center			P A
RightCtr			P A
R Bank			P A

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size classes listed to right

SUBSTRATE SIZE CLASS CODES

RS = bedrock smooth (>car)
RR = bedrock rough (> car)
RC = concrete/asphalt
XB = large boulder (1-4m)
SB = sm blder (.25 m to 1m)
CB = cobble (64-250mm)
GC = coarse gravel (16-64)
GF = fine gravel (2-16 mm)
SA = sand (0.25-2mm)
FN = fines (<0.25mm)
HP = hardpan (consol. fines)
WD = wood
OT = other

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P)/ absence (A) of coarse particulate organic matter (>1.0 mm) within 1 cm of each particle.

Cobble Embeddedness: visually estimate % embedded by fine particles (record to nearest 5%)

Site Code:	Date: __ __ / __ __ / 2006	
Wetted Width (m):	Bankfull Width (m):	Bankfull Height:	Transcect: B

TRANSECT SUBSTRATES				Cobble Embed (%)
Position	mm or Size Class	Depth (cm)	CPOM	
L Bank			P A	
LeftCtr			P A	
Center			P A	
RightCtr			P A	
R Bank			P A	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

HUMAN INFLUENCE	0 = Not Present CH - Within Channel B = On Bank C = Within 10m of Channel P = >10m and <50m of Channel		
	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	0 B C P	CH	0 B C P
Buildings	0 B C P	CH	0 B C P
Pavement/ Cleared Lot	0 B C P		0 B C P
Road/ Railroad	0 B C P	CH	0 B C P
Pipes (Inlet/ Outlet)	0 B C P	CH	0 B C P
Landfill/ Trash	0 B C P	CH	0 B C P
Park/ Lawn	0 B C P		0 B C P
Row Crops	0 B C P		0 B C P
Pasture/ Range	0 B C P		0 B C P
Logging Operations	0 B C P		0 B C P
Mining Activity	0 B C P	CH	0 B C P

RIPARIAN VEGETATION (downstream)	0 = Absent (0%) 3 = Heavy (40-75%) 1 = Sparse (<10%) 4 = Very Heavy>75%) 2 = Moderate (10-40%) **circle one**	
Riparian estimates are made 5m above and 5m below the transect and 10m to the side starting at the bank.		
Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m to 5m high)		
Shrubs and saplings 0.5m to 5m high	0 1 2 3 4	0 1 2 3 4
Ground Cover (<0.5 m high)		
Shrubs and saplings, herbs/ grasses	0 1 2 3 4	0 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 4	0 1 2 3 4

INSTREAM HABITAT COMPLEXITY	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)
Filamentous Algae	0 1 2 3 4
Aquatic Macrophytes	0 1 2 3 4
Boulders	0 1 2 3 4
Woody Debris >0.3m	0 1 2 3 4
Woody Debris <0.3m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

DENSIOMETER READINGS (0-17) *count covered dots*	
Left Bank	
Center Upstream	
Center Downstream	
Right Bank	

Inter-transect: B-C Wetted Width (m):

FLOW HABITATS (% between transects, T=100%)	
Channel Type	%
Riffle	
Rapid	
Run	
Glide	
Pool	
Cascade/ Fall	
Dry	

INTER-TRANSECT SUBSTRATES (measure in mm or use size classes)			
Position (%)	mm or Size Class	Depth (cm)	CPOM
L Bank			P A
LeftCtr			P A
Center			P A
RightCtr			P A
R Bank			P A

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size classes listed to right

SUBSTRATE SIZE CLASS CODES

RS = bedrock smooth (>car)
RR = bedrock rough (> car)
RC = concrete/asphalt
XB = large boulder (1-4m)
SB = sm blder (.25 m to 1m)
CB = cobble (64-250mm)
GC = coarse gravel (16-64)
GF = fine gravel (2-16 mm)
SA = sand (0.25-2mm)
FN = fines (<0.25mm)
HP = hardpan (consol. fines)
WD = wood
OT = other

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P)/ absence (A) of coarse particulate organic matter (>1.0 mm) within 1 cm of each particle.

Cobble Embeddedness: visually estimate % embedded by fine particles (record to nearest 5%)

Site Code:	Date: __ __ / __ __ / 2006	
Wetted Width (m):	Bankfull Width (m):	Bankfull Height:

Transect: C

TRANSECT SUBSTRATES				Cobble Embed (%)
Position	mm or Size Class	Depth (cm)	CPOM	
L Bank			P A	
LeftCtr			P A	
Center			P A	
RightCtr			P A	
R Bank			P A	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

HUMAN INFLUENCE	0 = Not Present CH - Within Channel B = On Bank C = Within 10m of Channel P = >10m and <50m of Channel								
	Left Bank				Channel	Right Bank			
Walls/ Rip-rap/ Dams	0	B	C	P	CH	0	B	C	P
Buildings	0	B	C	P	CH	0	B	C	P
Pavement/ Cleared Lot	0	B	C	P		0	B	C	P
Road/ Railroad	0	B	C	P	CH	0	B	C	P
Pipes (Inlet/ Outlet)	0	B	C	P	CH	0	B	C	P
Landfill/ Trash	0	B	C	P	CH	0	B	C	P
Park/ Lawn	0	B	C	P		0	B	C	P
Row Crops	0	B	C	P		0	B	C	P
Pasture/ Range	0	B	C	P		0	B	C	P
Logging Operations	0	B	C	P		0	B	C	P
Mining Activity	0	B	C	P	CH	0	B	C	P

RIPARIAN VEGETATION (downstream)	0 = Absent (0%) 3 = Heavy (40-75%) 1 = Sparse (<10%) 4 = Very Heavy>75%) 2 = Moderate (10-40%) **circle one**	
Riparian estimates are made 5m above and 5m below the transect and 10m to the side starting at the bank.		
Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m to 5m high)		
Shrubs and saplings 0.5m to 5m high	0 1 2 3 4	0 1 2 3 4
Ground Cover (<0.5 m high)		
Shrubs and saplings, herbs/ grasses	0 1 2 3 4	0 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 4	0 1 2 3 4

INSTREAM HABITAT COMPLEXITY	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)
Filamentous Algae	0 1 2 3 4
Aquatic Macrophytes	0 1 2 3 4
Boulders	0 1 2 3 4
Woody Debris >0.3m	0 1 2 3 4
Woody Debris <0.3m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

DENSIOMETER READINGS (0-17) *count covered dots*	
Left Bank	
Center Upstream	
Center Downstream	
Right Bank	

Inter-transect: C-D Wetted Width (m):

FLOW HABITATS (% between transects, T=100%)	
Channel Type	%
Riffle	
Rapid	
Run	
Glide	
Pool	
Cascade/ Fall	
Dry	

INTER-TRANSECT SUBSTRATES (measure in mm or use size classes)			
Position (%)	mm or Size Class	Depth (cm)	CPOM
L Bank			P A
LeftCtr			P A
Center			P A
RightCtr			P A
R Bank			P A

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size classes listed to right

SUBSTRATE SIZE CLASS CODES

RS = bedrock smooth (>car)
RR = bedrock rough (> car)
RC = concrete/asphalt
XB = large boulder (1-4m)
SB = sm blder (.25 m to 1m)
CB = cobble (64-250mm)
GC = coarse gravel (16-64)
GF = fine gravel (2-16 mm)
SA = sand (0.25-2mm)
FN = fines (<0.25mm)
HP = hardpan (consol. fines)
WD = wood
OT = other

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P)/ absence (A) of coarse particulate organic matter (>1.0 mm) within 1 cm of each particle.

Cobble Embeddedness: visually estimate % embedded by fine particles (record to nearest 5%)

Site Code:	Date: __ __ / __ __ / 2006	
Wetted Width (m):	Bankfull Width (m):	Bankfull Height:

Transect: D

TRANSECT SUBSTRATES				Cobble Embed (%)
Position	mm or Size Class	Depth (cm)	CPOM	
L Bank			P A	
LeftCtr			P A	
Center			P A	
RightCtr			P A	
R Bank			P A	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

0 = Not Present CH - Within Channel B = On Bank
C = Within 10m of Channel P = >10m and <50m of Channel

HUMAN INFLUENCE	Left Bank				Channel	Right Bank			
Walls/ Rip-rap/ Dams	0	B	C	P	CH	0	B	C	P
Buildings	0	B	C	P	CH	0	B	C	P
Pavement/ Cleared Lot	0	B	C	P		0	B	C	P
Road/ Railroad	0	B	C	P	CH	0	B	C	P
Pipes (Inlet/ Outlet)	0	B	C	P	CH	0	B	C	P
Landfill/ Trash	0	B	C	P	CH	0	B	C	P
Park/ Lawn	0	B	C	P		0	B	C	P
Row Crops	0	B	C	P		0	B	C	P
Pasture/ Range	0	B	C	P		0	B	C	P
Logging Operations	0	B	C	P		0	B	C	P
Mining Activity	0	B	C	P	CH	0	B	C	P

RIPARIAN VEGETATION (downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy>75%)
2 = Moderate (10-40%) **circle one**

Riparian estimates are made 5m above and 5m below the transect and 10m to the side starting at the bank.

Vegetation Class	Left Bank					Right Bank				
Upper Canopy (>5 m high)										
Trees and saplings >5 m high	0	1	2	3	4	0	1	2	3	4
Lower Canopy (0.5 m to 5m high)										
Shrubs and saplings 0.5m to 5m high	0	1	2	3	4	0	1	2	3	4
Ground Cover (<0.5 m high)										
Shrubs and saplings, herbs/ grasses	0	1	2	3	4	0	1	2	3	4
Barren, bare soil/ duff	0	1	2	3	4	0	1	2	3	4

INSTREAM HABITAT COMPLEXITY

0 = Absent (0%)
1 = Sparse (<10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (>75%)

Filamentous Algae	0	1	2	3	4
Aquatic Macrophytes	0	1	2	3	4
Boulders	0	1	2	3	4
Woody Debris >0.3m	0	1	2	3	4
Woody Debris <0.3m	0	1	2	3	4
Undercut Banks	0	1	2	3	4
Overhang. Vegetation	0	1	2	3	4
Live Tree Roots	0	1	2	3	4
Artificial Structures	0	1	2	3	4

DENSIOMETER READINGS (0-17)
count covered dots

Left Bank	
Center Upstream	
Center Downstream	
Right Bank	

Inter-transect: D-E

Wetted Width (m):

FLOW HABITATS (% between transects, T=100%)

Channel Type	%
Riffle	
Rapid	
Run	
Glide	
Pool	
Cascade/ Fall	
Dry	

INTER-TRANSECT SUBSTRATES (measure in mm or use size classes)

Position (%)	mm or Size Class	Depth (cm)	CPOM
L Bank			P A
LeftCtr			P A
Center			P A
RightCtr			P A
R Bank			P A

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size classes listed to right

SUBSTRATE SIZE CLASS CODES

RS = bedrock smooth (>car)
RR = bedrock rough (> car)
RC = concrete/asphalt
XB = large boulder (1-4m)
SB = sm blder (.25 m to 1m)
CB = cobble (64-250mm)
GC = coarse gravel (16-64)
GF = fine gravel (2-16 mm)
SA = sand (0.25-2mm)
FN = fines (<0.25mm)
HP = hardpan (consol. fines)
WD = wood
OT = other

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P)/ absence (A) of coarse particulate organic matter (>1.0 mm) within 1 cm of each particle.

Cobble Embeddedness: visually estimate % embedded by fine particles (record to nearest 5%)

Site Code:	Date: __ __ / __ __ / 2006	
Wetted Width (m):	Bankfull Width (m):	Bankfull Height:

Transect: E

TRANSECT SUBSTRATES				Cobble Embed (%)
Position	mm or Size Class	Depth (cm)	CPOM	
L Bank			P A	
LeftCtr			P A	
Center			P A	
RightCtr			P A	
R Bank			P A	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

HUMAN INFLUENCE	0 = Not Present CH - Within Channel B = On Bank C = Within 10m of Channel P = >10m and <50m of Channel								
	Left Bank				Channel	Right Bank			
Walls/ Rip-rap/ Dams	0	B	C	P	CH	0	B	C	P
Buildings	0	B	C	P	CH	0	B	C	P
Pavement/ Cleared Lot	0	B	C	P		0	B	C	P
Road/ Railroad	0	B	C	P	CH	0	B	C	P
Pipes (Inlet/ Outlet)	0	B	C	P	CH	0	B	C	P
Landfill/ Trash	0	B	C	P	CH	0	B	C	P
Park/ Lawn	0	B	C	P		0	B	C	P
Row Crops	0	B	C	P		0	B	C	P
Pasture/ Range	0	B	C	P		0	B	C	P
Logging Operations	0	B	C	P		0	B	C	P
Mining Activity	0	B	C	P	CH	0	B	C	P

RIPARIAN VEGETATION (downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy>75%)
2 = Moderate (10-40%) **circle one**

Riparian estimates are made 5m above and 5m below the transect and 10m to the side starting at the bank.

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m to 5m high)		
Shrubs and saplings 0.5m to 5m high	0 1 2 3 4	0 1 2 3 4
Ground Cover (<0.5 m high)		
Shrubs and saplings, herbs/ grasses	0 1 2 3 4	0 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 4	0 1 2 3 4

INSTREAM HABITAT COMPLEXITY	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)
Filamentous Algae	0 1 2 3 4
Aquatic Macrophytes	0 1 2 3 4
Boulders	0 1 2 3 4
Woody Debris >0.3m	0 1 2 3 4
Woody Debris <0.3m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

DENSIOMETER READINGS (0-17) *count covered dots*	
Left Bank	
Center Upstream	
Center Downstream	
Right Bank	

Inter-transect: E-F Wetted Width (m):

FLOW HABITATS (% between transects, T=100%)	
Channel Type	%
Riffle	
Rapid	
Run	
Glide	
Pool	
Cascade/ Fall	
Dry	

INTER-TRANSECT SUBSTRATES (measure in mm or use size classes)			
Position (%)	mm or Size Class	Depth (cm)	CPOM
L Bank			P A
LeftCtr			P A
Center			P A
RightCtr			P A
R Bank			P A

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size classes listed to right

SUBSTRATE SIZE CLASS CODES

RS = bedrock smooth (>car)
RR = bedrock rough (> car)
RC = concrete/asphalt
XB = large boulder (1-4m)
SB = sm blder (.25 m to 1m)
CB = cobble (64-250mm)
GC = coarse gravel (16-64)
GF = fine gravel (2-16 mm)
SA = sand (0.25-2mm)
FN = fines (<0.25mm)
HP = hardpan (consol. fines)
WD = wood
OT = other

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P)/ absence (A) of coarse particulate organic matter (>1.0 mm) within 1 cm of each particle.

Cobble Embeddedness: visually estimate % embedded by fine particles (record to nearest 5%)

Site Code:	Date: __ __ / __ __ / 2006	Photos UPSTREAM and DOWNSTREAM
Wetted Width (m):	Bankfull Width (m):	Bankfull Height: Transect: F

TRANSECT SUBSTRATES				Cobble Embed (%)
Position	mm or Size Class	Depth (cm)	CPOM	
L Bank			P A	
LeftCtr			P A	
Center			P A	
RightCtr			P A	
R Bank			P A	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

HUMAN INFLUENCE	0 = Not Present CH - Within Channel B = On Bank C = Within 10m of Channel P = >10m and <50m of Channel								
	Left Bank				Channel	Right Bank			
Walls/ Rip-rap/ Dams	0	B	C	P	CH	0	B	C	P
Buildings	0	B	C	P	CH	0	B	C	P
Pavement/ Cleared Lot	0	B	C	P		0	B	C	P
Road/ Railroad	0	B	C	P	CH	0	B	C	P
Pipes (Inlet/ Outlet)	0	B	C	P	CH	0	B	C	P
Landfill/ Trash	0	B	C	P	CH	0	B	C	P
Park/ Lawn	0	B	C	P		0	B	C	P
Row Crops	0	B	C	P		0	B	C	P
Pasture/ Range	0	B	C	P		0	B	C	P
Logging Operations	0	B	C	P		0	B	C	P
Mining Activity	0	B	C	P	CH	0	B	C	P

RIPARIAN VEGETATION (downstream)	0 = Absent (0%) 3 = Heavy (40-75%) 1 = Sparse (<10%) 4 = Very Heavy>75%) 2 = Moderate (10-40%) **circle one**									
Riparian estimates are made 5m above and 5m below the transect and 10m to the side starting at the bank.										
Vegetation Class	Left Bank					Right Bank				
Upper Canopy (>5 m high)										
Trees and saplings >5 m high	0	1	2	3	4	0	1	2	3	4
Lower Canopy (0.5 m to 5m high)										
Shrubs and saplings 0.5m to 5m high	0	1	2	3	4	0	1	2	3	4
Ground Cover (<0.5 m high)										
Shrubs and saplings, herbs/ grasses	0	1	2	3	4	0	1	2	3	4
Barren, bare soil/ duff	0	1	2	3	4	0	1	2	3	4

INSTREAM HABITAT COMPLEXITY	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)				
Filamentous Algae	0	1	2	3	4
Aquatic Macrophytes	0	1	2	3	4
Boulders	0	1	2	3	4
Woody Debris >0.3m	0	1	2	3	4
Woody Debris <0.3m	0	1	2	3	4
Undercut Banks	0	1	2	3	4
Overhang. Vegetation	0	1	2	3	4
Live Tree Roots	0	1	2	3	4
Artificial Structures	0	1	2	3	4

DENSIOMETER READINGS (0-17) *count covered dots*	
Left Bank	
Center Upstream	
Center Downstream	
Right Bank	

Inter-transect: F-G	Wetted Width (m):

FLOW HABITATS (% between transects, T=100%)	
Channel Type	%
Riffle	
Rapid	
Run	
Glide	
Pool	
Cascade/ Fall	
Dry	

INTER-TRANSECT SUBSTRATES (measure in mm or use size classes)			
Position (%)	mm or Size Class	Depth (cm)	CPOM
L Bank			P A
LeftCtr			P A
Center			P A
RightCtr			P A
R Bank			P A

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size classes listed to right

SUBSTRATE SIZE CLASS CODES

RS = bedrock smooth (>car)
RR = bedrock rough (> car)
RC = concrete/asphalt
XB = large boulder (1-4m)
SB = sm blder (.25 m to 1m)
CB = cobble (64-250mm)
GC = coarse gravel (16-64)
GF = fine gravel (2-16 mm)
SA = sand (0.25-2mm)
FN = fines (<0.25mm)
HP = hardpan (consol. fines)
WD = wood
OT = other

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P)/ absence (A) of coarse particulate organic matter (>1.0 mm) within 1 cm of each particle.

Cobble Embeddedness: visually estimate % embedded by fine particles (record to nearest 5%)

Site Code:	Date: __ __ / __ __ / 2006	
Wetted Width (m):	Bankfull Width (m):	Bankfull Height:

Transect: G

TRANSECT SUBSTRATES				Cobble Embed (%)
Position	mm or Size Class	Depth (cm)	CPOM	
L Bank			P A	
LeftCtr			P A	
Center			P A	
RightCtr			P A	
R Bank			P A	

HUMAN INFLUENCE	0 = Not Present CH - Within Channel B = On Bank C = Within 10m of Channel P = >10m and <50m of Channel		
	Left Bank	Channel	Right Bank
Walls/ Rip-rap/ Dams	0 B C P	CH	0 B C P
Buildings	0 B C P	CH	0 B C P
Pavement/ Cleared Lot	0 B C P		0 B C P
Road/ Railroad	0 B C P	CH	0 B C P
Pipes (Inlet/ Outlet)	0 B C P	CH	0 B C P
Landfill/ Trash	0 B C P	CH	0 B C P
Park/ Lawn	0 B C P		0 B C P
Row Crops	0 B C P		0 B C P
Pasture/ Range	0 B C P		0 B C P
Logging Operations	0 B C P		0 B C P
Mining Activity	0 B C P	CH	0 B C P

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

RIPARIAN VEGETATION (downstream)	0 = Absent (0%) 3 = Heavy (40-75%) 1 = Sparse (<10%) 4 = Very Heavy>75%) 2 = Moderate (10-40%) circle one	
Riparian estimates are made 5m above and 5m below the transect and 10m to the side starting at the bank.		
Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m to 5m high)		
Shrubs and saplings 0.5m to 5m high	0 1 2 3 4	0 1 2 3 4
Ground Cover (<0.5 m high)		
Shrubs and saplings, herbs/ grasses	0 1 2 3 4	0 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 4	0 1 2 3 4

INSTREAM HABITAT COMPLEXITY	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)
Filamentous Algae	0 1 2 3 4
Aquatic Macrophytes	0 1 2 3 4
Boulders	0 1 2 3 4
Woody Debris >0.3m	0 1 2 3 4
Woody Debris <0.3m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

DENSIOMETER READINGS (0-17) *count covered dots*	
Left Bank	
Center Upstream	
Center Downstream	
Right Bank	

Inter-transect: G-H Wetted Width (m):

FLOW HABITATS (% between transects, T=100%)	
Channel Type	%
Riffle	
Rapid	
Run	
Glide	
Pool	
Cascade/ Fall	
Dry	

INTER-TRANSECT SUBSTRATES (measure in mm or use size classes)			
Position (%)	mm or Size Class	Depth (cm)	CPOM
L Bank			P A
LeftCtr			P A
Center			P A
RightCtr			P A
R Bank			P A

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size classes listed to right

SUBSTRATE SIZE CLASS CODES

RS = bedrock smooth (>car)
RR = bedrock rough (> car)
RC = concrete/asphalt
XB = large boulder (1-4m)
SB = sm blder (.25 m to 1m)
CB = cobble (64-250mm)
GC = coarse gravel (16-64)
GF = fine gravel (2-16 mm)
SA = sand (0.25-2mm)
FN = fines (<0.25mm)
HP = hardpan (consol. fines)
WD = wood
OT = other

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P)/ absence (A) of coarse particulate organic matter (>1.0 mm) within 1 cm of each particle.

Cobble Embeddedness: visually estimate % embedded by fine particles (record to nearest 5%)

Site Code:	Date: __ __ / __ __ / 2006	
Wetted Width (m):	Bankfull Width (m):	Bankfull Height:

Transect: H

TRANSECT SUBSTRATES				Cobble Embed (%)
Position	mm or Size Class	Depth (cm)	CPOM	
L Bank			P A	
LeftCtr			P A	
Center			P A	
RightCtr			P A	
R Bank			P A	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

HUMAN INFLUENCE	0 = Not Present CH - Within Channel B = On Bank C = Within 10m of Channel P = >10m and <50m of Channel								
	Left Bank				Channel	Right Bank			
Walls/ Rip-rap/ Dams	0	B	C	P	CH	0	B	C	P
Buildings	0	B	C	P	CH	0	B	C	P
Pavement/ Cleared Lot	0	B	C	P		0	B	C	P
Road/ Railroad	0	B	C	P	CH	0	B	C	P
Pipes (Inlet/ Outlet)	0	B	C	P	CH	0	B	C	P
Landfill/ Trash	0	B	C	P	CH	0	B	C	P
Park/ Lawn	0	B	C	P		0	B	C	P
Row Crops	0	B	C	P		0	B	C	P
Pasture/ Range	0	B	C	P		0	B	C	P
Logging Operations	0	B	C	P		0	B	C	P
Mining Activity	0	B	C	P	CH	0	B	C	P

RIPARIAN VEGETATION (downstream)	0 = Absent (0%) 3 = Heavy (40-75%) 1 = Sparse (<10%) 4 = Very Heavy>75%) 2 = Moderate (10-40%) **circle one**

Riparian estimates are made 5m above and 5m below the transect and 10m to the side starting at the bank.

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m to 5m high)		
Shrubs and saplings 0.5m to 5m high	0 1 2 3 4	0 1 2 3 4
Ground Cover (<0.5 m high)		
Shrubs and saplings, herbs/ grasses	0 1 2 3 4	0 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 4	0 1 2 3 4

INSTREAM HABITAT COMPLEXITY	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)
Filamentous Algae	0 1 2 3 4
Aquatic Macrophytes	0 1 2 3 4
Boulders	0 1 2 3 4
Woody Debris >0.3m	0 1 2 3 4
Woody Debris <0.3m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

DENSIOMETER READINGS (0-17) *count covered dots*	
Left Bank	
Center Upstream	
Center Downstream	
Right Bank	

Inter-transect: H-I

Wetted Width (m):

FLOW HABITATS (% between transects, T=100%)	
Channel Type	%
Riffle	
Rapid	
Run	
Glide	
Pool	
Cascade/ Fall	
Dry	

INTER-TRANSECT SUBSTRATES (measure in mm or use size classes)			
Position (%)	mm or Size Class	Depth (cm)	CPOM
L Bank			P A
LeftCtr			P A
Center			P A
RightCtr			P A
R Bank			P A

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size classes listed to right

SUBSTRATE SIZE CLASS CODES

RS = bedrock smooth (>car)
RR = bedrock rough (> car)
RC = concrete/asphalt
XB = large boulder (1-4m)
SB = sm blder (.25 m to 1m)
CB = cobble (64-250mm)
GC = coarse gravel (16-64)
GF = fine gravel (2-16 mm)
SA = sand (0.25-2mm)
FN = fines (<0.25mm)
HP = hardpan (consol. fines)
WD = wood
OT = other

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P)/ absence (A) of coarse particulate organic matter (>1.0 mm) within 1 cm of each particle.

Cobble Embeddedness: visually estimate % embedded by fine particles (record to nearest 5%)

Site Code:	Date: __ __ / __ __ / 2006	
Wetted Width (m):	Bankfull Width (m):	Bankfull Height:

Transect: I

TRANSECT SUBSTRATES				Cobble Embed (%)
Position	mm or Size Class	Depth (cm)	CPOM	
L Bank			P A	
LeftCtr			P A	
Center			P A	
RightCtr			P A	
R Bank			P A	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

HUMAN INFLUENCE	0 = Not Present CH - Within Channel B = On Bank C = Within 10m of Channel P = >10m and <50m of Channel								
	Left Bank				Channel	Right Bank			
Walls/ Rip-rap/ Dams	0	B	C	P	CH	0	B	C	P
Buildings	0	B	C	P	CH	0	B	C	P
Pavement/ Cleared Lot	0	B	C	P		0	B	C	P
Road/ Railroad	0	B	C	P	CH	0	B	C	P
Pipes (Inlet/ Outlet)	0	B	C	P	CH	0	B	C	P
Landfill/ Trash	0	B	C	P	CH	0	B	C	P
Park/ Lawn	0	B	C	P		0	B	C	P
Row Crops	0	B	C	P		0	B	C	P
Pasture/ Range	0	B	C	P		0	B	C	P
Logging Operations	0	B	C	P		0	B	C	P
Mining Activity	0	B	C	P	CH	0	B	C	P

RIPARIAN VEGETATION (downstream)	0 = Absent (0%) 3 = Heavy (40-75%) 1 = Sparse (<10%) 4 = Very Heavy>75%) 2 = Moderate (10-40%) **circle one**

Riparian estimates are made 5m above and 5m below the transect and 10m to the side starting at the bank.

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m to 5m high)		
Shrubs and saplings 0.5m to 5m high	0 1 2 3 4	0 1 2 3 4
Ground Cover (<0.5 m high)		
Shrubs and saplings, herbs/ grasses	0 1 2 3 4	0 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 4	0 1 2 3 4

INSTREAM HABITAT COMPLEXITY	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)
Filamentous Algae	0 1 2 3 4
Aquatic Macrophytes	0 1 2 3 4
Boulders	0 1 2 3 4
Woody Debris >0.3m	0 1 2 3 4
Woody Debris <0.3m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

DENSIOMETER READINGS (0-17) *count covered dots*	
Left Bank	
Center Upstream	
Center Downstream	
Right Bank	

Inter-transect: I-J Wetted Width (m):

FLOW HABITATS (% between transects, T=100%)	
Channel Type	%
Riffle	
Rapid	
Run	
Glide	
Pool	
Cascade/ Fall	
Dry	

INTER-TRANSECT SUBSTRATES (measure in mm or use size classes)			
Position (%)	mm or Size Class	Depth (cm)	CPOM
L Bank			P A
LeftCtr			P A
Center			P A
RightCtr			P A
R Bank			P A

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size classes listed to right

SUBSTRATE SIZE CLASS CODES

RS = bedrock smooth (>car)
RR = bedrock rough (> car)
RC = concrete/asphalt
XB = large boulder (1-4m)
SB = sm blder (.25 m to 1m)
CB = cobble (64-250mm)
GC = coarse gravel (16-64)
GF = fine gravel (2-16 mm)
SA = sand (0.25-2mm)
FN = fines (<0.25mm)
HP = hardpan (consol. fines)
WD = wood
OT = other

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P)/ absence (A) of coarse particulate organic matter (>1.0 mm) within 1 cm of each particle.

Cobble Embeddedness: visually estimate % embedded by fine particles (record to nearest 5%)

Site Code:	Date: __ __ / __ __ / 2006	
Wetted Width (m):	Bankfull Width (m):	Bankfull Height:

Transect: J

TRANSECT SUBSTRATES				Cobble Embed (%)
Position	mm or Size Class	Depth (cm)	CPOM	
L Bank			P A	
LeftCtr			P A	
Center			P A	
RightCtr			P A	
R Bank			P A	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width

Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

HUMAN INFLUENCE	0 = Not Present CH - Within Channel B = On Bank C = Within 10m of Channel P = >10m and <50m of Channel								
	Left Bank				Channel	Right Bank			
Walls/ Rip-rap/ Dams	0	B	C	P	CH	0	B	C	P
Buildings	0	B	C	P	CH	0	B	C	P
Pavement/ Cleared Lot	0	B	C	P		0	B	C	P
Road/ Railroad	0	B	C	P	CH	0	B	C	P
Pipes (Inlet/ Outlet)	0	B	C	P	CH	0	B	C	P
Landfill/ Trash	0	B	C	P	CH	0	B	C	P
Park/ Lawn	0	B	C	P		0	B	C	P
Row Crops	0	B	C	P		0	B	C	P
Pasture/ Range	0	B	C	P		0	B	C	P
Logging Operations	0	B	C	P		0	B	C	P
Mining Activity	0	B	C	P	CH	0	B	C	P

RIPARIAN VEGETATION (downstream)

0 = Absent (0%) 3 = Heavy (40-75%)
1 = Sparse (<10%) 4 = Very Heavy>75%)
2 = Moderate (10-40%) **circle one**

Riparian estimates are made 5m above and 5m below the transect and 10m to the side starting at the bank.

Vegetation Class	Left Bank	Right Bank
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m to 5m high)		
Shrubs and saplings 0.5m to 5m high	0 1 2 3 4	0 1 2 3 4
Ground Cover (<0.5 m high)		
Shrubs and saplings, herbs/ grasses	0 1 2 3 4	0 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 4	0 1 2 3 4

INSTREAM HABITAT COMPLEXITY	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)
Filamentous Algae	0 1 2 3 4
Aquatic Macrophytes	0 1 2 3 4
Boulders	0 1 2 3 4
Woody Debris >0.3m	0 1 2 3 4
Woody Debris <0.3m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

DENSIOMETER READINGS (0-17) *count covered dots*	
Left Bank	
Center Upstream	
Center Downstream	
Right Bank	

Inter-transect: J-K Wetted Width (m):

FLOW HABITATS (% between transects, T=100%)	
Channel Type	%
Riffle	
Rapid	
Run	
Glide	
Pool	
Cascade/ Fall	
Dry	

INTER-TRANSECT SUBSTRATES (measure in mm or use size classes)			
Position (%)	mm or Size Class	Depth (cm)	CPOM
L Bank			P A
LeftCtr			P A
Center			P A
RightCtr			P A
R Bank			P A

Note: Substrate sizes can be recorded either as direct measures of the median axis of each particle or one of the size classes listed to right

SUBSTRATE SIZE CLASS CODES

RS = bedrock smooth (>car)
RR = bedrock rough (> car)
RC = concrete/asphalt
XB = large boulder (1-4m)
SB = sm blder (.25 m to 1m)
CB = cobble (64-250mm)
GC = coarse gravel (16-64)
GF = fine gravel (2-16 mm)
SA = sand (0.25-2mm)
FN = fines (<0.25mm)
HP = hardpan (consol. fines)
WD = wood
OT = other

CPOM/ COBBLE EMBEDDEDNESS

CPOM: Record presence (P)/ absence (A) of coarse particulate organic matter (>1.0 mm) within 1 cm of each particle.

Cobble Embeddedness: visually estimate % embedded by fine particles (record to nearest 5%)

Site Code:	Date: __ __ / __ __ / 2006	**Take Photograph DOWNSTREAM**
Wetted Width (m):	Bankfull Width (m):	Bankfull Height: **Transect: K**

TRANSECT SUBSTRATES				**Cobble Embed (%)**
Position	**mm or Size Class**	**Depth (cm)**	**CPOM**	
L Bank			P A	
LeftCtr			P A	
Center			P A	
RightCtr			P A	
R Bank			P A	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

HUMAN INFLUENCE	0 = Not Present CH - Within Channel B = On Bank C = Within 10m of Channel P = >10m and <50m of Channel								
	Left Bank				**Channel**	**Right Bank**			
Walls/ Rip-rap/ Dams	0	B	C	P	CH	0	B	C	P
Buildings	0	B	C	P	CH	0	B	C	P
Pavement/ Cleared Lot	0	B	C	P		0	B	C	P
Road/ Railroad	0	B	C	P	CH	0	B	C	P
Pipes (Inlet/ Outlet)	0	B	C	P	CH	0	B	C	P
Landfill/ Trash	0	B	C	P	CH	0	B	C	P
Park/ Lawn	0	B	C	P		0	B	C	P
Row Crops	0	B	C	P		0	B	C	P
Pasture/ Range	0	B	C	P		0	B	C	P
Logging Operations	0	B	C	P		0	B	C	P
Mining Activity	0	B	C	P	CH	0	B	C	P

RIPARIAN VEGETATION (downstream)	0 = Absent (0%) 3 = Heavy (40-75%) 1 = Sparse (<10%) 4 = Very Heavy>75%) 2 = Moderate (10-40%) **circle one**	
Riparian estimates are made 5m above and 5m below the transect and 10m to the side starting at the bank.		
Vegetation Class	**Left Bank**	**Right Bank**
Upper Canopy (>5 m high)		
Trees and saplings >5 m high	0 1 2 3 4	0 1 2 3 4
Lower Canopy (0.5 m to 5m high)		
Shrubs and saplings 0.5m to 5m high	0 1 2 3 4	0 1 2 3 4
Ground Cover (<0.5 m high)		
Shrubs and saplings, herbs/ grasses	0 1 2 3 4	0 1 2 3 4
Barren, bare soil/ duff	0 1 2 3 4	0 1 2 3 4

INSTREAM HABITAT COMPLEXITY	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)
Filamentous Algae	0 1 2 3 4
Aquatic Macrophytes	0 1 2 3 4
Boulders	0 1 2 3 4
Woody Debris >0.3m	0 1 2 3 4
Woody Debris <0.3m	0 1 2 3 4
Undercut Banks	0 1 2 3 4
Overhang. Vegetation	0 1 2 3 4
Live Tree Roots	0 1 2 3 4
Artificial Structures	0 1 2 3 4

DENSIOMETER READINGS (0-17) *count covered dots*	
Left Bank	
Center Upstream	
Center Downstream	
Right Bank	

Additional Comments/ Field Notes:

Site Code:	Date: __ __ / __ __ / **2006**	FULL FORM

Site Map:

Field Notes/ Comments:

Attachment B

BMI Taxa List

Attachment B – Benthic Macroinvertebrate Taxa List for Upper Truckee River Golf Course Project

Upper Truckee River Golf Course Project Benthic Macroinvertebrate Taxa								Upper Truckee River 9/21/2006			
								Targeted Riffle	Multi-Habitat	Targeted Riffle	Multi-Habitat
Phylum	Subphylum	Class	Order	Family	Subfamily	Tribe	Taxon	UTR-1		UTR-2	
Arthropoda											
	Hexapoda										
		Insecta									
			Coleoptera								
				Elmidae							
							Optioservus sp.	54	22	43	19
							Zaitzevia sp.	--	1	1	--
							Narpus sp.	--	1	--	1
							Optioservus sp.	53	87	28	99
							Zaitzevia sp.	4	--	--	--
				Haliplidae							
							Brychius sp.	--	5	--	--
				Hydraenidae							
							Hydraena sp.	--	--	--	1
			Diptera								
				Athericidae							
							Atherix pachypus	--	--	1	--
				Ceratopogonidae							
							Bezzia/ Palpomyia	2	2	4	4
							Culicoides sp.	--	15	--	2
				Chironomidae							
					Chironominae						
						Chironomini					
							Apedilum sp.	--	1	--	1
							Cryptochironomus sp.	--	8	--	3
							Phaenopsectra sp.	--	17	--	--
							Polypedilum sp.	--	5	4	6
							Microtendipes pedellus group	--	1	--	--
						Tanytarsini					
							Rheotanytarsus sp.	--	--	1	4
							Tanytarsus sp.	--	19	--	2
					Diamesinae						
						Diamesini					

							Potthastia gaedii group	9	1	6	3
					Orthocladiinae						
							Orthocladius complex	--	25	37	21
							Cricotopus sp.	14	--	4	--
							Eukiefferiella sp.	8	--	12	16
							Parakiefferiella sp.	--	--	--	2
							Psectrocladius sp.	--	5	--	21
							Synorthocladius sp.	--	1	5	--
							Cricotopus bicinctus group	--	1	3	4
							Tvetenia bavarica group	2	2	28	15
							Cricotopus nostocicola	--	2	--	1
					Prodiamesinae						
							Monodiamesa sp.	--	1	--	1
							Odontomesa sp.	--	3	--	--
					Tanypodinae						
						Pentaneurini					
							Thienemannimyia group	--	6	2	13
							Pentaneura sp.	--	--	--	1
				Empididae							
							Chelifera/ Metachela	--	5	--	--
							Hemerodromia sp.	--	3	--	--
							Neoplasta sp.	1	--	--	--
				Psychodidae							
							Pericoma/ Telmatoscopus	--	4	1	--
				Simuliidae							
							Simulium sp.	3	--	12	2
				Tipulidae							
							Antocha sp.	1	1	1	--
							Dicranota sp.	--	--	2	1
							Hesperoconopa sp.	--	1	--	--
							Hexatoma sp.	--	--	--	2
							Limnophila sp.	--	--	--	1
			Ephemeroptera								
				Ameletidae							
							Ameletus sp.	2	--	--	3
				Baetidae							
							Centroptilum sp.	1	7	--	3
							Baetis tricaudatus	5	--	10	2
				Ephemerellidae				102	42	103	53
							Attenella sp.	3	1	3	7

							Drunella grandis	2	8	3	6
				Heptageniidae							
							Cinygmula sp.	22	6	30	11
							Epeorus sp.	1	--	--	--
							Ironodes sp.	--	--	1	1
							Rhithrogena sp.	62	4	14	6
				Leptohyphidae							
							Tricorythodes sp.	--	8	--	7
				Leptophlebiidae							
							Paraleptophlebia sp.	2	3	5	6
			Hemiptera								
				Corixidae				--	1	--	--
			Megaloptera								
				Sialidae							
							Sialis sp.	--	1	--	--
			Plecoptera								
				Capniidae				1	1	1	7
				Chloroperlidae							
							Sweltsa sp.	62	14	43	35
				Nemouridae							
							Zapada sp.	--	--	1	1
							Zapada cinctipes	1	--	7	4
				Perlidae				1	--	--	--
							Calineuria californica	--	--	1	--
				Perlodidae							
							Cultus sp.	4	3	3	4
							Perlinodes aureus	4	1	14	7
							Skwala americana	13	3	5	4
			Trichoptera								
				Brachycentridae							
							Micrasema sp.	1	3	3	1
				Glossosomatidae							
							Agapetus sp.	--	--	1	--
							Glossosoma sp.	1	--	--	1
				Hydropsychidae							
							Cheumatopsyche sp.	14	9	10	4
							Hydropsyche sp.	5	1	6	2
				Hydroptilidae							
							Hydroptila sp.	--	38	--	17
				Lepidostomatidae							

							Lepidostoma sp.	28	37	18	32
				Rhyacophilidae							
							Rhyacophila sp.	--	--	2	--
							Rhyacophila brunnea group	4	5	12	5
							Rhyacophila grandis group	--	--	2	--
				Uenoidae							
							Neophylax sp.	--	5	--	7
	Chelicerata										
		Arachnida									
			Trombidiformes								
				Hydryphantidae							
							Wandesia sp.	1	--	1	--
				Hygrobatidae							
							Hygrobates sp.	--	3	--	--
				Lebertiidae							
							Lebertia sp.	2	8	3	2
				Sperchontidae							
							Sperchon sp.	1	1	--	--
				Torrenticolidae							
							Torrenticola sp.	3	9	3	6
Annelida											
	Clitellata										
		Oligochaeta						5	14	6	2
Mollusca											
		Bivalvia									
			Veneroida								
				Sphaeriidae				--	12	--	--
		Gastropoda									
			Basommatophora								
				Physidae							
							Physa sp.	--	--	--	1
								504	493	506	493
							Total Organisms Recovered	504	493	506	493
							Extra Organisms	0	7	156	4
							QC Organisms	17	2	0	16
							Total Picked (extras + QC)	521	502	662	513
							Grids Processed	0.5	0.75	0.5	2
							Total Grids Possible	3	8	2	6
							Abundance (#/ sample)	3126	5355	2648	1539

APPENDIX H

Native American Contacts

Sierra District
Cultural Resources
P. O. Box 266
Tahoma, Ca 96142
530-525-3386

April 24, 2006

William Dancing Feather
Cultural Resources Coordinator
Washoe Tribe of Nevada and California
Washoe Archive and Cultural Center
861 Crescent Drive
Carson City, NV 89701

Dear Mr. Dancing Feather,

The Department of Parks and Recreation (Parks), in conjunction with the Bureau of Reclamation (BOR), proposes to restore a 1.5 mile segment of the Upper Truckee River within the Lake Valley State Recreation Area (Lake Tahoe Golf Course) and Washoe Meadows State Park located in South Lake Tahoe, California (T12N, R18E, Section 20, 28 and 29). The principle activity associated with the proposed project would involve reconstructing channel alignment to restore channel morphology in planform, geometry and profile grade which would eventually create 267 acres of restored floodplain suitable for wetlands and native riparian vegetation communities. Project related activities associated with the project would involve relocating six golf course holes that currently exist on Lake Valley State Recreation Area property along the eastern edge of the Upper Truckee River. These holes and related fairways would be constructed on the western edge of the river in the southernmost portion of Washoe Meadows State Park. This action would likely involve impacting four prehistoric sites that may be considered eligible for the National Register of Historic Places (NRHP). The nature of the proposed project, and involvement of a federal agency (BOR), requires compliance with Section 106 of the National Historic Preservation Act, which mandates federal agencies to consider effects of projects on historic properties.

Parks performed reconnaissance and evaluation of the project area. The attached report is the result of the archaeological evaluations of four archaeological sites within the proposed project area. Please note that CA-ELD-555 is also located in the project area, but was excluded from evaluation during this investigation since it was already determined significant and eligible for listing on the NRHP based on surface remains.

The enclosed draft *Phase II Archaeological Field Testing Report & Evaluation for Four Prehistoric Sites: CA-ELD-2152, CA-ELD-2157, CA-ELD-2158, CA-ELD-2160, Washoe Meadows State Park, El Dorado County, California* is presented to the Washoe Tribe of Nevada and California for review and consideration. At this time we are specifically requesting comments on the archaeological site evaluations set-forth in the attached report. We also appreciate any comments, questions or concerns the Washoe Tribe may have regarding the proposed project's possible effects on Native American cultural resources.

If you or any of the Washoe Tribe have any questions concerning the attached report, please call me at (530) 525-9526 or email at djaffke@parks.ca.gov.

Sincerely,

Denise Jaffke
Associate State Archaeologist

Enclosed: Phase II Evaluation Report

State of California • The Resources Agency
Arnold Schwarzenegger, *Governor*

DEPARTMENT OF PARKS AND RECREATION
Ruth Coleman, *Director*

Sierra District
Cultural Resources
P. O. Box 266
Tahoma, Ca 96142
530-525-3386

April 24, 2006

Lynda Shoshone
Washoe Tribe of Nevada and California
838 A Wa-She-Shu Way
Gardnerville, NV 89140

Dear Lynda,

The Department of Parks and Recreation (Parks), in conjunction with the Bureau of Reclamation (BOR), proposes to restore a 1.5 mile segment of the Upper Truckee River within the Lake Valley State Recreation Area (Lake Tahoe Golf Course) and Washoe Meadows State Park located in South Lake Tahoe, California (T12N, R18E, Section 20, 28 and 29). The principle activity associated with the proposed project would involve reconstructing channel alignment to restore channel morphology in planform, geometry and profile grade which would eventually create 267 acres of restored floodplain suitable for wetlands and native riparian vegetation communities. Project related activities associated with the project would involve relocating six golf course holes that currently exist on Lake Valley State Recreation Area property along the eastern edge of the Upper Truckee River. These holes and related fairways would be constructed on the western edge of the river in the southernmost portion of Washoe Meadows State Park. This action would likely involve impacting four prehistoric sites that may be considered eligible for the National Register of Historic Places (NRHP). The nature of the proposed project, and involvement of a federal agency (BOR), requires compliance with Section 106 of the National Historic Preservation Act, which mandates federal agencies to consider effects of projects on historic properties.

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If you or any of the Washoe Tribe have any questions concerning the attached report, please call me at (530) 525-9526 or email at djaffke@parks.ca.gov.

Sincerely,

Denise Jaffke
Associate State Archaeologist

Enclosed: Phase II Evaluation Report

Sierra District
Cultural Resources
P. O. Box 266
Tahoma, Ca 96142
530-525-3386

April 24, 2006

Brian Wallace
Tribal Chairperson
Washoe Tribe of Nevada and California
919 Highway 395 South
Gardnerville, NV 89410

Dear Mr. Wallace,

The Department of Parks and Recreation (Parks), in conjunction with the Bureau of Reclamation (BOR), proposes to restore a1.5 mile segment of the Upper Truckee River within the Lake Valley State Recreation Area (Lake Tahoe Golf Course) and Washoe Meadows State Park located in South Lake Tahoe, California (T12N, R18E, Section 20, 28 and 29). The principle activity associated with the proposed project would involve reconstructing channel alignment to restore channel morphology in planform, geometry and profile grade which would eventually create 267 acres of restored floodplain suitable for wetlands and native riparian vegetation communities. Project related activities associated with the project would involve relocating six golf course holes that currently exist on Lake Valley State Recreation Area property along the eastern edge of the Upper Truckee River. These holes and related fairways would be constructed on the western edge of the river in the southernmost portion of Washoe Meadows State Park. This action would likely involve impacting four prehistoric sites that may be considered eligible for the National Register of Historic Places (NRHP). The nature of the proposed project, and involvement of a federal agency (BOR), requires compliance with Section 106 of the National Historic Preservation Act, which mandates federal agencies to consider effects of projects on historic properties.

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If you or any of the Washoe Tribe have any questions concerning the attached report, please call me at (530) 525-9526 or email at djaffke@parks.ca.gov.

Sincerely,

Denise Jaffke
Associate State Archaeologist

Enclosed: Phase II Evaluation Report

cc:
William Dancing Feather
Lynda Shoshone
Cyndie Walck, DPR Project Manager

Sierra District
Cultural Resources
P. O. Box 266
Tahoma, Ca 96142
530-525-9526

June 14, 2004

Lynda Shoshone
Washoe Tribal Council of California and Nevada

Dear Lynda:

This letter accompanies a copy of my notes and photographs taken from the Public Meeting held at Lake Tahoe Golf Course on June 6, 2004. Also included are sections of the *Upper Truckee River Upper Reach Environmental Assessment* report prepared by Swanson Hydrology & Geomorphology (December 2003). I have only included the Cultural Resources and Proposed Alternative sections, but if you would like a copy of the full report, please let me know (see Contents for additional chapters).

Also, I would like to arrange a date for consultation with interested Washoe Tribal members—yourself included, of course—to discuss the Upper Truckee River Rehabilitation project. I thought it might be beneficial to visit portions of the project area the same day as the site tour at Washoe Meadows with Pacific Legacy and possibly Penny Rucks and Susan Lindström. Let me know if you think it would be feasible and what dates would work best for you. I have yet to speak with Lisa Shapiro to discuss a potential date of the Washoe Meadows site tour, but I was hoping for late July, early August.

If you would like to contact me regarding this project or the site tour, please do not hesitate to call (530) 525-9526 or sierraark@jps.net.

Sincerely,

Denise L. Thomas
Associate State Archaeologist

Sierra District
Cultural Resources
P. O. Box 266
Tahoma, Ca 96142
530-525-3386

July 19, 2004

William Dancing Feather
Cultural Resources Coordinator
Washoe Tribe of Nevada and California
Washoe Archive and Cultural Center
861 Crescent Drive
Carson City, NV 89701

Dear Mr. Dancing Feather,

The Department of Parks and Recreation (DPR) is conducting a cultural resources inventory for the proposed project, Upper Truckee River Restoration Project, Upper Reach. This inventory effort is intended to guarantee compliance with the California Environmental Quality Act (CEQA) of 1970, the CEQA Guidelines, and the National Historic Preservation Act (NHPA) of 1966.

The Upper Truckee River has been identified as a major pollutant source of sediment and nutrients flowing into Lake Tahoe, owing to the large drainage area of urban land. Nutrients, including bioavailable nitrogen and phosphorus, have been identified as a major contributor to algae growth in Lake Tahoe, which has led to a significant decline in the clarity of the Lake since measurements began in the 1960s. Fine sediments contributes to lake clarity decline, as well as the degradation of aquatic habitat for fish and other wildlife in the Upper Truckee River. The segment of the river that is contributing a high degree of sedimentation is located on DPR property at Lake Valley State Recreation Area (i.e., Tahoe Golf Course). The purpose of the proposed Upper Truckee River Restoration Project is to restore the existing river and surrounding area to pre-developed condition that sustains aquatic and riparian habitat, yields a more natural sediment transport system, and provides a natural watershed that is morphologically and hydrologically balanced.

I am contacting you to ask if you know of any traditional cultural places (e.g., plant gathering areas) or sites of religious and cultural significance which could potentially be impacted by the proposed project. We realize that the Upper Truckee River assumes cultural significance to modern Washoe people and are interested in contemporary Native American values that may be associated with the project area.

Susan Lindström, Ph.D., Consulting Archaeologist and Penny Rucks, M.A. Consulting Ethnographer conducted prefield research addressing the entire watershed south the Highway 50 bridge at Elks Club Drive. A field reconnaissance was conducted only for that portion of the Upper Truckee River corridor between Highway 50 bridge at Elks Club Drive and the Highway 50 bridge at Meyers, an area comprising roughly four miles of river channel and encompassing about 480 acres. The following sites were identified in the project vicinity:

1.	FS-05-19-331	Prehistoric Site	
2.	UTR-6	Prehistoric Isolate	Chert flake in dirt road
3.	UTR-9	Historic Isolate	"Pearl Oil" can with lead solder

No cultural resources have yet been identified directly within the Area of Potential Effects (APE) for the proposed project.

Since the project is located along an area considered highly sensitive for archaeological resources, we are planning an Extended Archaeological Field Survey which will involve a limited excavation along portions of the Upper Truckee River to check for the presence or absence of subsurface cultural deposits. The excavation will last up to four days and consist of backhoe trenches to maximize the sample area and deposit processed per unit-time. If any artifacts are recovered they will be identified and then returned. Further, if a subsurface deposit is identified, the location will be noted and the testing will conclude in that area and an Archaeological Test Excavation to assess site significance and integrity will be planned at a future date. I will submit a draft copy of the Extended Archaeological Field Survey Proposal for your review and comment by September 2004.*

Enclosed you will find a marked topographic map showing the project area. Please feel free to contact me at my office, 530.525.9526 or sierraark@jps.net, if you have any comments or questions.

Thank you for your assistance. I look forward to working with you on this important project.

Sincerely,

Denise L Thomas
Associate State Archaeologist

Enclosed: Project Location Map

Cc: Lynda Shoshone
William Dancing Feather
Judith Polanich
Cyndi Walck

Sierra District
Cultural Resources
P. O. Box 266
Tahoma, Ca 96142
530-525-3386

July 19, 2004

Rob Wood
Native American Heritage Commission
915 Capital Mall, Rm. 364
Sacramento, CA 95814

Dear Mr. Wood:

The Department of Parks and Recreation (DPR) is conducting a cultural resources inventory for the proposed project, Upper Truckee River Restoration Project, Upper Reach. The project is located in Sections 20, 29, 30 of T12N/R18E depicted on the South Lake Tahoe, California USGS 7.5' quadrangle. This inventory effort is intended to guarantee compliance with the California Environmental Quality Act (CEQA) of 1970, the CEQA Guidelines, and the National Historic Preservation Act (NHPA) of 1966.

The Upper Truckee River has been identified as a major pollutant source of sediment and nutrients flowing into Lake Tahoe, owing to the large drainage area of urban land. Nutrients, including bioavailable nitrogen and phosphorus, have been identified as a major contributor to algae growth in Lake Tahoe, which has led to a significant decline in the clarity of the Lake since measurements began in the 1960s. Fine sediments contribute to lake clarity decline, as well as the degradation of aquatic habitat for fish and other wildlife in the Upper Truckee River. The segment of the river that is contributing a high degree of sedimentation is located on DPR property at Lake Valley State Recreation Area (i.e., Tahoe Golf Course). The purpose of the proposed Upper Truckee River Restoration Project is to restore the existing river and surrounding area to a pre-developed condition that sustains aquatic and riparian habitat, yields a more natural sediment transport system, and provides a natural watershed that is morphologically and hydrologically balanced.

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No cultural resources have yet been identified directly within the Area of Potential Effects (APE) for the proposed project.

We are pleased to bring this proposed activity to your attention and would appreciate any background information you can provide regarding prehistoric, historic, or ethnographic land use. We are also interested in contemporary Native American values that may be associated with the project area or any other information contained in your Sacred Lands Inventory.

Enclosed you will find a marked topographic map showing the project area. Please feel free to contact me at my office, 530.525.9526 or sierraark@jps.net, if you have any comments or questions.

Thank you for your assistance.

Sincerely,

Denise L Thomas
Associate State Archaeologist

Enclosed: Project Location Map

Sierra District
Cultural Resources
P. O. Box 266
Tahoma, Ca 96142
530-525-3386

August 9, 2004

Brian Wallace
Tribal Chairperson
Washoe Tribe of Nevada and California
919 Highway 395 South
Gardnerville, NV 89410

Dear Mr. Wallace,

The Department of Parks and Recreation (DPR) is conducting a cultural resources inventory for the proposed project, Upper Truckee River Restoration Project, Upper Reach. This inventory effort is intended to guarantee compliance with the California Environmental Quality Act (CEQA) of 1970, the CEQA Guidelines, and the National Historic Preservation Act (NHPA) of 1966.

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Enclosed you will find a marked topographic map showing the project area. Please feel free to contact me at my office, 530.525.9526 or sierraark@jps.net, if you have any comments or questions.

Thank you for your assistance. I look forward to working with you on this important project.

Sincerely,

Denise L Thomas
Associate State Archaeologist

Enclosed: Project Location Map

Cc: Lynda Shoshone
William Dancing Feather
Judith Polanich
Cyndi Walck

August 9, 2004

Brian Wallace
Tribal Chairperson
Washoe Tribe of Nevada and California
919 Highway 395 South
Gardnerville, NV 89410

Dear Mr. Wallace:

This letter accompanies a copy of the Extended Archaeological Field Survey proposal outlining exploratory trenching in areas along the Upper Truckee River. Proposed testing is currently scheduled for November 2004. I welcome any and all comments and/or suggestions. Please do not hesitate to contact me at (530) 525.9526.

Sincerely,

Denise L. Thomas
Associate State Archaeologist

September 2, 2004

William Dancing Feather
Cultural Resources Coordinator
Washoe Tribe of Nevada and California
Washoe Archive and Cultural Center
861 Crescent Drive
Carson City, NV 89701

Dear Mr. Dancing Feather,

This letter accompanies a copy of the Extended Archaeological Field Survey proposal outlining exploratory trenching in areas along the Upper Truckee River. Proposed testing is currently scheduled for November 2004. I welcome any and all comments and/or suggestions. Please do not hesitate to contact me at (530) 525.9526.

Sincerely,

Denise L. Thomas
Associate State Archaeologist

EDAW | AECOM

EDAW Inc
2022 J Street, Sacramento, California 95811
www.edaw.com

27 Feb., 2007

Debbie Pilas-Treadway
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

RE: Upper Truckee River Restoration Project

Dear Ms. Pilas-Treadway:

EDAW is conducting cultural resources studies for the above-referenced project located in El Dorado County, near the town of Meyers, and depicted on the Emerald Bay and Echo Lake USGS topographic quadrangle maps in Township 12N, Range 18E, Sections 18-20, 29, and 30. The proposed project would consist of re-channeling the Truckee River to its historic route to restore natural habitats and reduce the sediment flow into Lake Tahoe.

We are pleased to bring this activity to your attention, and would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American land use. We are also interested in any contemporary Native American values that may be present near or within the project area. We would also like to request a search of the NAHC Sacred Land files.

Please send via mail or facsimile a listing of local Native American groups or representatives at your earliest convenience, so that we may contact appropriate individuals and account for their potential concerns in the planning process.

If you have any questions or comments feel free to contact me at my office. I can be reached by email at Ludwigb@edaw.com, or by phone at 916-414-5886. I look forward to hearing from you soon.

Sincerely,

Brian Ludwig, Ph.D.
Senior Archaeologist

enclosure: USGS map section

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390
Web Site www.nahc.ca.gov

March 7, 2007

Brian Ludwig
Senior Archaeologist
EDAW Inc.

Sent by Fax: 916-414-5850
Number of Pages: 2

Re: Proposed Upper Truckee River Restoration Project, El Dorado County.

Dear Mr. Ludwig:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4038.

Sincerely,

Debbie Pilas-Treadway
Environmental Specialist III

Native American Contacts
El Dorado County
March 7, 2007

Washoe Tribe of Nevada and California
Waldo Walker, Chairperson
919 Highway 395 South Washoe
Gardnerville , NV 89410
waldo.walker@washoetribe.us
775-265-4191
775-265-6240 Fax

Washoe Tribe of Nevada and California THPO
William Dancing Feather, Tribal Historic Preservation
861 Crescent Drive Washoe
Carson City , NV 89701
wthpo@yahoo.com
(775) 888-0936
(775) 888-0937 FAX

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Upper Truckee River Restoration project, El Dorado County.

EDAW | AECOM

EDAW Inc
2022 J Street, Sacramento, California 95811
www.edaw.com

10 March, 2007

Mr. Waldo Walker
Washoe Tribe of Nevada and California
919 Highway 395 South
Gardnerville, NV 89410

RE: Upper Truckee River Restoration Project

Dear Mr. Walker:

EDAW is conducting cultural resources studies for the above-referenced project located in El Dorado County, near the town of Meyers, and depicted on the Emerald Bay and Echo Lake USGS topographic quadrangle maps in Township 12N, Range 18E, Sections 18-20, 29, and 30. The proposed project would consist of re-channeling the Truckee River to its historic route to restore natural habitats and reduce the sediment flow into Lake Tahoe.

We would appreciate your help in identifying any concerns your community may have regarding the cultural resources in the study area. Please return the enclosed response form. Returning this form does not imply that you approve or disapprove of the study, nor does it limit your opportunity to comment at a later time.

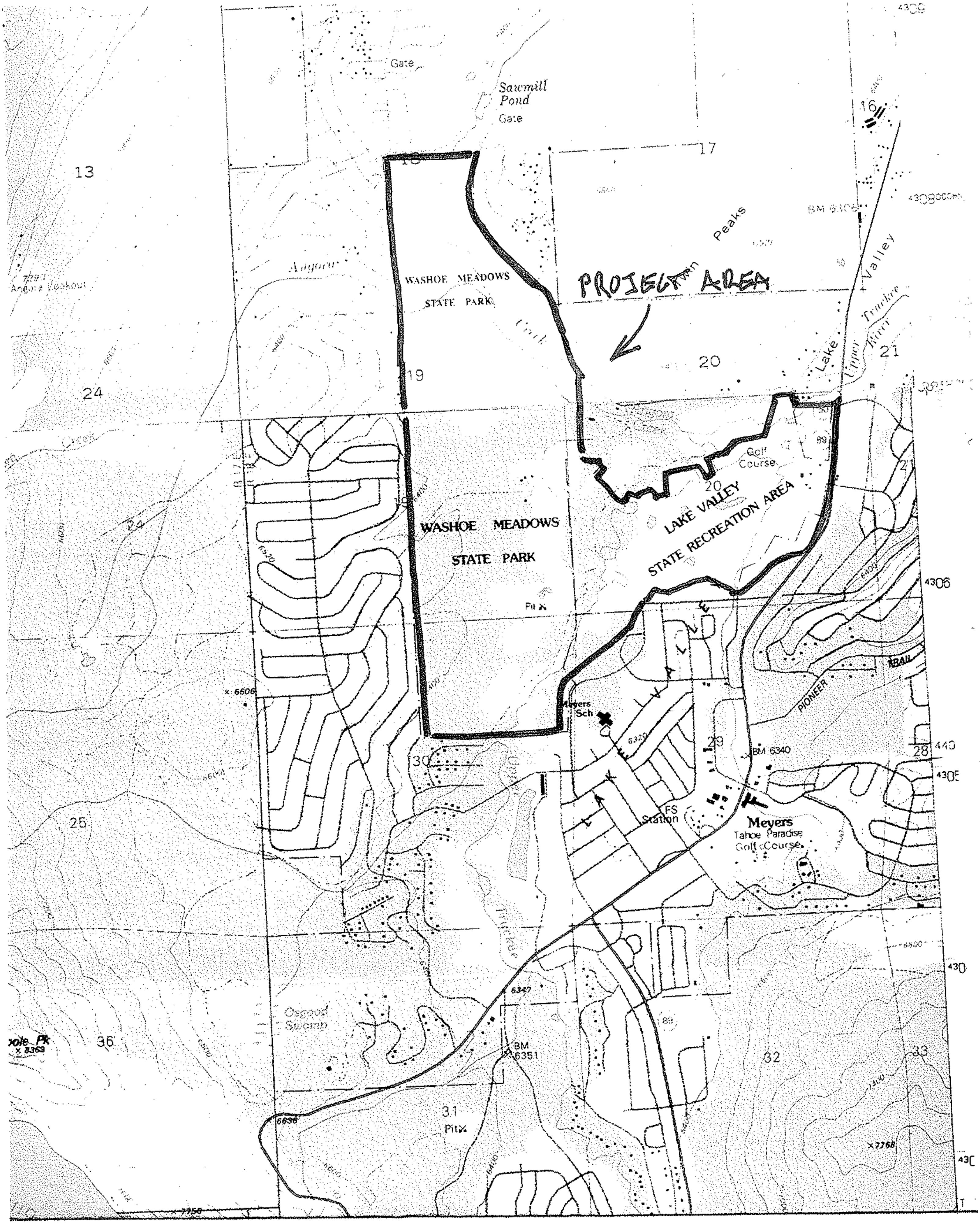
Efforts to address your concerns will be included in the planning process. A list of Native American communities that are being contacted has been included. If there are any other groups or individuals you think should be contacted, please let us know.

In order to incorporate your concerns and/or input in any forthcoming reports, we would appreciate receiving your comments by April 15, 2007. If you have questions, please feel free to contact me at your convenience. I can be reached by email at Brian.Ludwig@edaw.com or by phone at 916-414-5886.

Sincerely,

Brian Ludwig, Ph.D.
Senior Archaeologist

enclosure: USGS map section, response form



Sawmill Pond
Gate
13
17
16
PROJECT AREA
WASHOE MEADOWS STATE PARK
Angora Lookout
Peaks
Lake Valley
Upper Truckee River
19
20
21
24
WASHOE MEADOWS STATE PARK
LAKE VALLEY STATE RECREATION AREA
Golf Course
Pit
Meyers Sch
PIONEER
29
30
28
BM 6340
FS Station
Meyers
Tahoe Paradise Golf Course
25
Osgood Swamp
36
BM 6351
32
33
31
Pit

Upper Truckee River Restoration Project

Please check all that apply:

Please call me to discuss the project further; my day-time phone number is (_____)___________
or my evening phone number is (_____)___________

I have further comments as provided below.

I do not have any comments.

Comments:

____

____

____

____

____

____

CONTACT LETTER MAILED TO:

Washoe Tribe of Nevada and California
Mr. Waldo Walker
919 Highway 395 South
Gardnerville, NV 89410

NAME AND ADDRESS (if different):

____
____
____
____
____

Signature:

____
[Name of Recipient here]

____
Date

Please return to:

Brian Ludwig
EDAW, Inc.
2022 J St.
Sacramento, CA 95814

00-095\Example Res Form .doc

EDAW Inc
2022 J Street, Sacramento, California 95811
www.edaw.com

10 March, 2007

Mr. William Dancing Feather
861 Crescent Dr.
Carson City, NV 89701

RE: Upper Truckee River Restoration Project

Dear Mr. Dancing Feather:

EDAW is conducting cultural resources studies for the above-referenced project located in El Dorado County, near the town of Meyers, and depicted on the Emerald Bay and Echo Lake USGS topographic quadrangle maps in Township 12N, Range 18E, Sections 18-20, 29, and 30. The proposed project would consist of re-channeling the Truckee River to its historic route to restore natural habitats and reduce the sediment flow into Lake Tahoe.

We would appreciate your help in identifying any concerns your community may have regarding the cultural resources in the study area. Please return the enclosed response form. Returning this form does not imply that you approve or disapprove of the study, nor does it limit your opportunity to comment at a later time.

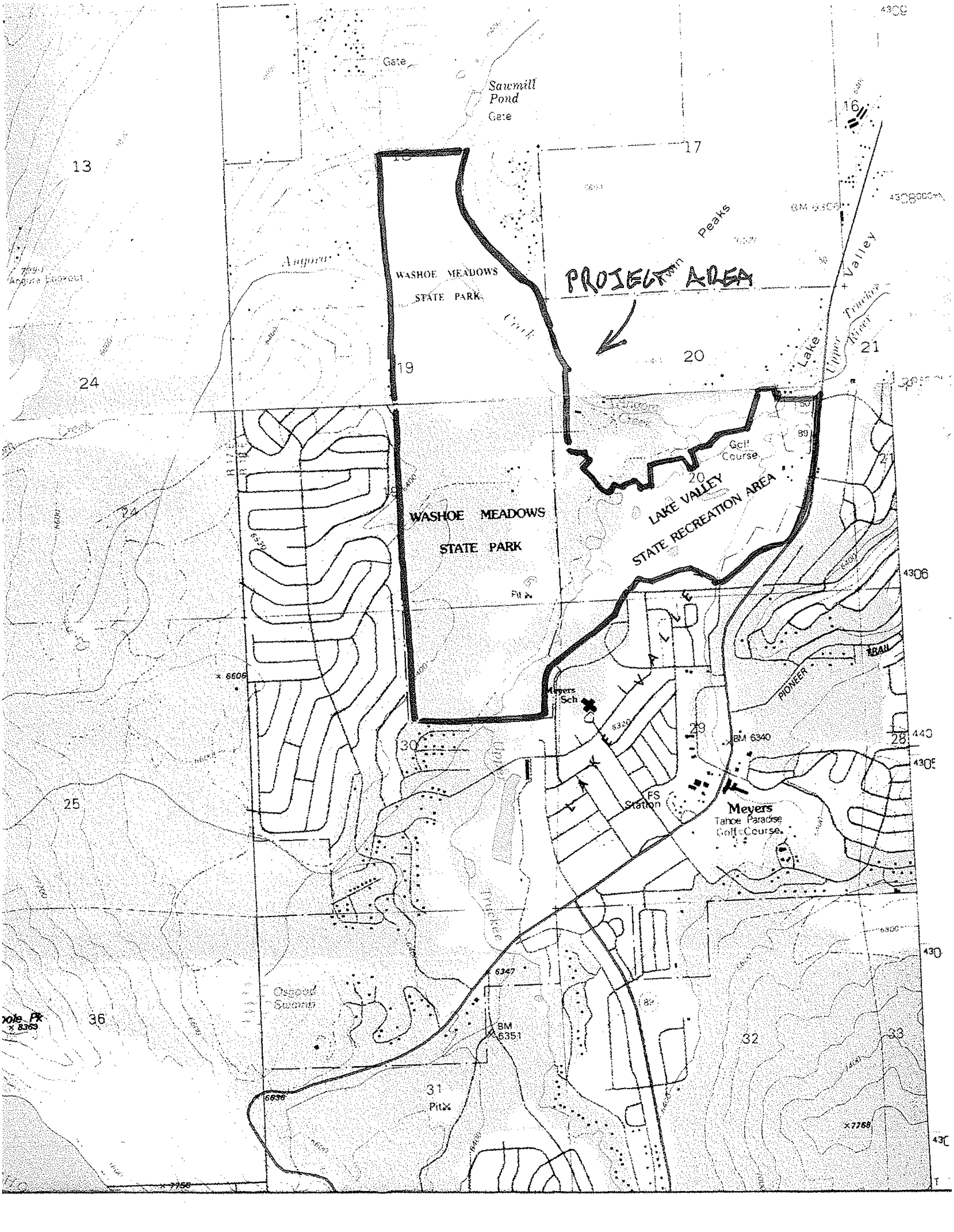
Efforts to address your concerns will be included in the planning process. A list of Native American communities that are being contacted has been included. If there are any other groups or individuals you think should be contacted, please let us know.

In order to incorporate your concerns and/or input in any forthcoming reports, we would appreciate receiving your comments by April 15, 2007. If you have questions, please feel free to contact me at your convenience. I can be reached by email at Brian.Ludwig@edaw.com or by phone at 916-414-5886.

Sincerely,

Brian Ludwig, Ph.D.
Senior Archaeologist

enclosure: USGS map section, response form



PROJECT AREA
WASHOE MEADOWS STATE PARK
LAKE VALLEY STATE RECREATION AREA
Sawmill Pond
Gate
Angora
Peaks
Lake Valley
Upper Truckee River
Golf Course
Meyers Sch
FS Station
Meyers
Tahoe Paradise Golf Course
PIONEER TRAIL
BM 6340
BM 6351
Osgood Swamp
Pit
13
16
17
19
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Upper Truckee River Restoration Project

Please check all that apply:

Please call me to discuss the project further; my day-time phone number is (_____)___________
or my evening phone number is (_____)___________

I have further comments as provided below.

I do not have any comments.

Comments:

____

____

____

____

____

____

CONTACT LETTER MAILED TO:

Washoe Tribe of Nevada and California
Mr. William Dancing Feather
861 Crescent Dr.
Carson City, NV 89701

NAME AND ADDRESS (if different):

____

____

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____

____

Signature:

____
[Name of Recipient here]

____
Date

Please return to:

Brian Ludwig
EDAW, Inc.
2022 J St.
Sacramento, CA 95814

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Sierra District
Cultural Resources
P. O. Box 266
Tahoma, Ca 96142
530-525-3386

September 16, 2009

Darrel Cruz
Tribal Historic Preservation Officer
Washoe Tribe of Nevada and California
919 Hwy 395, South
Gardnerville, NV 89410

Dear Mr. Cruz,

The enclosed *Finding of No Adverse Effect for the Upper Truckee River Restoration Project—Washoe Meadows, California State Parks* is presented to the Washoe Tribe of Nevada and California for your review. We appreciate any comments, questions or concerns the Washoe Tribe may have regarding the project and proposed conditions to preserve historic properties located in the Area of Potential Effects for the Upper Truckee River Restoration Project.

If you or any of the Washoe Tribe has any questions concerning the attached report, please call me at (530) 525-9526 or email at djaffke@parks.ca.gov.

Sincerely,

Denise Jaffke
Associate State Archaeologist

Enclosed: Research Design (1Hard Copy)

APPENDIX I

Air Quality Modeling Data

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\weirichj\Desktop\UTRG Temp\UTR G Alt 2.urb924

Project Name: UTR Golf Course and Restoration Alt 2

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/15/2012-5/31/2012 Active Days: 15	4.62	35.03	24.29	0.00	0.02	1.83	1.84	0.01	1.68	1.69	3,906.23
Mass Grading 05/15/2012-05/31/2012	4.62	35.03	24.29	0.00	0.02	1.83	1.84	0.01	1.68	1.69	3,906.23
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	4.44	34.69	19.92	0.00	0.00	1.82	1.82	0.00	1.67	1.67	3,604.81
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.18	0.33	4.36	0.00	0.02	0.01	0.03	0.01	0.01	0.01	301.42
Time Slice 6/1/2012-9/29/2012 Active Days: 104	10.94	**96.11**	55.56	**0.05**	245.47	4.83	250.30	51.29	4.44	55.73	11,977.39
Mass Grading 06/01/2012-09/30/2012	10.94	96.11	55.56	0.05	245.47	4.83	250.30	51.29	4.44	55.73	11,977.39
Mass Grading Dust	0.00	0.00	0.00	0.00	245.28	0.00	245.28	51.23	0.00	51.23	0.00
Mass Grading Off Road Diesel	8.88	68.28	38.32	0.00	0.00	3.88	3.88	0.00	3.57	3.57	7,023.21
Mass Grading On Road Diesel	1.70	27.17	8.52	0.04	0.15	0.93	1.08	0.05	0.85	0.90	4,351.34
Mass Grading Worker Trips	0.36	0.66	8.72	0.01	0.03	0.02	0.05	0.01	0.01	0.03	602.84
Time Slice 10/1/2012-10/15/2012 Active Days: 13	2.89	25.22	13.36	0.00	0.01	1.06	1.07	0.00	0.97	0.98	2,734.41
Trenching 10/01/2012-10/15/2012	2.89	25.22	13.36	0.00	0.01	1.06	1.07	0.00	0.97	0.98	2,734.41
Trenching Off Road Diesel	2.80	25.04	11.01	0.00	0.00	1.05	1.05	0.00	0.97	0.97	2,572.10
Trenching Worker Trips	0.10	0.18	2.35	0.00	0.01	0.00	0.01	0.00	0.00	0.01	162.30

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Time Slice 5/15/2013-5/31/2013 Active Days: 15	8.36	67.84	40.83	0.02	35.35	3.30	38.65	7.39	3.04	10.43	8,499.02
Mass Grading 05/15/2013-05/31/2013	6.57	54.03	33.39	0.01	35.34	2.58	37.92	7.39	2.37	9.76	6,744.71
Mass Grading Dust	0.00	0.00	0.00	0.00	35.28	0.00	35.28	7.37	0.00	7.37	0.00
Mass Grading Off Road Diesel	5.95	46.56	27.37	0.00	0.00	2.33	2.33	0.00	2.14	2.14	5,161.62
Mass Grading On Road Diesel	0.47	7.19	2.29	0.01	0.05	0.24	0.29	0.02	0.22	0.24	1,304.91
Mass Grading Worker Trips	0.15	0.28	3.72	0.00	0.01	0.01	0.02	0.01	0.01	0.01	278.19
Mass Grading 05/15/2013-10/15/2013	1.79	13.81	7.44	0.00	0.00	0.73	0.73	0.00	0.67	0.67	1,754.31
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	1.74	13.72	6.20	0.00	0.00	0.72	0.72	0.00	0.66	0.66	1,661.58
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.24	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.73
Time Slice 6/1/2013-9/30/2013 Active Days: 104	9.91	86.29	48.59	0.04	420.17	4.30	424.47	87.77	3.96	91.73	11,558.49
Fine Grading 06/01/2013-09/30/2013	8.11	72.48	41.15	0.04	420.17	3.58	423.74	87.77	3.29	91.06	9,804.18
Fine Grading Dust	0.00	0.00	0.00	0.00	420.00	0.00	420.00	87.71	0.00	87.71	0.00
Fine Grading Off Road Diesel	6.39	48.21	29.46	0.00	0.00	2.75	2.75	0.00	2.53	2.53	5,151.47
Fine Grading On Road Diesel	1.55	23.97	7.65	0.04	0.15	0.81	0.97	0.05	0.75	0.80	4,351.34
Fine Grading Worker Trips	0.16	0.30	4.03	0.00	0.02	0.01	0.03	0.01	0.01	0.01	301.37
Mass Grading 05/15/2013-10/15/2013	1.79	13.81	7.44	0.00	0.00	0.73	0.73	0.00	0.67	0.67	1,754.31
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	1.74	13.72	6.20	0.00	0.00	0.72	0.72	0.00	0.66	0.66	1,661.58
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.24	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.73

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Time Slice 10/1/2013-10/15/2013 Active Days: 13	1.79	13.81	7.44	0.00	0.00	0.73	0.73	0.00	0.67	0.67	1,754.31
Mass Grading 05/15/2013-10/15/2013	1.79	13.81	7.44	0.00	0.00	0.73	0.73	0.00	0.67	0.67	1,754.31
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	1.74	13.72	6.20	0.00	0.00	0.72	0.72	0.00	0.66	0.66	1,661.58
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.24	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.73
Time Slice 5/15/2014-5/30/2014 Active Days: 14	3.07	22.93	15.97	0.00	0.01	1.22	1.23	0.00	1.13	1.13	2,837.17
Fine Grading 05/15/2014-05/30/2014	2.28	17.54	11.72	0.00	0.01	0.81	0.81	0.00	0.74	0.75	2,209.02
Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Off Road Diesel	2.22	17.43	10.29	0.00	0.00	0.81	0.81	0.00	0.74	0.74	2,093.12
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.11	1.43	0.00	0.01	0.00	0.01	0.00	0.00	0.01	115.90
Mass Grading 05/15/2014-10/15/2014	0.80	5.39	4.25	0.00	0.00	0.42	0.42	0.00	0.38	0.38	628.16
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.77	5.35	3.68	0.00	0.00	0.41	0.41	0.00	0.38	0.38	581.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.04	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.36
Time Slice 5/31/2014-5/31/2014 Active Days: 1	0.80	5.39	4.25	0.00	0.00	0.42	0.42	0.00	0.38	0.38	628.16
Mass Grading 05/15/2014-10/15/2014	0.80	5.39	4.25	0.00	0.00	0.42	0.42	0.00	0.38	0.38	628.16
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.77	5.35	3.68	0.00	0.00	0.41	0.41	0.00	0.38	0.38	581.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.04	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.36

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Time Slice 6/2/2014-8/30/2014 Active Days: 78	8.04	69.95	41.50	0.04	420.17	3.39	423.57	87.77	3.12	90.89	10,383.47
Mass Grading 05/15/2014-10/15/2014	0.80	5.39	4.25	0.00	0.00	0.42	0.42	0.00	0.38	0.38	628.16
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.77	5.35	3.68	0.00	0.00	0.41	0.41	0.00	0.38	0.38	581.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.04	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.36
Mass Grading 06/01/2014-09/30/2014	7.25	64.56	37.25	0.04	420.17	2.98	423.15	87.77	2.74	90.51	9,755.31
Mass Grading Dust	0.00	0.00	0.00	0.00	420.00	0.00	420.00	87.71	0.00	87.71	0.00
Mass Grading Off Road Diesel	5.68	43.50	26.20	0.00	0.00	2.27	2.27	0.00	2.09	2.09	5,097.72
Mass Grading On Road Diesel	1.40	20.74	6.76	0.04	0.15	0.70	0.85	0.05	0.64	0.69	4,309.90
Mass Grading Worker Trips	0.17	0.32	4.29	0.00	0.02	0.01	0.03	0.01	0.01	0.02	347.69

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Time Slice 9/1/2014-9/30/2014 Active Days: 26	**11.66**	93.88	**59.33**	0.05	**420.18**	**5.08**	**425.26**	**87.77**	**4.67**	**92.45**	**13,264.32**
Mass Grading 05/15/2014-10/15/2014	0.80	5.39	4.25	0.00	0.00	0.42	0.42	0.00	0.38	0.38	628.16
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.77	5.35	3.68	0.00	0.00	0.41	0.41	0.00	0.38	0.38	581.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.04	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.36
Mass Grading 06/01/2014-09/30/2014	7.25	64.56	37.25	0.04	420.17	2.98	423.15	87.77	2.74	90.51	9,755.31
Mass Grading Dust	0.00	0.00	0.00	0.00	420.00	0.00	420.00	87.71	0.00	87.71	0.00
Mass Grading Off Road Diesel	5.68	43.50	26.20	0.00	0.00	2.27	2.27	0.00	2.09	2.09	5,097.72
Mass Grading On Road Diesel	1.40	20.74	6.76	0.04	0.15	0.70	0.85	0.05	0.64	0.69	4,309.90
Mass Grading Worker Trips	0.17	0.32	4.29	0.00	0.02	0.01	0.03	0.01	0.01	0.02	347.69
Mass Grading 09/01/2014-09/30/2014	3.62	23.93	17.83	0.00	0.01	1.69	1.70	0.00	1.55	1.55	2,880.85
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	3.54	23.78	15.83	0.00	0.00	1.68	1.68	0.00	1.55	1.55	2,718.60
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.08	0.15	2.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	162.25

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Time Slice 10/1/2014-10/15/2014 Active Days: 13	3.68	27.82	18.34	0.00	0.01	1.45	1.45	0.00	1.33	1.33	3,380.90
Fine Grading 10/01/2014-10/15/2014	2.88	22.43	14.09	0.00	0.00	1.03	1.04	0.00	0.95	0.95	2,752.75
Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Off Road Diesel	2.84	22.35	12.95	0.00	0.00	1.03	1.03	0.00	0.95	0.95	2,660.03
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.05	0.09	1.14	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.72
Mass Grading 05/15/2014-10/15/2014	0.80	5.39	4.25	0.00	0.00	0.42	0.42	0.00	0.38	0.38	628.16
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.77	5.35	3.68	0.00	0.00	0.41	0.41	0.00	0.38	0.38	581.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.04	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.36

Phase Assumptions

Phase: Fine Grading 6/1/2013 - 9/30/2013 - Type Your Description Here

Total Acres Disturbed: 84

Maximum Daily Acreage Disturbed: 21

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 1080.81

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

4 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Fine Grading 5/15/2014 - 5/30/2014 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Fine Grading 10/1/2014 - 10/15/2014 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/15/2012 - 5/31/2012 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 4 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 4 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

1 Skid Steer Loaders (44 hp) operating at a 0.55 load factor for 4 hours per day

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3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2012 - 9/30/2012 - Default Mass Site Grading Description

Total Acres Disturbed: 84

Maximum Daily Acreage Disturbed: 21

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 1080.81

Off-Road Equipment:

2 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

4 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 4 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 4 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 4 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 4 hours per day

3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

7 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

2 Trenchers (63 hp) operating at a 0.75 load factor for 4 hours per day

3 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 5/15/2013 - 5/31/2013 - Default Mass Site Grading Description

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 324.12

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Skid Steer Loaders (44 hp) operating at a 0.55 load factor for 6 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Mass Grading 5/15/2013 - 10/15/2013 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/15/2014 - 10/15/2014 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day

Phase: Mass Grading 6/1/2014 - 9/30/2014 - Type Your Description Here

Total Acres Disturbed: 84

Maximum Daily Acreage Disturbed: 21

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 1070.51

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

3 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 6 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

2 Pumps (53 hp) operating at a 0.74 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

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Phase: Mass Grading 9/1/2014 - 9/30/2014 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2012 - 10/15/2012 - Default Mass Site Grading Description

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

3 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 4 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\weirichj\Desktop\UTRG Temp\UTR G Alt 2.urb924

Project Name: UTR Golf Course and Restoration Alt 2

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2012 TOTALS (tons/year unmitigated)	0.62	5.42	3.16	0.00	12.76	0.27	13.04	2.67	0.25	2.92	669.89
2013 TOTALS (tons/year unmitigated)	0.59	5.09	2.88	0.00	22.11	0.25	22.37	4.62	0.23	4.85	676.19
2014 TOTALS (tons/year unmitigated)	0.51	4.29	2.62	0.00	21.85	0.22	22.07	4.56	0.20	4.76	619.54

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.01	0.00	0.14	0.00	0.00	0.00	0.25

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.16	0.02	0.17	0.00	0.00	0.00	11.46

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SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.17	0.02	0.31	0.00	0.00	0.00	11.71

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\weirichj\Desktop\UTRG Temp\UTR G Alt 3.urb924

Project Name: UTR Golf Course and Restoration Alt 3

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/15/2012-5/31/2012 Active Days: 15	3.51	27.15	18.30	0.00	0.01	1.33	1.35	0.00	1.23	1.23	3,024.00
Mass Grading 05/15/2012-05/31/2012	3.51	27.15	18.30	0.00	0.01	1.33	1.35	0.00	1.23	1.23	3,024.00
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	3.38	26.89	14.95	0.00	0.00	1.33	1.33	0.00	1.22	1.22	2,792.14
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.14	0.25	3.36	0.00	0.01	0.01	0.02	0.00	0.01	0.01	231.86
Time Slice 6/1/2012-9/29/2012 Active Days: 104	3.81	40.04	19.96	0.03	200.41	1.77	202.19	41.87	1.63	43.50	5,543.30
Mass Grading 06/01/2012-09/30/2012	3.81	40.04	19.96	0.03	200.41	1.77	202.19	41.87	1.63	43.50	5,543.30
Mass Grading Dust	0.00	0.00	0.00	0.00	200.28	0.00	200.28	41.83	0.00	41.83	0.00
Mass Grading Off Road Diesel	2.37	18.32	10.86	0.00	0.00	1.03	1.03	0.00	0.95	0.95	1,931.02
Mass Grading On Road Diesel	1.35	21.54	6.75	0.03	0.12	0.74	0.86	0.04	0.68	0.72	3,449.98
Mass Grading Worker Trips	0.10	0.18	2.35	0.00	0.01	0.00	0.01	0.00	0.00	0.01	162.30
Time Slice 10/1/2012-10/15/2012 Active Days: 13	1.94	16.14	9.45	0.00	0.01	0.73	0.73	0.00	0.67	0.67	1,779.15
Trenching 10/01/2012-10/15/2012	1.94	16.14	9.45	0.00	0.01	0.73	0.73	0.00	0.67	0.67	1,779.15
Trenching Off Road Diesel	1.87	16.01	7.77	0.00	0.00	0.72	0.72	0.00	0.67	0.67	1,663.22
Trenching Worker Trips	0.07	0.13	1.68	0.00	0.01	0.00	0.01	0.00	0.00	0.01	115.93

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Time Slice 5/14/2013-5/14/2013 Active Days: 1	1.57	11.81	6.82	0.00	0.00	0.66	0.66	0.00	0.61	0.61	1,484.36
Mass Grading 05/14/2013-10/15/2013	1.57	11.81	6.82	0.00	0.00	0.66	0.66	0.00	0.61	0.61	1,484.36
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	1.52	11.71	5.58	0.00	0.00	0.66	0.66	0.00	0.60	0.60	1,391.63
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.24	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.73
Time Slice 5/15/2013-5/31/2013 Active Days: 15	5.48	45.82	27.20	0.02	35.35	2.12	37.46	7.39	1.95	9.34	5,965.10
Mass Grading 05/14/2013-10/15/2013	1.57	11.81	6.82	0.00	0.00	0.66	0.66	0.00	0.61	0.61	1,484.36
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	1.52	11.71	5.58	0.00	0.00	0.66	0.66	0.00	0.60	0.60	1,391.63
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.24	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.73
Mass Grading 05/15/2013-05/31/2013	3.92	34.01	20.39	0.01	35.34	1.46	36.80	7.39	1.34	8.73	4,480.74
Mass Grading Dust	0.00	0.00	0.00	0.00	35.28	0.00	35.28	7.37	0.00	7.37	0.00
Mass Grading Off Road Diesel	3.32	26.59	14.99	0.00	0.00	1.21	1.21	0.00	1.11	1.11	2,944.01
Mass Grading On Road Diesel	0.47	7.19	2.29	0.01	0.05	0.24	0.29	0.02	0.22	0.24	1,304.91
Mass Grading Worker Trips	0.13	0.23	3.10	0.00	0.01	0.01	0.02	0.00	0.01	0.01	231.82

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Time Slice 6/1/2013-9/30/2013 Active Days: 104	7.39	64.76	36.80	**0.04**	**330.14**	3.19	333.33	**68.96**	2.93	71.90	8,874.57
Fine Grading 06/01/2013-09/30/2013	5.82	52.96	29.98	0.03	330.14	2.53	332.67	68.96	2.33	71.29	7,390.21
Fine Grading Dust	0.00	0.00	0.00	0.00	330.00	0.00	330.00	68.92	0.00	68.92	0.00
Fine Grading Off Road Diesel	4.42	33.65	19.88	0.00	0.00	1.87	1.87	0.00	1.72	1.72	3,638.86
Fine Grading On Road Diesel	1.23	19.00	6.07	0.03	0.12	0.65	0.77	0.04	0.59	0.63	3,449.98
Fine Grading Worker Trips	0.16	0.30	4.03	0.00	0.02	0.01	0.03	0.01	0.01	0.01	301.37
Mass Grading 05/14/2013-10/15/2013	1.57	11.81	6.82	0.00	0.00	0.66	0.66	0.00	0.61	0.61	1,484.36
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	1.52	11.71	5.58	0.00	0.00	0.66	0.66	0.00	0.60	0.60	1,391.63
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.24	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.73
Time Slice 10/1/2013-10/14/2013 Active Days: 12	4.28	34.06	19.52	0.00	0.01	1.65	1.66	0.00	1.52	1.52	4,060.64
Mass Grading 05/14/2013-10/15/2013	1.57	11.81	6.82	0.00	0.00	0.66	0.66	0.00	0.61	0.61	1,484.36
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	1.52	11.71	5.58	0.00	0.00	0.66	0.66	0.00	0.60	0.60	1,391.63
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.24	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.73
Trenching 10/01/2013-10/14/2013	2.72	22.25	12.70	0.00	0.01	0.99	1.00	0.00	0.91	0.91	2,576.28
Trenching Off Road Diesel	2.65	22.13	11.15	0.00	0.00	0.99	0.99	0.00	0.91	0.91	2,460.37
Trenching Worker Trips	0.06	0.12	1.55	0.00	0.01	0.00	0.01	0.00	0.00	0.01	115.91
Time Slice 10/15/2013-10/15/2013 Active Days: 1	1.57	11.81	6.82	0.00	0.00	0.66	0.66	0.00	0.61	0.61	1,484.36
Mass Grading 05/14/2013-10/15/2013	1.57	11.81	6.82	0.00	0.00	0.66	0.66	0.00	0.61	0.61	1,484.36
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	1.52	11.71	5.58	0.00	0.00	0.66	0.66	0.00	0.60	0.60	1,391.63
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.24	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.73

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Time Slice 5/14/2014-5/14/2014 Active Days: 1	2.31	17.70	12.08	0.00	0.01	0.82	0.82	0.00	0.75	0.75	2,249.57
Fine Grading 05/14/2014-05/31/2014	2.31	17.70	12.08	0.00	0.01	0.82	0.82	0.00	0.75	0.75	2,249.57
Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Off Road Diesel	2.24	17.57	10.36	0.00	0.00	0.81	0.81	0.00	0.75	0.75	2,110.49
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.07	0.13	1.72	0.00	0.01	0.00	0.01	0.00	0.00	0.01	139.08
Time Slice 5/15/2014-5/31/2014 Active Days: 15	3.11	23.09	16.33	0.00	0.01	1.23	1.24	0.00	1.13	1.14	2,877.72
Fine Grading 05/14/2014-05/31/2014	2.31	17.70	12.08	0.00	0.01	0.82	0.82	0.00	0.75	0.75	2,249.57
Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Off Road Diesel	2.24	17.57	10.36	0.00	0.00	0.81	0.81	0.00	0.75	0.75	2,110.49
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.07	0.13	1.72	0.00	0.01	0.00	0.01	0.00	0.00	0.01	139.08
Mass Grading 05/15/2014-10/14/2014	0.80	5.39	4.25	0.00	0.00	0.42	0.42	0.00	0.38	0.38	628.16
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.77	5.35	3.68	0.00	0.00	0.41	0.41	0.00	0.38	0.38	581.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.04	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.36

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Time Slice 6/2/2014-8/30/2014 Active Days: 78	6.92	59.83	35.08	0.03	330.13	2.87	333.00	68.96	2.64	71.60	8,736.67
Mass Grading 05/15/2014-10/14/2014	0.80	5.39	4.25	0.00	0.00	0.42	0.42	0.00	0.38	0.38	628.16
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.77	5.35	3.68	0.00	0.00	0.41	0.41	0.00	0.38	0.38	581.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.04	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.36
Mass Grading 06/01/2014-09/30/2014	6.12	54.43	30.84	0.03	330.13	2.45	332.58	68.96	2.25	71.21	8,108.51
Mass Grading Dust	0.00	0.00	0.00	0.00	330.00	0.00	330.00	68.92	0.00	68.92	0.00
Mass Grading Off Road Diesel	4.90	37.78	22.62	0.00	0.00	1.89	1.89	0.00	1.74	1.74	4,459.60
Mass Grading On Road Diesel	1.11	16.44	5.36	0.03	0.12	0.56	0.67	0.04	0.51	0.55	3,417.12
Mass Grading Worker Trips	0.12	0.22	2.86	0.00	0.01	0.01	0.02	0.00	0.01	0.01	231.79

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Time Slice 9/1/2014-9/29/2014 Active Days: 25	**9.46**	**78.94**	**47.76**	0.04	330.14	**3.83**	**333.97**	68.96	**3.52**	**72.49**	**11,071.54**
Mass Grading 05/15/2014-10/14/2014	0.80	5.39	4.25	0.00	0.00	0.42	0.42	0.00	0.38	0.38	628.16
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.77	5.35	3.68	0.00	0.00	0.41	0.41	0.00	0.38	0.38	581.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.04	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.36
Mass Grading 06/01/2014-09/30/2014	6.12	54.43	30.84	0.03	330.13	2.45	332.58	68.96	2.25	71.21	8,108.51
Mass Grading Dust	0.00	0.00	0.00	0.00	330.00	0.00	330.00	68.92	0.00	68.92	0.00
Mass Grading Off Road Diesel	4.90	37.78	22.62	0.00	0.00	1.89	1.89	0.00	1.74	1.74	4,459.60
Mass Grading On Road Diesel	1.11	16.44	5.36	0.03	0.12	0.56	0.67	0.04	0.51	0.55	3,417.12
Mass Grading Worker Trips	0.12	0.22	2.86	0.00	0.01	0.01	0.02	0.00	0.01	0.01	231.79
Mass Grading 09/01/2014-09/29/2014	2.54	19.11	12.67	0.00	0.01	0.96	0.97	0.00	0.89	0.89	2,334.87
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	2.48	19.00	11.24	0.00	0.00	0.96	0.96	0.00	0.88	0.88	2,218.98
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.43	0.00	0.01	0.00	0.01	0.00	0.00	0.01	115.90

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Time Slice 9/30/2014-9/30/2014 Active Days: 1	6.92	59.83	35.08	0.03	330.13	2.87	333.00	68.96	2.64	71.60	8,736.67
Mass Grading 05/15/2014-10/14/2014	0.80	5.39	4.25	0.00	0.00	0.42	0.42	0.00	0.38	0.38	628.16
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.77	5.35	3.68	0.00	0.00	0.41	0.41	0.00	0.38	0.38	581.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.04	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.36
Mass Grading 06/01/2014-09/30/2014	6.12	54.43	30.84	0.03	330.13	2.45	332.58	68.96	2.25	71.21	8,108.51
Mass Grading Dust	0.00	0.00	0.00	0.00	330.00	0.00	330.00	68.92	0.00	68.92	0.00
Mass Grading Off Road Diesel	4.90	37.78	22.62	0.00	0.00	1.89	1.89	0.00	1.74	1.74	4,459.60
Mass Grading On Road Diesel	1.11	16.44	5.36	0.03	0.12	0.56	0.67	0.04	0.51	0.55	3,417.12
Mass Grading Worker Trips	0.12	0.22	2.86	0.00	0.01	0.01	0.02	0.00	0.01	0.01	231.79
Time Slice 10/1/2014-10/14/2014 Active Days: 12	3.07	22.91	15.66	0.00	0.01	1.24	1.25	0.00	1.14	1.14	2,797.76
Fine Grading 10/01/2014-10/15/2014	2.27	17.52	11.41	0.00	0.00	0.83	0.83	0.00	0.76	0.76	2,169.61
Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Off Road Diesel	2.23	17.43	10.26	0.00	0.00	0.82	0.82	0.00	0.76	0.76	2,076.89
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.05	0.09	1.14	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.72
Mass Grading 05/15/2014-10/14/2014	0.80	5.39	4.25	0.00	0.00	0.42	0.42	0.00	0.38	0.38	628.16
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.77	5.35	3.68	0.00	0.00	0.41	0.41	0.00	0.38	0.38	581.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.04	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.36

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Time Slice 10/15/2014-10/15/2014 Active Days: 1	2.27	17.52	11.41	0.00	0.00	0.83	0.83	0.00	0.76	0.76	2,169.61
Fine Grading 10/01/2014-10/15/2014	2.27	17.52	11.41	0.00	0.00	0.83	0.83	0.00	0.76	0.76	2,169.61
Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Off Road Diesel	2.23	17.43	10.26	0.00	0.00	0.82	0.82	0.00	0.76	0.76	2,076.89
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.05	0.09	1.14	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.72

Phase Assumptions

Phase: Fine Grading 6/1/2013 - 9/30/2013 - Type Your Description Here

Total Acres Disturbed: 66

Maximum Daily Acreage Disturbed: 16.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 856.92

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 4 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 4 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

4 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 4 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Fine Grading 5/14/2014 - 5/31/2014 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 6 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

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1 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Fine Grading 10/1/2014 - 10/15/2014 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Mass Grading 5/15/2012 - 5/31/2012 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 4 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

1 Skid Steer Loaders (44 hp) operating at a 0.55 load factor for 4 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2012 - 9/30/2012 - Default Mass Site Grading Description

Total Acres Disturbed: 66

Maximum Daily Acreage Disturbed: 16.5

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 856.92

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 5/14/2013 - 10/15/2013 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Mass Grading 5/15/2013 - 5/31/2013 - Default Mass Site Grading Description

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 324.12

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 4 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

2 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 4 hours per day

1 Skid Steer Loaders (44 hp) operating at a 0.55 load factor for 4 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 5/15/2014 - 10/14/2014 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

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Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day

Phase: Mass Grading 6/1/2014 - 9/30/2014 - Type Your Description Here

Total Acres Disturbed: 66

Maximum Daily Acreage Disturbed: 16.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 848.76

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Mass Grading 9/1/2014 - 9/29/2014 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Trenching 10/1/2013 - 10/14/2013 - Type Your Description Here

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 6 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 6 hours per day

Phase: Trenching 10/1/2012 - 10/15/2012 - Type Your Description Here

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 4 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\weirichj\Desktop\UTRG Temp\UTR G Alt 4.urb924

Project Name: UTR Golf Course and Restoration Alt 4

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/15/2012-5/30/2012 Active Days: 14	3.51	27.15	18.30	0.00	37.80	1.33	39.13	7.90	1.23	9.12	3,024.00
Mass Grading 05/15/2012-05/30/2012	3.51	27.15	18.30	0.00	37.80	1.33	39.13	7.90	1.23	9.12	3,024.00
Mass Grading Dust	0.00	0.00	0.00	0.00	37.78	0.00	37.78	7.89	0.00	7.89	0.00
Mass Grading Off Road Diesel	3.38	26.89	14.95	0.00	0.00	1.33	1.33	0.00	1.22	1.22	2,792.14
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.14	0.25	3.36	0.00	0.01	0.01	0.02	0.00	0.01	0.01	231.86
Time Slice 6/1/2012-9/29/2012 Active Days: 104	8.40	87.14	42.30	0.07	78.06	3.83	81.89	16.34	3.52	19.86	11,928.93
Mass Grading 06/01/2012-10/14/2012	8.40	87.14	42.30	0.07	78.06	3.83	81.89	16.34	3.52	19.86	11,928.93
Mass Grading Dust	0.00	0.00	0.00	0.00	77.78	0.00	77.78	16.24	0.00	16.24	0.00
Mass Grading Off Road Diesel	5.33	41.48	22.42	0.00	0.00	2.28	2.28	0.00	2.09	2.09	4,290.73
Mass Grading On Road Diesel	2.83	45.24	14.18	0.07	0.25	1.55	1.80	0.08	1.42	1.51	7,244.04
Mass Grading Worker Trips	0.24	0.43	5.70	0.00	0.02	0.01	0.03	0.01	0.01	0.02	394.16

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Time Slice 10/1/2012-10/13/2012 Active Days: 12	**10.03**	**100.11**	**50.62**	**0.07**	78.06	**4.46**	82.52	16.34	**4.10**	20.44	**13,351.69**
Mass Grading 06/01/2012-10/14/2012	8.40	87.14	42.30	0.07	78.06	3.83	81.89	16.34	3.52	19.86	11,928.93
Mass Grading Dust	0.00	0.00	0.00	0.00	77.78	0.00	77.78	16.24	0.00	16.24	0.00
Mass Grading Off Road Diesel	5.33	41.48	22.42	0.00	0.00	2.28	2.28	0.00	2.09	2.09	4,290.73
Mass Grading On Road Diesel	2.83	45.24	14.18	0.07	0.25	1.55	1.80	0.08	1.42	1.51	7,244.04
Mass Grading Worker Trips	0.24	0.43	5.70	0.00	0.02	0.01	0.03	0.01	0.01	0.02	394.16
Trenching 10/01/2012-10/15/2012	1.63	12.96	8.32	0.00	0.00	0.63	0.63	0.00	0.58	0.58	1,422.76
Trenching Off Road Diesel	1.57	12.86	6.98	0.00	0.00	0.62	0.62	0.00	0.57	0.57	1,330.02
Trenching Worker Trips	0.06	0.10	1.34	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.74
Time Slice 10/15/2012-10/15/2012 Active Days: 1	1.63	12.96	8.32	0.00	0.00	0.63	0.63	0.00	0.58	0.58	1,422.76
Trenching 10/01/2012-10/15/2012	1.63	12.96	8.32	0.00	0.00	0.63	0.63	0.00	0.58	0.58	1,422.76
Trenching Off Road Diesel	1.57	12.86	6.98	0.00	0.00	0.62	0.62	0.00	0.57	0.57	1,330.02
Trenching Worker Trips	0.06	0.10	1.34	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.74
Time Slice 5/15/2013-9/30/2013 Active Days: 119	6.19	64.97	31.49	0.06	85.24	2.70	87.93	17.83	2.48	20.31	9,952.57
Mass Grading 05/15/2013-10/15/2013	6.19	64.97	31.49	0.06	85.24	2.70	87.93	17.83	2.48	20.31	9,952.57
Mass Grading Dust	0.00	0.00	0.00	0.00	85.00	0.00	85.00	17.75	0.00	17.75	0.00
Mass Grading Off Road Diesel	3.76	29.63	16.57	0.00	0.00	1.50	1.50	0.00	1.38	1.38	3,308.41
Mass Grading On Road Diesel	2.27	35.07	11.19	0.06	0.22	1.19	1.41	0.07	1.10	1.17	6,365.97
Mass Grading Worker Trips	0.15	0.28	3.72	0.00	0.01	0.01	0.02	0.01	0.01	0.01	278.19

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Time Slice 10/1/2013-10/14/2013 Active Days: 12	7.74	77.12	39.43	0.06	**85.24**	3.27	**88.51**	**17.83**	3.01	**20.84**	11,375.31
Mass Grading 05/15/2013-10/15/2013	6.19	64.97	31.49	0.06	85.24	2.70	87.93	17.83	2.48	20.31	9,952.57
Mass Grading Dust	0.00	0.00	0.00	0.00	85.00	0.00	85.00	17.75	0.00	17.75	0.00
Mass Grading Off Road Diesel	3.76	29.63	16.57	0.00	0.00	1.50	1.50	0.00	1.38	1.38	3,308.41
Mass Grading On Road Diesel	2.27	35.07	11.19	0.06	0.22	1.19	1.41	0.07	1.10	1.17	6,365.97
Mass Grading Worker Trips	0.15	0.28	3.72	0.00	0.01	0.01	0.02	0.01	0.01	0.01	278.19
Trenching 10/01/2013-10/14/2013	1.55	12.14	7.95	0.00	0.00	0.58	0.58	0.00	0.53	0.53	1,422.74
Trenching Off Road Diesel	1.50	12.05	6.71	0.00	0.00	0.57	0.57	0.00	0.53	0.53	1,330.02
Trenching Worker Trips	0.05	0.09	1.24	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.73
Time Slice 10/15/2013-10/15/2013 Active Days: 1	6.19	64.97	31.49	0.06	85.24	2.70	87.93	17.83	2.48	20.31	9,952.57
Mass Grading 05/15/2013-10/15/2013	6.19	64.97	31.49	0.06	85.24	2.70	87.93	17.83	2.48	20.31	9,952.57
Mass Grading Dust	0.00	0.00	0.00	0.00	85.00	0.00	85.00	17.75	0.00	17.75	0.00
Mass Grading Off Road Diesel	3.76	29.63	16.57	0.00	0.00	1.50	1.50	0.00	1.38	1.38	3,308.41
Mass Grading On Road Diesel	2.27	35.07	11.19	0.06	0.22	1.19	1.41	0.07	1.10	1.17	6,365.97
Mass Grading Worker Trips	0.15	0.28	3.72	0.00	0.01	0.01	0.02	0.01	0.01	0.01	278.19

Phase Assumptions

Phase: Mass Grading 5/15/2012 - 5/30/2012 - Default Mass Site Grading Description

Total Acres Disturbed: 1

Maximum Daily Acreage Disturbed: 0.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 4 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

1 Skid Steer Loaders (44 hp) operating at a 0.55 load factor for 4 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

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2 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2012 - 10/14/2012 - Default Mass Site Grading Description

Total Acres Disturbed: 17

Maximum Daily Acreage Disturbed: 4.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 1799.31

Off-Road Equipment:

2 Cranes (399 hp) operating at a 0.43 load factor for 2 hours per day

3 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 4 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 4 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 4 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 4 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

3 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 5/15/2013 - 10/15/2013 - Type Your Description Here

Total Acres Disturbed: 17

Maximum Daily Acreage Disturbed: 4.25

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 1581.21

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 4 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 4 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

3 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Trenching 10/1/2012 - 10/15/2012 - Default Mass Site Grading Description

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Trenching 10/1/2013 - 10/14/2013 - Type Your Description Here

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\weirichj\Desktop\UTRG Temp\UTR G Alt 3.urb924

Project Name: UTR Golf Course and Restoration Alt 3

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2012 TOTALS (tons/year unmitigated)	0.24	2.39	1.24	0.00	10.42	0.11	10.53	2.18	0.10	2.28	322.50
2013 TOTALS (tons/year unmitigated)	0.45	3.93	2.24	0.00	17.43	0.19	17.62	3.64	0.18	3.82	532.06
2014 TOTALS (tons/year unmitigated)	0.44	3.68	2.21	0.00	17.17	0.18	17.35	3.59	0.16	3.75	524.07

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\weirichj\Desktop\UTRG Temp\UTR G Alt 4.urb924

Project Name: UTR Golf Course and Restoration Alt 4

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2012 TOTALS (tons/year unmitigated)	0.52	5.33	2.64	0.00	4.79	0.24	5.03	1.00	0.22	1.22	722.29
2013 TOTALS (tons/year unmitigated)	0.42	4.36	2.13	0.00	5.63	0.18	5.81	1.18	0.17	1.34	665.41

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\weirichj\Desktop\UTRG Temp\UTR G Alt 5.urb924

Project Name: UTR Golf Course and Restoration Alt 5

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/15/2012-5/31/2012 Active Days: 15	3.35	26.50	17.36	0.00	35.30	1.29	36.58	7.37	1.18	8.55	2,934.11
Mass Grading 05/15/2012-05/31/2012	3.35	26.50	17.36	0.00	35.30	1.29	36.58	7.37	1.18	8.55	2,934.11
Mass Grading Dust	0.00	0.00	0.00	0.00	35.28	0.00	35.28	7.37	0.00	7.37	0.00
Mass Grading Off Road Diesel	3.22	26.27	14.34	0.00	0.00	1.28	1.28	0.00	1.18	1.18	2,725.43
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.12	0.23	3.02	0.00	0.01	0.01	0.02	0.00	0.00	0.01	208.68
Time Slice 6/1/2012-9/29/2012 Active Days: 104	3.58	36.34	18.80	0.03	315.11	1.65	316.75	65.82	1.51	67.33	4,950.70
Mass Grading 06/01/2012-09/30/2012	3.58	36.34	18.80	0.03	315.11	1.65	316.75	65.82	1.51	67.33	4,950.70
Mass Grading Dust	0.00	0.00	0.00	0.00	315.00	0.00	315.00	65.78	0.00	65.78	0.00
Mass Grading Off Road Diesel	2.37	18.32	10.86	0.00	0.00	1.03	1.03	0.00	0.95	0.95	1,931.02
Mass Grading On Road Diesel	1.12	17.84	5.59	0.03	0.10	0.61	0.71	0.03	0.56	0.59	2,857.38
Mass Grading Worker Trips	0.10	0.18	2.35	0.00	0.01	0.00	0.01	0.00	0.00	0.01	162.30
Time Slice 10/1/2012-10/15/2012 Active Days: 13	1.94	16.14	9.45	0.00	0.01	0.73	0.73	0.00	0.67	0.67	1,779.15
Trenching 10/01/2012-10/15/2012	1.94	16.14	9.45	0.00	0.01	0.73	0.73	0.00	0.67	0.67	1,779.15
Trenching Off Road Diesel	1.87	16.01	7.77	0.00	0.00	0.72	0.72	0.00	0.67	0.67	1,663.22
Trenching Worker Trips	0.07	0.13	1.68	0.00	0.01	0.00	0.01	0.00	0.00	0.01	115.93

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Time Slice 5/15/2013-5/31/2013 Active Days: 15	0.31	2.20	1.94	0.00	0.00	0.13	0.13	0.00	0.12	0.12	296.73
Mass Grading 05/15/2013-05/31/2013	0.31	2.20	1.94	0.00	0.00	0.13	0.13	0.00	0.12	0.12	296.73
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.30	2.18	1.63	0.00	0.00	0.13	0.13	0.00	0.12	0.12	273.54
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.02	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.18
Time Slice 6/1/2013-9/30/2013 Active Days: 104	6.65	57.76	34.19	0.03	315.12	2.86	317.98	65.82	2.63	68.46	7,809.66
Mass Grading 06/01/2013-09/30/2013	6.65	57.76	34.19	0.03	315.12	2.86	317.98	65.82	2.63	68.46	7,809.66
Mass Grading Dust	0.00	0.00	0.00	0.00	315.00	0.00	315.00	65.78	0.00	65.78	0.00
Mass Grading Off Road Diesel	5.43	41.67	24.51	0.00	0.00	2.32	2.32	0.00	2.13	2.13	4,604.55
Mass Grading On Road Diesel	1.02	15.74	5.02	0.03	0.10	0.53	0.63	0.03	0.49	0.52	2,857.38
Mass Grading Worker Trips	0.19	0.35	4.65	0.00	0.02	0.01	0.03	0.01	0.01	0.02	347.73
Time Slice 10/1/2013-10/15/2013 Active Days: 13	1.84	15.07	9.03	0.00	0.01	0.67	0.67	0.00	0.61	0.61	1,779.13
Trenching 10/01/2013-10/15/2013	1.84	15.07	9.03	0.00	0.01	0.67	0.67	0.00	0.61	0.61	1,779.13
Trenching Off Road Diesel	1.78	14.96	7.48	0.00	0.00	0.66	0.66	0.00	0.61	0.61	1,663.22
Trenching Worker Trips	0.06	0.12	1.55	0.00	0.01	0.00	0.01	0.00	0.00	0.01	115.91

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Time Slice 5/15/2014-5/31/2014 Active Days: 15	2.79	20.74	14.33	0.00	35.30	1.07	36.37	7.37	0.99	8.36	2,725.72
Mass Grading 05/15/2014-05/31/2014	1.54	11.73	8.29	0.00	35.29	0.54	35.83	7.37	0.50	7.87	1,511.31
Mass Grading Dust	0.00	0.00	0.00	0.00	35.28	0.00	35.28	7.37	0.00	7.37	0.00
Mass Grading Off Road Diesel	1.48	11.62	6.86	0.00	0.00	0.54	0.54	0.00	0.49	0.49	1,395.42
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.43	0.00	0.01	0.00	0.01	0.00	0.00	0.01	115.90
Mass Grading 05/15/2014-10/15/2014	1.25	9.02	6.04	0.00	0.00	0.53	0.54	0.00	0.49	0.49	1,214.40
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	1.21	8.93	4.89	0.00	0.00	0.53	0.53	0.00	0.49	0.49	1,121.69
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.14	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.72
Time Slice 6/2/2014-9/30/2014 Active Days: 104	5.65	48.92	29.10	0.03	192.90	2.29	195.19	40.30	2.11	42.41	7,372.39
Mass Grading 05/15/2014-10/15/2014	1.25	9.02	6.04	0.00	0.00	0.53	0.54	0.00	0.49	0.49	1,214.40
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	1.21	8.93	4.89	0.00	0.00	0.53	0.53	0.00	0.49	0.49	1,121.69
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.14	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.72
Mass Grading 06/01/2014-09/30/2014	4.40	39.91	23.07	0.03	192.90	1.76	194.66	40.30	1.62	41.92	6,157.99
Mass Grading Dust	0.00	0.00	0.00	0.00	192.78	0.00	192.78	40.26	0.00	40.26	0.00
Mass Grading Off Road Diesel	3.35	26.06	15.48	0.00	0.00	1.29	1.29	0.00	1.19	1.19	3,072.85
Mass Grading On Road Diesel	0.92	13.62	4.44	0.03	0.10	0.46	0.56	0.03	0.42	0.46	2,830.17
Mass Grading Worker Trips	0.13	0.24	3.15	0.00	0.01	0.01	0.02	0.00	0.01	0.01	254.97

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Time Slice 10/1/2014-10/15/2014 Active Days: 13	3.00	22.93	14.69	0.00	0.01	1.13	1.14	0.00	1.04	1.04	2,993.52
Mass Grading 05/15/2014-10/15/2014	1.25	9.02	6.04	0.00	0.00	0.53	0.54	0.00	0.49	0.49	1,214.40
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	1.21	8.93	4.89	0.00	0.00	0.53	0.53	0.00	0.49	0.49	1,121.69
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.14	0.00	0.00	0.00	0.01	0.00	0.00	0.00	92.72
Trenching 10/01/2014-10/15/2014	1.74	13.91	8.66	0.00	0.01	0.60	0.60	0.00	0.55	0.55	1,779.12
Trenching Off Road Diesel	1.69	13.80	7.23	0.00	0.00	0.59	0.59	0.00	0.55	0.55	1,663.22
Trenching Worker Trips	0.06	0.11	1.43	0.00	0.01	0.00	0.01	0.00	0.00	0.01	115.90

Phase Assumptions

Phase: Mass Grading 5/15/2014 - 5/31/2014 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 4 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2014 - 9/30/2014 - Type Your Description Here

Total Acres Disturbed: 63

Maximum Daily Acreage Disturbed: 15.75

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 702.97

Off-Road Equipment:

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2 Cranes (399 hp) operating at a 0.43 load factor for 2 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 4 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 5/15/2012 - 5/31/2012 - Default Mass Site Grading Description

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 4 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2012 - 9/30/2012 - Default Mass Site Grading Description

Total Acres Disturbed: 63

Maximum Daily Acreage Disturbed: 15.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 709.73

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 5/15/2013 - 5/31/2013 - Default Mass Site Grading Description

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

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Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

Phase: Mass Grading 5/15/2014 - 10/15/2014 - Type Your Description Here

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2013 - 9/30/2013 - Type Your Description Here

Total Acres Disturbed: 63

Maximum Daily Acreage Disturbed: 15.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 709.73

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

2 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 4 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

3 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Trenching 10/1/2014 - 10/15/2014 - Type Your Description Here

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 4 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Trenching 10/1/2012 - 10/15/2012 - Default Mass Site Grading Description

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 4 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Trenching 10/1/2013 - 10/15/2013 - Type Your Description Here

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 4 hours per day

1 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 4 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\weirichj\Desktop\UTRG Temp\UTR G Alt 5.urb924

Project Name: UTR Golf Course and Restoration Alt 5

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2012 TOTALS (tons/year unmitigated)	0.22	2.19	1.17	0.00	16.65	0.10	16.75	3.48	0.09	3.57	291.01
2013 TOTALS (tons/year unmitigated)	0.36	3.12	1.85	0.00	16.39	0.15	16.54	3.42	0.14	3.56	419.89
2014 TOTALS (tons/year unmitigated)	0.33	2.85	1.72	0.00	10.30	0.13	10.43	2.15	0.12	2.27	423.27

APPENDIX J

Noise Modeling Data

Appendix XX

24 Hour Noise Modeling

Model Input Sheet

EDAW | AECOM

Project: UTR Golf Course

Date: **June 30, 2009**

Condition: Individual Source Calculations

Ambient Noise Level (dBA Leq) as Monitored on November 15, 2008

36.60	ambient level

Lawn Mower Noise Levels (dBA Leq) as Monitored on October 12, 2006

74.00	at 6 feet

Human Conversation Noise Level (dBA Leq)

60.00	at 3 feet

Decibel Addition

=10*LOG(10^(N1/10)+10^(N2/10)+10^(N3/10))

Decibel Attenuation

=N1-(20.5*(LOG(D1/D2)))

Calculation Table

	at 100 feet
Ambient	36.6
Lawn Mower (1)	49.0
Humans (4)	33.6

Appendix XX

24 Hour Noise Modeling

Model Input Sheet

EDAW | AECOM

Project: UTR Golf Course

Date: **June 30, 2009**

Condition: Existing

Hour	Leq	Lmax	L50	L90
12:00	36.6			
13:00	36.6			
14:00	36.6			
15:00	36.6			
16:00	36.6			
17:00	36.6			
18:00	36.6			
19:00	36.6			
20:00	36.6			
21:00	36.6			
22:00	36.6			
23:00	36.6			
0:00	36.6			
1:00	36.6			
2:00	36.6			
3:00	36.6			
4:00	36.6			
5:00	36.6			
6:00	36.6			
7:00	36.6			
8:00	36.6			
9:00	36.6			
10:00	36.6			
11:00	36.6			

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	36.6	-	-	-
Evening (7 p.m. - 9 p.m.)	36.6	-	-	-
Nighttime (9 p.m. - 7 a.m.)	36.6	-	-	-

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	36.6	-	-	-
Evening (7 p.m. - 9 p.m.)	36.6	-	-	-
Nighttime (9 p.m. - 7 a.m.)	36.6	-	-	-

Percentage of Energy

Daytime	50%
Evening	13%
Nighttime	38%

Calculated CNEL, dBA

43.3

Appendix XX

24 Hour Noise Modeling

Model Input Sheet

EDAW | AECOM

Project: UTR Golf Course

Date: **June 30, 2009**

Condition: Existing + Lawn Mowers

Hour	Leq	Lmax	L50	L90
12:00	36.6			
13:00	36.6			
14:00	36.6			
15:00	36.6			
16:00	36.6			
17:00	36.6			
18:00	36.6			
19:00	36.6			
20:00	36.6			
21:00	36.6			
22:00	36.6			
23:00	36.6			
0:00	36.6			
1:00	36.6			
2:00	36.6			
3:00	36.6			
4:00	36.6			
5:00	36.6			
6:00	36.6			
7:00	49.0			
8:00	49.0			
9:00	36.6			
10:00	36.6			
11:00	36.6			

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	42.3	0.0	0.0	0.0
Evening (7 p.m. - 9 p.m.)	36.6	0.0	0.0	0.0
Nighttime (9 p.m. - 7 a.m.)	36.6	0.0	0.0	0.0

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	49.0	0.0	0.0	0.0
Evening (7 p.m. - 9 p.m.)	36.6	0.0	0.0	0.0
Nighttime (9 p.m. - 7 a.m.)	36.6	0.0	0.0	0.0

Percentage of Energy	
Daytime	79%
Evening	5%
Nighttime	16%

Calculated CNEL, dBA
44.4

Appendix XX

24 Hour Noise Modeling

Model Input Sheet

EDAW | AECOM

Project: UTR Golf Course

Date: **June 30, 2009**

Condition: Existing + Lawn Mowers + Golfing

Hour	Leq	Lmax	L50	L90
12:00	39.0			
13:00	39.0			
14:00	39.0			
15:00	39.0			
16:00	39.0			
17:00	39.0			
18:00	39.0			
19:00	36.6			
20:00	36.6			
21:00	36.6			
22:00	36.6			
23:00	36.6			
0:00	36.6			
1:00	36.6			
2:00	36.6			
3:00	36.6			
4:00	36.6			
5:00	36.6			
6:00	36.6			
7:00	49.0			
8:00	49.0			
9:00	39.0			
10:00	39.0			
11:00	39.0			

Averages

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	43.0	0.0	0.0	0.0
Evening (7 p.m. - 9 p.m.)	36.6	0.0	0.0	0.0
Nighttime (9 p.m. - 7 a.m.)	36.6	0.0	0.0	0.0

Uppermost-Level

	Leq	Lmax	L50	L90
Daytime (7 a.m. - 7 p.m.)	49.0	0.0	0.0	0.0
Evening (7 p.m. - 9 p.m.)	36.6	0.0	0.0	0.0
Nighttime (9 p.m. - 7 a.m.)	36.6	0.0	0.0	0.0

Percentage of Energy

Daytime	81%
Evening	5%
Nighttime	14%

Calculated CNEL, dBA

44.6

Appendix X2

Project-Generated Construction Source Noise Prediction Model

Upper Truckee River Restoration and Golf Course

EDAW | AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold*	2,720	55.0
	50	89.7
	100	83.7
	150	80.2
	200	77.7
	250	75.7
	300	74.1
	350	72.8
	400	71.7
	450	70.6
	500	69.7
	550	68.9
	600	68.1

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Excavator	85	0.4
Dozer	85	0.4
Crane	85	0.16
Impact Pile Driver	95	0.2

Ground Type	Hard
Source Height	8
Receiver Height	5
Ground Factor	0.00

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Excavator	81.0
Dozer	81.0
Crane	77.0
Impact Pile Driver	88.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
89.7

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006.

[2] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

Appendix X2

Project-Generated Construction Source Noise Prediction Model

Upper Truckee River Restoration and Golf Course

EDAW | AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold*	1,648	55.0
	50	85.4
	100	79.3
	150	75.8
	200	73.3
	250	71.4
	300	69.8
	350	68.5
	400	67.3
	450	66.3
	500	65.4
	550	64.5
	600	63.8

Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Excavator	85	0.4
Dozer	85	0.4
Crane	85	0.16
Front End Loader	80	0.4

Ground Type	Hard
Source Height	8
Receiver Height	5
Ground Factor	0.00

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Excavator	81.0
Dozer	81.0
Crane	77.0
Front End Loader	76.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
85.4

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006.

[2] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

Appendix XX

Traffic Noise Prediction Model, (FWHA RD-77-108)

Model Input Sheet

Project Name : UTRR and Golf Course
Project Number : 5110049.01
Modeling Condition : Existing
Ground Type : Soft
Metric (L_{eq}, L_{dn}, CNEL) : CNEL

K Factor :
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment From	To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	US 50	Pioneer Trail	Sawmill Road	13700	45	68	96.91	1.58	1.51	77.74	12.62	9.64	0
2	US 50	SR 89	Pioneer Trail	13600	45	76	96.91	1.58	1.51	77.74	12.62	9.64	0

Appendix XX

Traffic Noise Prediction Model, (FWHA RD-77-108)

Predicted Noise Levels

Project Name : UTRR and Golf Course
Project Number : 5110049.01
Modeling Condition : Existing
Metric (Leq, Ldn, CNEL) : CNEL

		Segment		Noise Levels, dB CNEL				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	US 50	Pioneer Trail	Sawmill Road	64.9	55.3	59.6	66.4	39	84	181	390	840
2	US 50	SR 89	Pioneer Trail	64.2	54.5	58.8	65.6	39	84	180	388	836