Water Quality Management Plan for the Lake Tahoe Region

Volume V. Summary

TAHOE REGIONAL PLANNING AGENCY

November 30, 1988

WATER QUALITY MANAGEMENT PLAN
FOR THE
LAKE TAHOE REGION

VOLUME V. SUMMARY

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SUMMARY

Volume I: Water Quality Management Plan

SECTION I. CONTROL NEEDS AND PROGRAMS

I. INTRODUCTION

The Tahoe Regional Planning Agency (TRPA) has prepared this water quality management plan under section 208 of the federal Clean Water Act (33 USC 466 et seq.). The water quality management plan is in seven volumes:

Volume I	Water Quality Management Plan
Volume II	Handbook of Best Management Practices
Volume III	SEZ Protection and Restoration Program
Volume IV	Capital Improvements Program for Erosion and Runoff Control
Volume V	Summary
Volume VI	Responsiveness Summary and Response to Comments
Volume VII	Technical Appendix

TRPA is the regional land use and environmental resource planning and regulatory agency for the Tahoe Region, operating under the authority of the Tahoe Regional Planning Compact (94 Stat. 3233). TRPA is also a designated areawide planning agency under section 208 of the Clean Water Act.

TRPA adopted a 208 plan for the Tahoe Region in 1981 ("1981 208 plan"). Nevada and California certified the plan with conditions, and EPA approved the plan, also with conditions.

At this time, TRPA proposes to amend the 1981 208 plan to make it consistent with recent amendments to the TRPA's Regional Plan, which cannot be fully implemented without the amendments. The amendments to the Regional Plan provide more flexibility in managing land use, and provide stronger programs to protect and enhance water quality.

There are three key concepts in the TRPA Regional Plan which cannot be fully implemented under the 1981 208 plan, and which make these amendments necessary:

Individual Parcel Evaluation System (IPES). IPES is a system for determining eligibility for construction of single-family homes on vacant parcels.

Soils and Land Coverage. The TRPA Regional Plan incorporates new policies for the regulation of land coverage based on the concepts of base land coverage, coverage transfers, and mitigation of excess coverage.

Stream Environment Zones. The Regional Plan includes some refined policies for protection of stream environment zones (SEZs) in the areas of removal of exceptions to the prohibitions on encroachment, restoration of SEZs, identification of SEZs, and SEZ setbacks.

II. THE SETTING

General. The Lake Tahoe Basin is located between the Carson Range on the east and the Sierra Nevada on the west. Approximately one-third of the Basin is in Nevada, and two-thirds in California. The total land area of the Basin is about 207,000 acres, with more than 70 percent in public ownership. Lake Tahoe, the dominant feature of the watershed, is world renowned for its crystal clear water and beautiful setting.

The climate of the Region is characterized by long, relatively mild winters and short, dry summers. 50 percent or more of the annual precipitation falls in the form of snow. The average growing season is short, extending from mid-June to the end of August.

The Basin was formed as the result of regional faulting and subsequent uplift and downdrop. The land area is relatively small in comparison to the size of the receiving waters, Lake Tahoe. The cool temperatures of the Basin inhibit the breakdown of organic material, resulting in coarse, infertile soils. Geologically, the Basin is young and has relatively shallow, somewhat sterile soils.

Bailey (1974) developed a system to classify land in the Tahoe Region according to the level of use it can withstand and still maintain its environmental integrity. Bailey's system identifies seven land capability districts, and assigns an allowable percentage of land coverage to each district.

The vegetation of the Region is dominated by a mixed conifer association which occupies about 85 percent of the land area.

The land use pattern of the Region is already established, with little likelihood of major changes in the future. There are about 20 developed towns in the Region, with major population centers in the

South Lake Tahoe/Meyers area, Incline Village, Kings Beach, Tahoe City, and Tahoma. The development occurs mostly in the area adjacent to the Lake and the wide, gently sloping valleys in the south. The undeveloped areas of the Region are predominantly publicly owned.

Hydrology and Water Quality. Lake Tahoe has very low concentrations of nutrients, high oxygen content, and exceptionally clear waters. The clarity of the waters is largely due to low algal productivity and represents a system that is naturally low in algal nutrients. Under natural conditions, the clarity of the Lake would be expected to change so slowly as to be imperceptible to man. However, man has altered the nutrient budget of the Lake and accelerated the natural aging process (eutrophication). Increased algae productivity has become evident.

Algal productivity at the index station of the Tahoe Research Group (U.C. Davis) has increased 150 percent since 1968, and clarity of the Lake has declined by approximately 20 percent.

The TRPA environmental threshold carrying capacities ("thresholds") and the California and Nevada water quality standards set the applicable standards for Lake Tahoe and its tributary streams. In general, these standards call for reductions in nutrient loadings to Lake Tahoe and attainment of algal productivity and clarity values observed in 1971 to 1974. (For details, see Volume I, Attachments 1 and 2.)

Nutrients and sediments follow three main pathways to Lake Tahoe: direct precipitation, groundwater recharge, and inflow from the tributary streams. In addition, atmospheric deposition, both wet and dry, provides a source of nitrogen, phosphorus, and iron to Lake Tahoe. Development of the Tahoe Region has resulted in five new direct sources of nutrients and sediment: (1) fertilizers, (2) exfiltration from sewer lines, (3) leachate from abandoned septic systems, (4) in-Basin contributions from vehicle emissions, combustion heaters, and blowing dust, and (5) increased erosion. Removal of vegetation and coverage of the soil interferes with mechanisms which remove nutrients. Nutrient uptake is decreased, while land coverage reduces or eliminates nitrogen removal by denitrification and provides a new source of sediment.

III. PROBLEM ASSESSMENT AND CONTROL NEEDS

To meet the TRPA and state standards, and to reverse the trends in Lake Tahoe's water quality, it is necessary to control the elevated sediment and nutrient loads to Lake Tahoe. In general, urbanization and development of the Region have increased drainage density and added land coverage to the watershed, increasing nutrient and sediment loads to Lake Tahoe. Local sources of airborne nutrients enrich the background levels from upwind areas, and contribute to deposition of nutrients on Lake Tahoe. Fertilizers and losses from sewage collection and treatment systems add nutrients to the system, and activities such as timber harvesting, recreation, off-road vehicle use, grazing, boating, and dredging contribute to the water quality problems.

Control measures are needed to reduce or eliminate water quality impacts from streets, roads, and highways; existing urban development; urban drainage systems; additional development; encroachment on SEZs and the shorezone; vegetation displacement and alteration; and fertilizer use.

Airborne nutrients originate from auto emissions, natural gas combustion, electric power plants, fertilizer volatilization, lightning, blowing dust, and other sources. Although TRPA cannot directly affect the levels of transport from upwind, controls on auto emissions, combustion heaters, and dust in the Tahoe Region will help reduce nutrient deposition on Lake Tahoe.

Although virtually all municipal sewage generated in the Region is exported from the Region prior to disposal, the Tahoe Region also has a risk of water quality problems associated with waste management: wastewater collection and treatment, solid waste management, spills, and snow disposal. Control measures are needed to prevent water quality problems from these sources.

Land use practices not directly related to urbanization may also affect water quality, including timber harvest, outdoor recreation (including off-road vehicle use), livestock containment and grazing, and the use of pesticides. Some water quality problems may originate in Lake Tahoe itself: shoreline erosion, wastes from boats, and dredging may contribute nutrients, sediments, bacteria, solids, or toxic substances to Lake Tahoe. Control measures are necessary to minimize water quality impacts from these sources.

IV. PROGRAM DESCRIPTIONS

The proposed 208 amendments include a detailed description of the water quality control programs. The programs respond to the control needs identified above, and are a combination of regulatory, voluntary, and capital improvement programs and planning processes designed to protect water quality in the Tahoe Region. See Table 1 of this Summary for a description of the water quality control programs.

V. PLAN IMPLEMENTATION

The proposed amendments assign responsibility for each water quality control program to a management agency, pursuant to the requirements of the Clean Water Act and the federal regulations. TRPA itself is the main management agency responsible for implementing regulatory programs, and is assisted by the following agencies:

CALTRANS
California Department of State Parks
California Regional Water Quality Control Board--Lahontan Region
California Tahoe Conservancy
City of South Lake Tahoe, CA
Douglas County, NV
Douglas County Sewer Improvement District
Incline Village General Improvement District
Kingsbury General Improvement District
Nevada Department of Transportation
Nevada Division of State Parks and Recreation
Nevada Division of Environmental Protection
Nevada Tahoe Conservation District
Placer County, CA
South Tahoe Public Utility District
Tahoe City Public Utility District
Tahoe Resource Conservation District
United States Forest Service, Lake Tahoe Basin Management Unit
Washoe County, NV

All of the regulatory programs to be implemented by TRPA under its Code of Ordinances are in place, except for IPES, land coverage transfers, and revised criteria for identification of SEZs which will be implemented upon certification and approval of these amendments. Those agencies responsible for the issuance of discharge permits, the Lahontan Board and NDEP, have the necessary authority to issue the permits under state and federal law. The two main capital improvement programs in the 208 plan, the Capital Improvements Program (CIP) for erosion and runoff control and the SEZ Restoration Program, are scheduled to be completed in approximately 20 years. Redevelopment and community planning are already underway.

VI. PLAN EVALUATION AND REVISION

TRPA will implement a monitoring program to evaluate the environmental thresholds, the effectiveness of the Regional Plan, and the implementing ordinances and programs. The program will include continuous scientific monitoring of conditions related to the thresholds for pelagic and littoral Lake Tahoe, tributary streams, surface runoff, groundwater, land coverage, and SEZs. TRPA will also establish a science advisory panel to review the technical assumptions, techniques, and procedures associated with monitoring and analysis efforts.

The Lake Tahoe Interagency Monitoring Program (LTIMP) was established in 1980 to acquire and disseminate the water quality information for Lake Tahoe. Funding for the LTIMP has increased in the last two fiscal years.

TRPA will publish annual or semi-annual reports on the implementation of the monitoring program covering progress on threshold attainment and maintenance, research, and overall monitoring results.

At least every five years, TRPA shall evaluate the results of its monitoring programs. The first comprehensive review shall be conducted by September 30, 1991. As required by Chapter 32 of the TRPA Code of Ordinances, TRPA will set performance targets related to the attainment and maintenance of thresholds and applicable federal, state, and local air and water quality standards. Water quality-related performance targets are also incorporated into the 208 plan itself.

If the 208 plan produces the expected benefits to the environment sooner than expected, or more slowly, as determined by evaluation of the performance targets included in the 208 plan, TRPA shall make adjustments, as appropriate, to ensure attainment and maintenance of thresholds and standards.

Volume I. Water Quality Management Plan

SECTION II. ENVIRONMENTAL, SOCIAL, AND ECONOMIC IMPACTS

I. INTRODUCTION

The proposed 208 amendments include a discussion of impacts which is tiered off a series of environmental documents prepared by TRPA since 1980. These documents discuss the environmental, social, and economic impacts of the thresholds, the Goals and Policies, the Code of

Ordinances, the Plan Area Statements, and the Regional Transportation Plan, and are included in the impact analysis by reference. They are available for public inspection at the TRPA offices, 195 U.S. Highway 50, Round Hill, NV.

II. ALTERNATIVES TO THE PROPOSED ACTION

The impact analysis evaluates the environmental, social, and economic impacts of the proposed 208 amendments and three alternatives: (1) the No-Growth Alternative, (2) the No-Action Alternative, and (3) the Hybrid Alternative.

Alternative 1, the No-Growth Alternative, provides a baseline for comparison and represents the existing situation "on the ground," with application of the corrective and remedial measures for water quality management.

Alternative 2, the No-Action Alternative, consists of implementation of the 1981 208 plan, which TRPA adopted in 1981 to protect water quality until adoption of environmental thresholds and a revised Regional Plan under the mandate of the Tahoe Regional Planning Compact.

Alternative 3, the Hybrid Alternative, adds several water quality programs to Alternative 2 which are absent from the 1981 plan but which TRPA is already implementing (e.g., excess coverage mitigation program, SEZ restoration program). Alternative 3 represents the status quo, but TRPA does not intend it to be a long-term plan because it is inconsistent with the Goals and Policies and the Code of Ordinances.

See Table 1 of this summary for a comparison of the water quality control measures of the proposed 208 amendments and the three alternatives.

III. IMPACT SUMMARY

A. THE PROPOSED 208 AMENDMENTS

The proposed amendments create no adverse environmental impacts which cannot be mitigated to a less-than-significant level. Potential adverse impacts in the areas of water quality, cultural and historical resources, and natural hazards are mitigated. The proposed amendments will attain and maintain the TRPA thresholds for soils, stream environment zones, and water quality, and are consistent with TRPA programs to attain and maintain the remaining thresholds: air quality, community design, fish, noise, recreation, scenic resources, and wildlife.

The proposed amendments will result in a number of positive impacts. They will: promote rehabilitation of the built environment; reduce strip development; result in a net decrease in land coverage in sensitive land capability districts; create new open space; enhance soil productivity, stability, and filtration capacity; restore disturbed stream environment zones; reduce the area of disturbed lands; reduce drainage density; have a positive financial impact on sewage collection and treatment districts; contribute to economic recovery; improve housing diversity and the availability of low-income housing; reduce the risk of flooding; and enhance recreation opportunities.

B. ALTERNATIVES TO THE PROPOSED ACTION

For a comparison of the impacts of the proposed 208 amendments and the three alternatives, see Table 2 of this summary.

In general, the No-Growth Alternative would have many positive impacts on the Region, but it would discourage redevelopment and community planning, not improve problems of traffic congestion, not meet state and federal air quality standards, further weaken the Region's economy, not improve the diversity of housing, and continue the imbalance between recreation supply and demand.

The No-Action Alternative, implementation of the 1981 plan, would fail to attain and maintain TRPA thresholds for soils, stream environment zones, air quality, and water quality; would hinder efforts to revitalize the built environment and the Region's economy; and would not be consistent with TRPA programs to attain the maintain the thresholds for scenic resources and wildlife.

The Hybrid Alternative adds additional environmental control programs to the No-Action Alternative, but it would still fail to attain and maintain air quality thresholds, would hinder revitalization and economic recovery, would not improve housing diversity, and would not be consistent with TRPA programs to meet scenic resource thresholds.

IV. ORGANIZATIONS AND PERSONS CONSULTED

TRPA consulted regularly with an inter-agency working group on the preparation of the proposed 208 amendments. The working group included the California State Water Resources Control Board, California Regional Water Quality Control Board, the California Attorney General, the League to Save Lake Tahoe, the Nevada Division of Environmental Protection, the Tahoe Sierra Preservation Council, the U.S. Environmental Protection Agency, and the U.S. Forest Service. In addition, TRPA consulted with a number of individual technical experts on the analysis of potential impacts.

TABLE 1
Comparison Table of the Alternatives

Water Quality Management Control Measures	Alternative 1- No-Growth	2- No-Action	3- Hybrid Plan	4- Proposed Action
A. Urban Runoff and Erosion				
1. installation and maintenance of BMPs required on all property	yes	no	yes	yes
2. specific program of BMP implementation	yes	no	yes	yes
3. TRPA remedial actions to implement BMP requirements	yes	yes	yes	yes
4. implementation of Capital Improvements Program (CIP)	yes	yes	yes	yes
5. excess coverage mitigation program	yes	no	yes	yes
6. effluent limits and permits	yes	yes	yes	yes
7. limits on new subdivisions	n/a	yes	yes	yes
8. land use planning and control	yes	no	yes	yes
9. residential development priorities	n/a	[1]	[1]	[2]
10. limits on additional land coverage	n/a	yes[3]	yes	yes
11. water quality mitigation program	n/a	yes	yes	yes
12. transfer of development				
a. residential development rights	yes	no	yes	yes
b. existing development	yes	no	yes	yes
c. land coverage	n/a	no	no	yes
d. residential allocations	n/a	yes	yes	yes
13. restrictions on SEZ encroachment	n/a	yes	yes	yes
14. SEZ restoration program	yes	no	yes	yes
15. SEZ setbacks	n/a	[4]	[4]	[5]
16. protection of native vegetation	yes	yes	yes	yes

Table 1, cont.

Water Quality Management Control Measures	Alternative 1- No-Growth	2- No-Action	3- Hybrid Plan	4- Proposed Action
A. Urban Runoff and Erosion, cont.				
17. native and adapted plant requirements for revegetation	yes	yes-	yes	yes
18. restoration of disturbed areas	yes	yes-	yes	yes
19. fertilizer reporting requirements	yes	no	yes	yes
B. Airborne Nutrients				
1. improved mass transit	yes	no	yes	yes
2. redevelopment and redirection of land use	no	no	no	yes
3. combustion heater, stationary source, and related rules	yes	no	yes	yes
C. Waste Management				
1. sewage collection and treatment policies	yes	yes	yes	yes
2. solid waste management policies	yes	yes	yes	yes
3. controls on hazardous materials and wastes	yes	yes-	yes	yes
4. snow and ice control BMPs and reporting requirements	yes	yes-	yes	yes
D. Natural Area Management				
1. requirements to apply BMPs on all property	yes	yes-	yes	yes
2. land use planning and controls	yes	no	yes	yes
3. control of encroachment in sensitive areas	yes	yes	yes	yes

Table 1, cont.

Water Quality Management Control Measures	Alternative 1- No-Growth	2- No-Action	3- Hybrid Plan	4- Proposed Action
E. Lake Tahoe and the Shorezone				
1. restrictions on shorezone encroachment and veg'n alteration	yes	no	yes	yes
2. shorezone BMPs	yes	no	yes	yes
3. vessel waste controls	yes	yes	yes	yes
4. dredging BMPs	yes	no	yes	yes
5. restrictions and conditions on dredging, filling, and construction in Lake Tahoe	yes	yes-	yes	yes

Key to Table 20

Alternative 1 -- No-Growth Alternative; no additional land coverage, no transfers of land coverage
Alternative 2 -- No-Action Alternative, implementation of the 1981 208 plan
Alternative 3 -- Hybrid Plan, adds additional water quality control measures to Alternative 2
Alternative 4 -- proposed 208 plan amendments

"yes" -- this program is a part of the alternative
"yes-" -- this program is a part of the alternative, but is significantly inferior or less-detailed than the other alternatives
"no" -- this program is not a part of the alternative

Footnotes

1. this alternative directs additional residential development to capability districts 4, 5, 6 and 7
2. this alternative directs additional residential development to capability districts 4, 5, 6, and 7 and, for single-family homes approved under IPES, to capability districts 1, 2, and 3.
3. this alternative allows overrides of the Bailey coefficients, with mitigation, for certain public projects
4. this alternative has no SEZ setbacks, but includes a buffer zone within the SEZ itself
5. this alternative includes SEZ setbacks from all SEZs

TABLE 2

Comparison of Impacts: Proposed Action and Alternatives

Probable Environmental, Social, and Economic Impacts	Alternative 1- No-Growth	2- No-Action	3- Hybrid Plan	4- Proposed Action
A. Land Use				
1. changes the existing land use pattern through redevelopment and community planning?	no	no	no	yes
2. creates new open space through excess coverage mitigation?	yes	no	yes	yes
3. restores SEZs in accordance with TRPA restoration threshold?	yes	no	yes	yes
4. results in what resident and visitor population?	lowest	highest	middle	middle
5. results in what additional development?	none	highest	lower	lower
B. Soils				
1. results in what additional land coverage?	none	highest	lower	lower
2. results in benefits from implementation of CIP, BMPs?	yes	yes	yes	yes
3. allows land coverage in excess of Bailey coefficients without explicit transfer or offsetting restoration?	no	yes	no	no
C. Stream Environment Zones				
1. results in benefits to SEZs from restoration program?	yes	no	yes	yes
2. creates what change in area of naturally functioning SEZ?	positive	negative	positive	positive

Table 2, cont.

Probable Environmental, Social, and Economic Impacts	Alternative 1- No-Growth	2- No-Action	3- Hybrid Plan	4- Proposed Action
D. Transportation and Air Quality				
1. reduces regional VMT (vehicle miles travelled)?	yes	no	yes	yes
2. meets TRPA standards for intersection level-of-service?	no	no	yes	yes
3. meets state and federal carbon monoxide standards?	no	no	yes	yes
E. Water Quality				
1. what reduction in sediment and nutrient loads to Lake Tahoe?	highest	lowest	middle	middle
2. reduces atmospheric deposition of nitrogen?	yes	yes	yes	yes
3. improves groundwater quality, reduces nutrient loads?	yes	yes	yes	yes
4. will meet ambient quality standards for Lake Tahoe?	yes	no	yes	yes
5. protects tributary water quality?	yes	yes	yes	yes
F. Sewage Collection and Treatment: adequate capacity available at				
1. STPUD (El Dorado)?	yes	no	no	no
2. TTSA (Placer/El Dorado)?	excess[1]	yes[1]	yes[1]	yes[1]
3. IVGID (Washoe)?	excess	yes	yes	yes
4. DCSID (Douglas)?	excess	yes	yes	yes
G. Economy				
1. increases investment in the Tahoe Region?	no	yes	yes	yes
2. changes visitor mix?	no	no	no	yes
3. relieves capacity constraints during peak periods?	no	yes	yes	yes
4. improves the resident economy?	no	yes	yes	yes

Note [1]: TTSA serves areas outside the Tahoe Region. Growth in these areas could utilize available capacity of TTSA facilities. Development within the Tahoe Region will not exceed the capacity of the export line nor fully utilize plant capacity.

Table 2, cont.

Probable Environmental, Social, and Economic Impacts	Alternative 1- No-Growth	2- No-Action	3- Hybrid Plan	4- Proposed Action
H. Community Design: consistent with TRPA threshold?	yes	yes	yes	yes
I. Cultural, Historical, and Architectural Resources: increases pressure on these resources?	no	yes	yes	yes
J. Energy				
1. increases energy use in buildings?	no	yes	yes	yes
2. increases energy use from motor fuels?	no	yes	no	no
K. Fish: consistent with TRPA fish thresholds?	yes	yes	yes	yes
L. Housing: increases diversity of housing?	no	no	no	yes
M. Natural Hazards: increases exposure to natural hazards?	yes	yes	yes	yes
N. Noise: consistent with TRPA noise thresholds?	yes	yes	yes	yes
O. Public Health, Safety, and Welfare: increases demand?	no	yes	yes	yes
P. Recreation: consistent with TRPA recreation thresholds?	no	yes	yes	yes
Q. Scenic Resources: consistent with TRPA scenic resource thresholds?	no	no	no	yes
R. Shorezone: results in increased shorezone development?	yes	yes	yes	yes
S. Wildlife: consistent with TRPA wildlife thresholds?	yes	no	yes	yes

A number of individuals and organizations made comments on the EIS and the draft 208 plan, the result of which was a thorough review of the draft plan and EIS. The review caused TRPA to make a number of changes, which are reflected in this final document. The changes, while important, do not create significant differences from the draft plan and EIS.

The seven volumes which make up the proposed 208 amendments were prepared by the TRPA staff.

Volume II. Handbook of Best Management Practices

I. INTRODUCTION

Best Management Practices (BMPs) is a term used to denote resource management practices whose purpose is to maintain water quality and to prevent or minimize water quality problems. TRPA policies and ordinances require that BMPs be incorporated into the design and execution of all development to prevent degradation of water quality. Prevention is achieved through application of project-specific practices, described in the Handbook.

The program of BMP implementation is described in Volume I. BMPs are required on all property in the Tahoe Region. On all new development, BMPs are required as a condition of project approval. For existing development, the implementation program includes educational, voluntary, remedial, and regulatory aspects to achieve retroactive application of BMPs.

The BMPs in the Handbook are an effective means to mitigate potentially adverse effects on water quality from development. Workable alternatives are described, but many more also exist and may be appropriate in a given situation. Selection of the desired practices should be based upon analysis of specific site conditions.

II. TEMPORARY BEST MANAGEMENT PRACTICES

The Handbook includes descriptions of temporary construction site practices, temporary sediment barriers, temporary soil stabilization practices, temporary runoff control (diversions) on slopes, temporary grade stabilization (downdrain) structures, and temporary sediment retention structures.

III. PERMANENT BEST MANAGEMENT PRACTICES

The Handbook includes descriptions of permanent slope stabilization practices, infiltration systems, and permanent runoff collection and conveyance practices.

IV. VEGETATIVE SOIL STABILIZATION PRACTICES

The Handbook includes lists of recommended grass, shrub, tree, and flower species and descriptions of wattling, fertilizer management, and irrigation practices.

V. SHOREZONE PRACTICES

The Handbook includes descriptions of protection of shorezone vegetation, revetments, bulkheads, jetties, breakwaters, beach replenishment, dredging, and pump-out facilities.

VI. MISCELLANEOUS PRACTICES

The Handbook includes descriptions of miscellaneous BMPs, including snow disposal practices, road salt storage practices, street cleaning practices, and practices for underground storage tanks.

Volume III. SEZ Protection and Restoration Program

I. INTRODUCTION

Stream environment zone (SEZ) is a term used to denote the major and minor streams, intermittent streams, drainage ways, meadows and marshes, and other areas of water influence within the Lake Tahoe Region.

Disturbance of SEZs can reduce their capability to convey spring snowmelt, storm water, and other forms of surface runoff from the slopes of the Tahoe Region. Disturbance also reduces the natural water cleansing capabilities of these areas. Maintaining SEZs in as natural a state as possible ensures their capability to convey and treat runoff water.

TRPA standards, policies, and ordinances prohibit encroachment in SEZs (with certain exceptions, primarily for public projects) and mandate the restoration of a portion of the disturbed, altered, or modified SEZs in the urbanized areas of the Region, and all the disturbed SEZs in the non-urban areas.

The riparian vegetation associated with SEZs is a critical component of the Tahoe Region's natural vegetation. This riparian vegetation provides critical wildlife habitat, enhances recreational opportunities, and supports a wide variety of plant species. Protection and restoration of SEZs are essential for improving and maintaining the unique values of the Tahoe Region and achieving TRPA thresholds for water quality, vegetation preservation, soil conservation, scenic resources, recreation, and wildlife.

II. SEZ PROTECTION AND RESTORATION POLICIES

Volume III describes: (1) the TRPA procedures for identifying SEZs, (2) restoration targets for SEZs, and (3) management and restoration policies. TRPA proposes to modify the criteria for identifying SEZs in accordance with the TRPA Goals and Policies (1986). The proposed criteria use a system of key (primary) and secondary indicators to identify SEZs, and establish setbacks from all SEZs based on the stability and vulnerability of the specific class of SEZ.

TRPA thresholds call for the protection and restoration of 25 percent of the SEZ lands that have been disturbed, developed, or subdivided. There are 4,400 acres of SEZ lands in this category, resulting in a target of 1,100 acres of SEZ restoration in the urban areas of the Region. Over 65 acres of restoration have already been completed in urbanized portions of the Region. The balance of the restoration will be accomplished by specific projects described in Volume III, and numerous small projects on parcels containing SEZs and acquired by the California Tahoe Conservancy, the United States Forest Service, or the Nevada Division of State Lands.

TRPA thresholds also call for the preservation and restoration of all disturbed SEZs in the natural areas of the Tahoe Region. The Forest Service has restored about 680 acres to date, and restoration of the remaining disturbed acreage is a top priority for the Forest Service.

TRPA policies prohibit new land coverage or other permanent disturbance in SEZs, with exceptions for certain public outdoor recreation facilities; public health, safety, or environmental protection projects; and projects which require access across SEZs to otherwise buildable sites, provided the TRPA makes required findings and provided that SEZ disturbance is offset at a rate of 1.5:1.

III. SEZ RESTORATION PROJECT DESCRIPTIONS

Volume III includes descriptions of specific proposed SEZ restoration projects in Placer, El Dorado, Douglas, and Washoe Counties. Altogether, 48 separate projects are described, with a combined acreage of about 450 acres. Volume III also includes a description of a program to refine and expand the SEZ restoration program over the next three years, and a schedule for that program.

Volume IV. Capital Improvements Program for Erosion and Runoff Control

I. INTRODUCTION

The purpose of the Capital Improvements Program (CIP) for erosion and runoff control is to identify projects and an implementation program for control of erosion and surface runoff on public rights-of-way in the Tahoe Region. TRPA's goal is to complete the necessary capital improvements in 20 years.

The street, road, and highway network affects water quality in several ways. It increases drainage density, adds impervious surfaces to the watershed, creates surface runoff, increases sediment and nutrient yields from the watershed, increases peak flows and flow velocities, decreases hydrologic lag time, short-circuits the watershed's natural cleansing abilities, and exposes unstabilized road shoulders, cut banks, fills slopes, ditches, and culvert outfalls to the erosive force of runoff waters.

The CIP is closely related to other documents of the California Tahoe Conservancy (A Report on Soil Erosion Control Needs and Projects in the Lake Tahoe Basin, 1987) and the U.S. Forest Service, Lake Tahoe Basin Management Unit (Watershed Improvement Needs Inventory, 1987). These two documents are incorporated into the CIP, by reference, in their entirety, to avoid redundancy. The Conservancy report identifies potential projects and estimates costs for portions of the Region in California. The LTBMU inventory is a summary of improvement needs, costs, and acreage for the portions of the Region managed by the U.S. Forest Service.

II. PROGRAM HISTORY

TRPA developed the original CIP for erosion and runoff control as part of the 208 plan adopted in 1981. That CIP identified the total cost of the program at $77 million (1976 dollars). Volume IV is based on the CIP from the 1981 208 plan, but has been revised to account for new problems areas which have been identified, projects completed since 1977, and updated estimates of costs of specific projects.

Approximately 65 projects have been completed in California and Nevada since 1979, at a cost of about $31 million. Funding for the completed projects has come from a variety of federal, state, and local sources.

III. GOALS AND POLICIES

Volume IV includes Goals and Policies excerpted from the Implementation Element, Regional Plan for the Lake Tahoe Basin, Goals and Policies (TRPA, 1986).

TRPA's goals are to (1) identify and seek commitments from agencies to implement the CIP, and seek consensus among the responsible individuals and agencies, (2) condition approvals for new development on positive improvements in off-site erosion and runoff control, (3) in cooperation with other agencies, provide funds to carry out the CIP, provide for revenue sources that distribute the costs equitably among the users of the Region, meet performance objectives, and attain environmental thresholds, and (4) coordinate the revenue program for implementation of the Regional Plan with other responsible agencies, and direct the utilization of regional revenues to solve high-priority water quality problems.

IV. PRIORITIES

There have been several priority systems established for the Capital Improvements Program for erosion and runoff control since 1977. The two main priority systems were established by the California State Water Resources Control Board (1980) and the California Tahoe Conservancy (1987 and 1988). Both were based on project cost-effectiveness with respect to reduction of sediment loads or soil loss, and other factors.

It is the policy of TRPA that local governments and other implementing agencies require flexibility in project priorities. It is also TRPA policy to establish priorities, in consultation with the implementing entities, and to direct revenues to high-priority projects.

The highest priorities for erosion and runoff control projects should be projects that address the most-critical water quality problems in individual local jurisdictions. A system of this nature will contribute to an equitable distribution of available revenues around the Region, and address both nutrient and sediment loads to Lake Tahoe and in-stream water quality problems.

Within a given jurisdiction, TRPA will attach a high priority for erosion and runoff control to projects which affect stream environment zones (particularly wetland and riparian areas), which reduce or repair disturbance of seasonally-saturated variable source areas, and which attempt to restore a more natural hydrologic response in the watershed by infiltrating runoff and reducing drainage density, especially in areas near tributary streams.

V. INSTITUTIONAL ROLES

Volume I assigns responsibility for capital improvement programs for erosion and runoff control to state transportation departments (for the state highways), local government and improvement districts (for local streets and roads), utility districts (for lands under their control), and the LTBMU and state parks departments (for forest roads).

TRPA's role is to facilitate program implementation, pursue additional sources of revenue, and provide technical assistance. The Tahoe Resource Conservation District and the Nevada Tahoe Conservation District also provide technical assistance. The Lahontan Board and the Nevada Division of Environmental Protection may also participate in project review and, as appropriate, issue discharge permits to individual projects.

VI. ANTICIPATED REVENUES AND EXPENSES

Funding for CIP implementation from the following six sources should provide over $6 million annually to the program: Burton-Santini Grants (LTBMU), California Tahoe Conservancy, CALTRANS, Nevada Department of Transportation, Nevada Division of State Lands, and water quality mitigation funds.

The costs for the full 20-year CIP are estimated at $270 million (1988 dollars). The cost of the first 5-year phase would be about $68 million, compared to projected revenues of about $30 million plus local contributions.

VII. PROGRAM UPDATE PROCESS

TRPA considers the CIP a dynamic document, and intends to update the program regularly, with cooperation from local government, the CTC, Nevada State Lands, state transportation departments, the LTBMU, and others.

VIII. CIP MAPS

The TRPA Code of Ordinances identifies CIP maps as official TRPA maps. The maps are available for public inspection at the TRPA offices.

IX. PROJECT LISTS

The CIP includes tables displaying the 20-year project lists for the local governments, CALTRANS, and NDOT. TRPA has listed the local CIP projects by TRPA Plan Area, and the highway projects by highway segment.

Volume VI. Responsiveness Summary and Response to Comments

The preparation of the 208 plan amendments was supported, in part, by a grant to TRPA under section 208 of the federal Clean Water Act. Thus, the plan is covered by the federal regulations for Public Participation Programs Under the Resource Conservation and Recovery Act, the Safe Drinking Water Act, and the Clean Water Act (40 CFR Part 25). These regulations require TRPA to prepare a responsiveness summary which summarizes the public's views, significant comments, and the TRPA's responses. The responsiveness summary appears in Volume VI.

The 208 plan also constitutes an Environmental Impact Statement pursuant to Article VII of the Tahoe Regional Planning Compact. In addition to the Responsiveness Summary, Volume VI also contains the TRPA Response to Comments on the draft plan and EIS.

Volume VII. Technical Appendix

The technical appendix contains detailed information and analysis on: (A) population projections, (B) land coverage and SEZ disturbance, (C) classification of watersheds according to their priority for improvement projects, (D) nutrient and sediment loading estimates using TRPA procedures, (E) simulations of runoff, nutrient, and sediment yields from two watersheds on the west and north shores, (F) estimated sediment yields using the SWRCB sediment yield model, (G) land coverage in TRPA community planning areas, (H) criteria for identification of SEZs, (I) future vehicle-miles-travelled (VMT) values, (J) upwind NOx emissions, (K) development of IPES, (L) data from the IPES data base, (M) water quality monitoring work program, and (N) selected water quality data for the Region, (O) list of supplemental compliance measures and contingency measures which TRPA has identified as of November, 1988.