## Section 2.3 Carson River (3 of 5 Focus Watersheds)

The Carson River watershed has been selected as a priority watershed because of the high resource value of its waters, the problems associated with the Leviathan Mine and other inactive mines, and the ongoing Upper Carson River watershed management planning effort organized by the Nevada Department of Environmental Protection which provides greater potential for coordinated watershed management and improvement.

### 2.3a Watershed Overview

The East and West Forks of the Carson River are located in Alpine County, south of Lake Tahoe (see Figure 2.3-1). The forks join to form the Carson River near Genoa, Nevada. Several tributaries, including Indian Creek and Bryant Creek, cross the California-Nevada state line separately from the main forks. Both the East and West Forks originate in the upper reaches of the eastern side of the Sierra Nevada in or near federal wilderness areas. The watershed is popular for sport fishing, rafting, and other outdoor recreation activities that depend on high water quality. The West Fork flows through scenic Hope Valley, where public funds have recently been spent to acquire important wetland/riparian habitat. A segment of the East Fork between Hangman's Bridge and the Nevada state line is designated as a State Wild and Scenic River, and is a popular river rafting area. The U.S. Forest Service is studying some reaches of the East Fork in California for possible inclusion in the federal Wild and Scenic River system.

The watershed supports two subspecies of threatened trout, the Lahontan and Paiute cutthroat trout. Heenan Lake, which contains a population of Lahontan cutthroat trout, was recently named as one of six waters statewide in the Department of Fish and Game's "Heritage Trout Program." As a result of the Sierra Nevada Ecosystem Project (SNEP), the East Fork Carson River has been recognized as a potential "Aquatic Diversity Management Area", and its tributaries, Silver King Creek above Llewelyn Falls, and Whitecliff Lake, as "Significant Natural Areas (Aquatic)". The East Fork was given an "Index of Biological Integrity" (IBI) score, based on the diversity of aquatic communities, in the "good" range (only seven of 100 Sierra Nevada streams scored "excellent"). The upper reach of the West Fork was also rated "good" (University of California, 1996). See the SNEP report (University of California, Davis, 1996) for more information on the East Fork.

The Pacific Rivers Council (1998) identified the East Fork Carson River as an Aquatic Diversity Area, due to the presence of eight native fish species, and a native amphibian, the mountain yellow-legged frog. The East Fork above Carson Falls, Murray Canyon, and Poison Flat Creeks were identified as "Critical Refuges" for the Lahontan Cutthroat trout, and Silver King, Corral Valley, and Coyote Valley Creeks as Critical Refuges for the Paiute cutthroat trout. The "Aquatic Diversity Area" and Critical Refuge" designations relate to the degree of intactness of natural ecosystem processes, and the probability that protection of these areas will promote ecosystem recovery in the long term ( The Pacific Rivers Council, 1998).

Most of the California portion of the Carson River watershed is in public ownership, and the local economy depends heavily on tourism. (The watershed also includes lands of the Washoe Tribe of California and Nevada.) Cattle ranching is important in the lower sections of the East and West Fork watersheds, and grazing on rangeland extends to the upper watersheds. Water diversions are limited by the California-Nevada Interstate Water Compact and a court decree. Water is released from several small California reservoirs for use in Nevada (California Department of Water Resources, 1991). Recently, the California Department of Fish and Game has been acquiring private water rights to maintain lake levels and support instream flows for aquatic life uses. Treated wastewater exported from the South Lake Tahoe area is stored in the South Tahoe Public Utility District's (STPUD's) Harvey Place Reservoir and released for use in irrigation. The permanent population of Alpine County is about 1,100; about half of these people live in the Carson River watershed, mostly in and near the communities of Markleeville, Woodfords, and Paynesville, and in the Woodfords Indian Community.

### 2.3b Water Quality Problems and Issues

Acid mine drainage and sedimentation problems associated with the inactive Leviathan Mine have impaired water quality and instream uses in downstream waters. (As shown in Figure 2.3-1, the Bryant Creek watershed is tributary to the East Fork Carson River in Nevada.) Bryant Creek has been on the Clean Water Act Section 303(d) list of impaired water bodies since the adoption of the 1975 North Lahontan Basin Plan (California Regional Water Quality Control Board, 1975). The segments of its tributaries Leviathan and Aspen Creeks affected by mine drainage were added to the list during the 1980s. The listings are for metals, but low pH and high levels of sulfate in the acid mine drainage are also of concern.

About 40 other inactive mines are located throughout the watershed. The U.S. Forest Service, Toiyabe National Forest, (1998) surveyed inactive mines in the Carson and Walker River watersheds during the summer of 1997, and noted the presence of acid mine drainage, unstabilized tailings, etc. Earlier biomonitoring also indicates problems possibly related to acid mine drainage in certain stream segments. A RWQCB-sponsored study (Vinyard and Watts, 1992) showed degradation of aquatic communities in Monitor Creek. Elevated levels of metals in fish tissue have been found in fish tissue samples collected from the East and West Forks, Monitor Creek, Silver Creek, and Indian Creek Reservoir and from several tributaries, under the SWRCB's Toxic Substances Monitoring Program or TSMP (e.g., California SWRCB, 1997). (For the purposes of the TSMP, "elevated" means levels at or above the 85th percentile of all samples collected statewide since 1978.) Additional study of the water quality impacts of inactive mines in the Carson River watershed is proposed as part of the WMI effort.

The East Fork Carson River is Section 303(d)-listed due to pH criteria violations near the state line, which may have been the result of 1980's drought conditions . The West Fork also has historic boron, mercury, and coliform criteria violations near the state line. Indian Creek Reservoir is Section 303(d) listed due to eutrophication, and Indian Creek due to aquatic habitat degradation. STPUD's monitoring of surface waters in the lower watershed shows very high levels of coliform bacteria that are not attributed to reclaimed wastewater discharges. Livestock grazing has damaged stream geomorphology and riparian vegetation in Hope Valley. A federal General Accounting Office report identified watershed problems related to grazing on National Forest lands in the upper East Fork watershed. The SNEP report (University of California, Davis, 1996) identified human impacts on aquatic and riparian habitat in the East Fork watershed including grazing of meadows, camping, and fishing including heavy fishing pressure near highways, mine tailings, wastewater effluent, and introduced trout which compete with native species. Grazing impacts are a special concern with respect to the potential for recovery of the threatened Paiute cutthroat trout and the SNEP report concludes (Vol. II, page 958) that "full recovery will require the exclusion of grazing from the riparian areas and meadows".

Flooding in January 1997 caused additional watershed damage. In the summer of 1997, Regional Board staff observed turbidity problems in the East Fork possibly related to recreational dredge mining. Other issues in these watersheds include highway and urban runoff, septic systems, forest management activities, potential impacts of the Markleeville Public Utility District's wastewater disposal system, and the relationship between water quantity and water quality.

The spread of exotic weeds such as tall whitetop (*Lepidium latifolium*) into riparian and wetland areas of the Carson and Truckee River watersheds has recently become an important issue. Such weeds can have significant impacts on natural ecosystems by outcompeting native plants and affecting the quality of food and habitat available to animals. However, the impacts of potential control measures such as herbicides on water quality and beneficial uses are also of concern. The Lahontan Basin includes a regionwide water quality objective that provides that there shall be no detectable pesticides in waters of the region. All waters of the Carson River watershed in California are designated for the Municipal and Domestic supply (MUN) beneficial use, and are considered sources of drinking water under Proposition 65.

Insert Figure 2.3 - 1
Watershed Map

The Carson River watershed efforts of the RWQCB involve both continued cooperation with the California-Nevada "Upper Carson River Coordinated Resource Management Plan (CRMP) group" and outreach to previously uninvolved stakeholders in the California portions of the watershed. RWQCB activities to protect and enhance water quality and beneficial uses in the Carson River watershed are expected to occur in cooperation with activities of a number of other public entities including but not limited to the following: U.S. Environmental Protection Agency, U.S. Forest Service, U.S. Bureau of Land Management, U.S. Natural Resource Conservation Service, U.S. Army Corps of Engineers, California Department of Fish and Game, California Department of Forestry and Fire Protection, California Department of Transportation, California Department of Parks and Recreation, Alpine County, Alpine Resource Conservation District, Woodfords Indian Community, and South Tahoe Public Utility District. Potential private stakeholder groups include the High Sierra Fly Casters, the Friends of Hope Valley, the Sierra Club Toiyabe Chapter, and other environmental and recreational user groups As the result of the first "Carson River Conference" held in April 1998, stakeholders for the Upper Carson River Watershed (in Alpine County California and Douglas County Nevada) closer coordination with three other stakeholder groups in the lower reaches of the river in Nevada. The Carson Water Subconservancy District, which has authority only in Nevada, has been designated to coordinate watershed group activities for the entire Nevada portion of the watershed. Its role with respect to California watershed activities has not yet been determined. The Upper Carson River group has hired a full-time coordinator for implementation of the bistate voluntary management plan in Nevada.

Communication and cooperation among public agencies and the private sector is expected to be an important aspect of the development of BMPs and watershed restoration programs on private and public lands in the Carson River watershed. Public outreach in the form of watershed education, and stakeholder meetings will be used to generate and encourage of public participation in the watershed approach. Other opportunities for public participation will occur in connection with consideration of permits, enforcement actions, status reports, and Basin Plan amendments at RWQCB meetings.

### 2.3c Goals and Objectives with Milestones

The fundamental goals of the RWQCB in applying a watershed management approach to the Carson River are to protect existing high quality water resources, to achieve water quality improvement, and to promote restoration of water resources. Effective watershed management can be accomplished with a cooperative interest-based approach, in coordination with stakeholders, to develop sustainable voluntary and committed efforts to protect and improve water resources within the watershed.

The following objectives for the Carson River WMI include milestones for attainment of the water resource goals within the watershed management approach. The objectives are listed in order of priority.

**Objective I: Establish and maintain a network of stakeholders. Coordinate the RWQCB's core regulatory, monitoring and assessment, planning, and TMDL development activities with stakeholders.**

The strength of the watershed management approach is an involved and diverse group of stakeholders. The Carson River watershed steward will develop communications with and among the stakeholders of the Carson River. A substantial number of stakeholders, including the RWQCB , have already become involved through the development of the ***Upper Carson River Watershed Management Plan*** by the Upper Carson River Watershed Management Committee. This bistate interagency watershed management planning effort began in 1994 and produced a plan in August 1996. The plan contains information on resources and water quality problems in the watershed, opportunities for funding for remedial projects, and the potential for coordinating and streamlining permitting processes. The bistate management plan emphasizes voluntary implementation of BMPs and remedial projects. Stakeholder meetings are held approximately monthly.

The RWQCB will seek to establish a California stakeholder group as a subcommittee of the existing bistate group by January 2000. The frequency of meetings and other events will depend on stakeholder interests.

Staff will also organize a workshop/watershed tour for RWQCB members and interested stakeholders in connection with a RWQCB meeting in the fall of 1999. The stakeholder mailing list will be updated on an ongoing basis.

As part of the organization of the California subgroup, stakeholders will be informed of RWQCB activities (core regulatory, nonpoint source, monitoring and assessment, planning, TMDLs, etc.) in the watershed, and the appropriate staff contacts for different programs. Stakeholder participation in these activities will be invited on an ongoing basis. Stakeholders will be asked for input in refinement of the RWQCB's WMI priorities, assessment of watershed problems, and development of a coordinated watershed monitoring plan during FY 1999-2000.

(Waste discharge permit priorities and specific milestones for permitting activities will be established in a future update of this WMI chapter.)

**Objective II: Reduce threats to and impairments of waters of the Carson River watershed due to metals and the impacts of mining**.

This objective involves ongoing and proposed RWQCB activity at the Leviathan Mine, and new efforts to assess and remediate impacts from historical mining activity in the Carson River watershed. Implementation of the Leviathan Mine five-year workplan has begun and includes active and passive treatment of acid mine drainage and revegetation of part of the mine site. There is current stakeholder interest in monitoring the impacts of inactive mines affecting the headwaters of the Carson River (e.g., High Sierra Fly Casters, 1998a and 1998b). The USFS has declared the Colorado Hill mining are a CERLCA site. Regional Board staff coordinates remediation efforts for the Zaca Mine, and other mines in the Monitor Creek drainage, with the U.S. Forest Service. A proposed Memorandum of Understanding will enable the U.S. Forest Service to qualify for additional funding to address these mine problems, and to implement other remedial work in the Carson River watershed.

**Objective III: Assess, protect, and enhance wetland and riparian areas in the Carson River watershed.**

The wetlands and riparian areas in the California portions of the Carson River watershed are extremely valuable water resources. (The California Resources Agency's "California Rivers Assessment " database ranks riparian resources for most reaches of the East and West Forks as "substantial".) Many wetlands and riparian areas have been impacted by human activities, including water diversions/water storage, mining, grazing, silviculture, urban and suburban development, road/ bridge construction and maintenance, and recreation. Protection and restoration of wetlands and riparian areas may help to mitigate downstream problems. Current stakeholder activities include public land acquisition of wetlands and riparian areas, limited restoration, and a study to map wetland and riparian areas that may be impacted by proposed water diversions**.** This objective will be addressed to some extent through implementation of Objective I, including stakeholder coordination, problem assessment, ongoing wetlands permitting and water quality certification activities, etc. However, more intensive work toward this objective, through the RWQCB's wetlands grant-funded program, could begin by the end of FY 1999-2000, once the emphasis shifts from current activities in Mono County.

Protection and restoration of riparian areas, and streamlining for Section 404 permits for remedial projects, have been identified as high priorities by stakeholders of the Upper Carson River CRMP group. The U.S. Forest Service has recently acquired the Bagley Valley watershed, tributary to the East Fork Carson River, and is proposing a significant restoration project to address problems caused by past hydrologic modification and livestock grazing activities.

The objectives above can and will be revised as appropriate in response to information provided by stakeholder input, watershed assessment data, and feedback from the application of performance standards.

### 2.3d Performance Standards -- (these will be added to later update of this chapter)

## 2.3d Ongoing and Proposed Tasks (Fiscal Years 2002-2003 to 2007-2008

This section describes the tasks and subtasks to be performed over the next five years to accomplish each of the stated objectives. The tasks and subtasks are arranged by priority except where a sequential order of steps is more logical. Resource needs in the tables below were estimated based on past experience, best professional judgment, and estimates by other staff.

**OBJECTIVE I: ESTABLISH AND MAINTAIN A NETWORK OF STAKEHOLDERS**

**Task 2.3/1: Establish and maintain communication with stakeholders.**

*Subtask 2.3/1-A. Publicize watershed activities through public outreach, education, and public participation.*

Develop media mailing list, issue press releases, hold workshops, give presentations to Alpine County Board of Supervisors, Alpine RCD, school groups, service clubs, etc.; participate in annual "workdays"; organize field trips, etc. Post outreach information on RWQCB Internet homepage and other watershed pages. Establish and maintain communication channels with watershed workers in the lower Carson River watershed (including the Carson Water Subconservancy District) and in other parts of California, and with the Resources Agency's Sierra Nevada planning effort.

*Subtask 2.3/1-B. Develop and maintain a list of stakeholders.*

The group should include representation from the Leviathan Mine Technical Advisory Committee (TAC), the Intermountain West Joint Venture (IMWJV), and agencies and stakeholder groups from outside the watershed (e.g., fly fishing groups, DWR, Division of Mines and Geology, Resources Agency, university researchers, restoration consultants). The list should include brief identification of interests and concerns of each stakeholder.

*Subtask 2.3/1-C. Continue to work with bistate (Upper Carson River CRMP) planning group.*

Attend meetings, participate in assessment and implementation activities, review reports, etc.

**Task 2.3/2: Work with stakeholders to assess problems, refine priorities for action, and ensure adequate funding for watershed activities.**

Further assessment of problems and threats, and refinement of priorities for action are needed because the bistate watershed plan was written to be nontechnical and did not include detailed input from all Alpine County stakeholders, especially the U.S. Forest Service and California Department of Fish and Game. The draft bistate plan does not include a monitoring element.

*Subtask 2.3/2-A. Review and synthesize existing information on state of water quality and watershed.*

This information will be obtained from stakeholders and others. Prepare a report which summarizes data, includes recommendations for

further monitoring and assessment, provides a better evaluation of point and nonpoint source problems, summarizes ongoing and planned watershed restoration activities in California, and evaluates whether current data are adequate to support Basin Plan updates, and/or Total Maximum Daily Loads (TMDLs) for Clean Water Act Section 303(d)-listed waters. Use information in revision of WMI chapter as appropriate.

*Subtask 2.3/2-B. Support and participate in ongoing/proposed assessment efforts by other stakeholders.*

Attend meetings, comment on proposals and reports, help to facilitate grant applications for funding and provide staff input to fieldwork as appropriate.

*Subtask 2.3/2-C. Work with stakeholders to refine WMI priorities and define criteria for success.*

Initiate more intensive dialogues with stakeholders to determine current stakeholder concerns and priorities, and discuss initial RWQCB staff priorities. Reach agreement on general and specific criteria for success of the watershed effort. Examples of possible criteria include: (1) active participation by a given percentage of the stakeholders in the watershed; (2) milestones such as completion of the monitoring and wetlands management plans, the geomorphology study, or a general permit for watershed restoration work; (3) improvements in the quality of the Leviathan Mine discharge; (4) restoration of a given streambank distance or wetland acreage; (5) a given number of successful grant applications by stakeholders. Revise/update Carson River section of the RWQCB's WMI chapter to reflect priorities.

*Subtask 2.3/2-D. Use results of assessment activities to update the regional water quality assessment and Section 303(d) list designations.*

*Subtask 2.3/2-E. Develop and implement a coordinated monitoring plan for the watershed in California.*

Work with stakeholder groups toward a coordinated monitoring plan involving all public and private entities that carry out or require water quality monitoring in Alpine County. Identify the monitoring sites, parameters, and frequencies that will provide the best baseline/trend data to address watershed implementation goals. (Trend monitoring should include stations and parameters to measure the success of remedial measures implemented in specific areas, and the effectiveness of specific BMPs.) Determine needs for additional special studies. Coordinate existing monitoring efforts to avoid duplication and identify additional monitoring (e.g., biological and wetland monitoring, sediment sampling, metals toxicity bioassays) which should be done when funds are available. Determine local interest in a volunteer monitoring program and organize one if appropriate. Seek short and long term funding for additional monitoring and assessment. (As a result of the April 1998 Carson River Conference, there may be an effort to coordinate monitoring and management of monitoring data throughout the entire watershed in California and Nevada.

Implementation of this task will be coordinated with that effort as appropriate.)

*Subtask 2.3/2-F. Work to optimize funding for watershed activities.*

Work with stakeholders to (1) coordinate implementation and optimize use of existing sources of funding; and (2) find and obtain "new" funding for priority watershed activities. Work with SWRCB and USEPA staff to ensure stable long-term sources of funding for needed watershed work, especially for tasks now unfunded or funded through unstable sources such as the General Fund. Write and submit grant proposals as funding opportunities arise.

**Task 2.3/3: Implement the RWQCB's 'core regulatory' activities through a 'watershed team' approach, and coordinate them with stakeholders.**

The RWQCB's 'core regulatory program', which includes regulation and enforcement, waste discharge requirements, NPDES permits, Section 401 certification, leaking underground storage tanks, Chapter 15, and other activities, will continue in coordination with other WMI activities for the Carson River Watershed. The RWQCB maintains waste discharge requirements for the South Tahoe Public Utility District and for ranchers who use STPUD's reclaimed wastewater for irrigation, Markleeville Public Utility District, Hope Valley Resort and Sorensen's Resort, Grover Hot Springs State Park, and other dischargers in the watershed. Ongoing activities will include update of these permits as appropriate and enforcement actions as necessary, environmental review and permitting for proposed new development, self monitoring report review, compliance monitoring, attendance at meetings, etc. 'Core regulatory' tasks will be implemented by RWQCB staff working with the watershed steward as part of a 'watershed team' The Carson River watershed steward must stay aware, and ensure that the stakeholder group is aware, of ongoing 'core regulatory' activities.

**Task 2.3/4: Expand existing nonpoint source program, and facilitate voluntary activities by stakeholders**.

*Subtask 2.3/4-A. Expand nonpoint source activities as appropriate.*

This task may involve activities such as timber harvest review (including increased sanitation harvest of dead trees to reduce fire hazards), review of other types of forest management activities, stormwater controls on public and private roads and parking lots, and implementation of BMPs for livestock grazing on public and private lands. Priorities will be set in coordination with the stakeholder group.

*Subtask 2.3/4-B. Obtain and provide technical information to stakeholders to support voluntary activities.*

Work with SWRCB staff**,** university extension programs, RCD's, etc Develop and publicize a library of "success stories".

*Subtask 2.3/4-C. Help to organize voluntary stakeholder activities.*

Such activities could include watershed restoration on public/private lands, volunteer monitoring, etc. Get information on existing voluntary programs (e.g., California Department of Fish and Game, USFS,

CalTrout);.determine potential for additional programs, and help to organize, publicize, etc.

**Task 2.3/5: Coordinate RWQCB planning activities with those of other stakeholders in the watershed.**

*Subtask 2.3/5-A. Review and comment on proposed updates to plans and regulations of other agencies that may affect watershed implementation.*

Examples include plans and regulations of the U.S. Forest Service, Alpine County, and Department of Fish and Game. This task could include coordination with water quality planning by the Woodfords Indian Community, if the Community attains tribal status for the purpose of setting its own water quality standards. This task could also include continued coordination with Alpine County regarding proposed water export projects and recommendations to the SWRCB regarding water rights and water quality/quantity issues as appropriate.

*Subtask 2.3/5-B. Involve stakeholders in updates of the Lahontan Basin Plan that affect the Carson River watershed.*

Stakeholders should be involved as early as possible in proposed Basin Plan updates, through stakeholder group meetings and special scoping meetings held well in advance of workshops and RWQCB action items. This task could include update of existing water quality standards, adoption of new site specific standards water bodies that do not now have them, adoption of Total Maximum Daily Loads (TMDLs), etc.

*Subtask 2.3/5-C. Participate in ongoing update of the **Upper Carson River Watershed Management Plan.***

*Subtask 2.3/5-D. Update the Carson River Section of the WMI Chapter.*

The Carson River Section of the WMI chapter will be updated periodically as necessary, with opportunities for stakeholder input.

**Task 2.3/6 : Coordinate RWQCB TMDL development and implementation activities with stakeholders**.

*Subtask 2.3/6-A. Complete ongoing work on Phase I TMDLs for Indian Creek Reservoir*

Draft TMDLs and a draft implementation program have been developed to provide for reduced phosphorus loading to Indian Creek Reservoir. Regional Board approval of Basin Plan amendments incorporating the TMDLs and implementation program will be considered during FY 2000-2003. Stakeholders will have the opportunity to comment on the draft documents through watershed group meetings as well as normal public participation channels. The implementation program calls for continued flushing of the reservoir with fresh water under existing water rights, continued monitoring of water quality in the reservoir and tributaries, and additional assessment and control of nonpoint sources of phosphorus loading. Stakeholder participation will be essential for implementation.

The draft TMDLs identify the need for a comprehensive limnological study of Indian Creek Reservoir in addition to the ongoing chemical water quality monitoring. This study would evaluate the degree of beneficial use support in the reservoir and the appropriateness of the existing total phosphorus objective for maintenance of a trout fishery. Once the TMDLs receive final approval, Regional Board staff will attempt to facilitate grant funding for a limnological study.

*Subtask 2.3/6-B. Begin development of TMDLs as appropriate for other currently Section 303(d) listed water bodies or segments of water bodies*.

The East Fork Carson River, Indian Creek, and Wolf Creek are Section 303(d) listed for a variety of habitat-related problems that are probably connected with livestock grazing. Additional monitoring is needed to document the extent and sources of impairment. (Problems in the East Fork were probably related to the 1980s drought, and delisting may be possible.) If voluntary implementation of livestock grazing BMPs can be assured through nonpoint source pollution control implementation, it may be possible to delist these waters, or to set numeric targets for BMP implementation and document these targets as TMDLs. Monitor Creek is Section 303(d) listed due to problems related to mining. Implementation of pollution abatement at the Zaca Mine and other mine sites in the Monitor Creek watershed by current mining claim holders or the USFS may allow the creek to be delisted. However, there are other inactive mines in the watershed, and the RWQCB may need to develop TMDLs that will ensure that their pollutant loads are also reduced. Stakeholders' involvement from the early stages of the process will be essential for TMDL development and implementation. TMDLs for Leviathan, Bryant, and Aspen Creeks will be developed, if necessary, at a date beyond the five-year planning and budgeting scope of this chapter. Current and future pollution abatement actions at Leviathan Mine may resolve the water quality problems that led to listing of these three creeks.

*Subtask 2.3/6-C. Revise the Section 303(d) list as a result of monitoring and assessment data; schedule and develop TMDLs for newly listed water bodies as resources permit.*

The additional monitoring proposed in this workplan, particularly the monitoring of impacts of inactive mines throughout the watershed, may show that additional surface waters should be Section 303(d) listed. Should additional waters be listed, TMDLs will need to be scheduled for these waters.

**Task 2.3/7: Periodically assess effectiveness of objectives and tasks in maintaining and improving water quality.**

*Subtask 2.3/7-A. Provide opportunities for public discussion and comment on effectiveness of watershed process.*

These could include workshops at bistate watershed group and/or California subcommittee meetings, RWQCB meetings, and the Triennial Review and Water Quality Assessment Update processes.

**OBJECTIVE II: REDUCE THREATS TO AND IMPAIRMENTS OF WATERS OF THE CARSON RIVER WATERSHED DUE TO METALS AND THE IMPACTS OF MINING.**

**Task 2.3/8: Leviathan Mine**

The Leviathan Mine is an inactive underground and open pit mine at which the Lahontan RWQCB is currently implementing a five-year remedial workplan. The workplan involves active and passive treatment of acid mine drainage, and reclamation and revegetation of the mine site. U.S. EPA oversees RWQCB activities at the mine site.

**Task 2.3/9: Continue to monitor impacts of mining throughout the watershed as funds permit.**

The Alpine County portion of the Carson River watershed includes about 40 inactive metal mines. Although there has been considerable monitoring in the Bryant Creek and Monitor Creek watersheds, additional baseline/trend monitoring will be necessary to identify potential metals sources, and document metals impacts on beneficial uses, before management strategies can be considered. for most of these streams. This monitoring should ideally be done through the comprehensive study outlined in Task 2.3/10 below. However, until funds can be obtained for this study, the RWQCB will continue to support limited monitoring for mining impacts with available funds. Such monitoring may include Toxic Substances Monitoring Program sampling and continued/expanded bioassessment.

**Task 2.3/10: Conduct a comprehensive assessment of metal loading sources in the Carson River Watershed, and identify management strategies to reduce impacts.**

Stakeholders at meetings of the Upper Carson River Watershed group and at the 1998 Carson River Conference have expressed interest in additional monitoring of mine impacts in the upper watershed. The subtasks outlined below could form the basis for a Section 205(j) grant proposal during the 2002 cycle. The RWQCB will continue to investigate other potential sources of funding. The study will be designed to complement, rather than duplicate, the U.S. Forest Service (1998) survey.

*Subtask 2.3/10-A Additional screening for potential water quality impacts from inactive mines.*

Most inactive mine sites are in remote or poorly accessible locations in Alpine County. Even with the initial USFS survey, data on potential water quality impacts are limited.

i. Information Survey: discuss with Alpine County locals, Office of Mines and Geology, USFS, Alpine Co. Planning Dept., historical organizations, review literature.

ii. Aerial surveillance: Obtain and examine aerial photographs of known and suspected problem areas, documented inactive mines with their sub-watersheds, and suspected natural sources of metals loading. Perform aerial survey if necessary.

iii Ground truthing: Visit potential problem sites. Includes written and photographic documentation as well as initial soil and water sampling as appropriate. Compare data with those from the U.S. Forest Service sampling in 1997.

iv Development of short list of potentially impacted streams and sub-watersheds: Estimate most important loading sources for metals within the Carson River watershed.

v. Identify water quality sampling and bioassessment locations: Based on previous steps and appropriate tributary-trunk relationships, determine the sampling locations for metals, and biological impacts of metals, on both the East Fork and West Fork of the Carson River. Include appropriate reference stations.

*Subtask 2.3/10-B. Assessment of chemical water quality impacts from inactive mines and other sources.*

Baseline and trend monitoring to determine metals and standard minerals on water samples, and metals in stream sediments..

*Subtask 2.3/10-C. Assessment of biological water quality impacts from inactive mines and other sources.*

Rapid bioassessment of macroinvertebrate populations at sampling stations to assess integrated effects of metals exposure.

*Subtask 2.3/10-D Develop report with recommendations for future actions to address metal contamination.*

Such actions could include Section 303(d) listing and TMDLs, site specific objectives for metals for certain water bodies, additional permits and/or enforcement actions, identifying needs for specific control projects and facilitating grant or legislative funding, etc.

**Task 2.3/11: Monitor Creek**

This task provides for follow-up on the results of the Monitor Creek Section 205(j) study to control sources of metals and acid mine drainage in the watershed, including the Zaca Mine adit drainage and Lovestedt Mill tailings. Other improvements in this watershed, such as additional controls on livestock grazing to protect Heenan Lake, may be pursued under other objectives.

*Subtask 2.3/11-A. Consider options to abate Zaca Mine discharge such as preparation of an NPDES permit and/or enforcement order for Zaca Mine discharge.*

*S*taff of the RWQCB and the U.S. Forest Service are working together in the development of a Preliminary Assessment, Scope of Work, Site Investigation and Site Analysis Plan and Engineering Evaluation/Cost Analysis for the historic Zaca Mine site. This effort is focused on several discharging adits and the Lovestedt tailings at this time, and may result in remedial activities for those features over the next two years.

*Subtask 2.3/11-B. Take action to abate impacts of inactive mines in the watershed.*

The U.S. Forest Service is in the process of identifying potentially responsible parties for both the historic Zaca Mine site and approximately 12 other historic mines throughout the Monitor-Mogul mining district. In addition, USFS and RWQCB staff are working together to develop a revised Memorandum of Understanding that will allow the two agencies to pursue grant funding to study and remediate priority watersheds impacted by mining activities. Board staff will provide updates to the Carson River Watershed stakeholders group as these efforts progress.

**OBJECTIVE III: ASSESS, PROTECT, AND ENHANCE WETLAND AND RIPARIAN AREAS IN THE CARSON RIVER WATERSHED.**

Watershed protection and restoration, particularly in wetland/riparian areas, are major goals of the ***Upper Carson River Watershed Management Plan***. Many of the tasks outlined below are linked to the stakeholder-related assessment and implementation tasks under Objective I.

**Task 2.3/12: Initial assessment of wetland and riparian areas.**

Assessment may include wetlands mapping, documentation of condition and function, and identification of point and nonpoint source pollutants and stressors.

*Subtask 2.3/12-A. Coordinate with existing wetland assessment efforts by other stakeholders.*

*Subtask 2.3/12-B Complete wetlands and riparian resource inventory and make accessible to other stakeholders.*

This task includes entry of data in to the RWQCB's database and developing a process to make the database accessible.

**Task 2.3/13: Wetland and Riparian Area Protection**

*Subtask 2.3/13-A. Develop wetlands management plan with stakeholders.*

*Subtask 2.3/13-B. Coordinate wetlands mitigation issues with other agencies and stakeholders.*

This includes exploration of opportunities for mitigation banks .

**Task 2.3/14: Restore wetland and riparian areas.**

Facilitation of voluntary restoration activities, including identification of sources of funding, is discussed under Objective I. The following additional tasks are necessary.

*Subtask 2.3/14-A. Identify potential restoration areas.*

Restoration areas will be identified through the assessment and mitigation coordination tasks above, and through the willingness of stakeholders to carry out voluntary restoration on their own lands.

*Subtask 2.3/14-B. Permit streamlining for restoration projects.*

This task could include work with the Corps of Engineers toward streamlining of Section 404 permits, particularly for restoration activities, and/or RWQCB adoption of other types of general permits. The bistate watershed planning group has proposed streamlined wetlands permitting and formation of an interagency, bistate development review committee. RWQCB staff would participate in the development review committee to the extent appropriate for projects with potential water quality impacts in California.

*Subtask 2.3/14-C. Coordinate with other stakeholders to develop project funding.*

**Task 2.3/15. Assess point and nonpoint source impacts to wetland and riparian areas; provide an overall assessment of problems and threats.**

This task involves review of existing information, support of stakeholder assessment projects, and development and implementation of a coordinated monitoring program. These activities will result in a more accurate assessment of point and nonpoint source problems at specific sites throughout the watershed. This task could also provide direction for eventual adoption of water quality objectives for wetlands.

*Subtask 2.3/15-A Conduct a specific assessment to determine potential impacts on wetlands, riparian systems, and stream geomorphology and biology.*

**References Cited in Section 2.3**


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**Carson-Walker Unit Tasks Planned for FY 02-03 to FY 06-07**

**PY estimates to be completed in next chapter update.**

| EXPECTED TASKS | PY Estimate by Fiscal Year | | | | |
|---|---|---|---|---|---|
| | FY 02-03 | FY 03-04 | FY 04-05 | FY 05-06 | FY 06-07 |
| **WATERSHED PROTECTION/SUPPORT TASKS** | | | | | |
| **Nonpoint source implementation** | | | | | |
| Conduct close review (including formal written comments) and oversight of grazing activities; implement *the California Rangeland Water Quality Management Plan* | | | | | |
| Coordination with the USFS under the MOU for restoration of abandoned mines in the Colorado Mining District (Alpine County) | | | | | |
| Participate in implementation of Clean Sierra Waters 319 NPS Control Project – Sierra Nevada Alliance | | | | | |
| **Nonpoint source outreach/education** | | | | | |
| Participate in Markleeville Creek Day and other outreach activities; participate in one-time activities such as Earth Day, Science Fairs, etc | | | | | |
| Solicit project proposals for funding under CWA 319, Prop 13 and CWA 205j | | | | | |
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| **Nonpoint source contract management** | | | | | |
| Manage contract for Rangeland BMPs in the Upper West Walker River Watershed ($96,890) | | | | | |
| **Timber Harvest (non-federal lands)** | | | | | |
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| **Prop. 13 contract management** | | | | | |
| Manage contract for Carson River Plan Assessment and GIS ($200,000) | | | | | |
| Manage contract for West Walker River/Mono Owens Watershed Plan Development ($396,000) | | | | | |
| **205j WQ planning contract management** | | | | | |
| No contracts for FY 02-03 | | | | | |
| **Basin Planning** | | | | | |
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| **Wetlands management and protection** | | | | | |
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| **Watershed management** | | | | | |
| Participate in Carson River Watershed Council/RCD | | | | | |
| Participate in development of Walker River Watershed Group | | | | | |
| **REGULATORY TASKS** | | | | | |
| **NPDES** | | | | | |
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| EXPECTED TASKS | PY Estimate by Fiscal Year | | | | |
|---|---|---|---|---|---|
| | FY 02-03 | FY 03-04 | FY 04-05 | FY 05-06 | FY 06-07 |
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| **Stormwater** | | | | | |
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| **Non-15 (WDR)** | | | | | |
| 6A095900700 STPUD Wastewater Treatment Plant (expires by 6/03) | | | | | |
| 6A260005000 Camp Antelope Community Indian Housing (expires by 6/03) | | | | | |
| 6A268706000 CalTrans Dist. 9 Road Improvement Projects (expires by 6/02) | | | | | |
| 6A020004000 Hope Valley Resort (expires by 1/99) | | | | | |
| **Water Quality Certification** | | | | | |
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| **Enforcement** | | | | | |
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| **Chapter 15** | | | | | |
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| **Dept of Defense** | | | | | |
| (tasks not planned by watershed unit) | | | | | |
| **Underground Storage Tanks** | | | | | |
| (tasks not planned by watershed unit) | | | | | |
| **Aboveground Storage Tanks** | | | | | |
| (tasks not planned by watershed unit) | | | | | |
| **Spills or complaints from unregulated sites** | | | | | |
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**CONTRACT NEEDS TO SUPPORT ABOVE EXPECTED TASKS:**

| Description | Amount Needed | Contract Term |
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**This table will be completed as part of next chapter update.**

| DESIRABLE TARGETED TASKS OR PROJECTS | PY Estimate by Fiscal Year | | | | |
|---|---|---|---|---|---|
| | FY 02-03 | FY 03-04 | FY 04-05 | FY 05-06 | FY 06-07 |
| **Implement BMPs/Improve Water Quality** | | | | | |
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| **Habitat Restoration/Beneficial Use Enhancement** | | | | | |
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| **Assess Loadings and Impacts** | | | | | |
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| **Research-oriented Studies** | | | | | |
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| **Water Conservation and Management** | | | | | |
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| **Monitoring** | | | | | |
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| **Education and Outreach** | | | | | |
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| **Watershed Planning** | | | | | |
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| **Land Acquisition/Conservation** | | | | | |
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**CONTRACT NEEDS TO SUPPORT ABOVE DESIRABLE TARGETED TASKS:**

| Description | Amount Needed | Contract Term |
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