TRPA
APC
PACKETS

JUNE
1981
NOTICE OF MEETING OF THE
ADVISORY PLANNING COMMISSION OF THE
TAHOE REGIONAL PLANNING AGENCY

NOTICE IS HEREBY GIVEN that on June 10, 1981 at
10:00 a.m. at the hearing room of the Tahoe
Regional Planning Agency, located at 2155 South Avenue, South
Lake Tahoe, California, the Advisory Planning Commission of
said agency will conduct its regular meeting. The agenda for
said meeting is attached to and made a part of this notice.

Dated: June 1, 1981

By: Philip A. Gycrevnder
Executive Director
Tahoe Regional Planning Agency
CALL TO ORDER AND DETERMINATION OF QUORUM

APPROVAL OF AGENDA

DISPOSITION OF MINUTES

PLANNING MATTERS

- List of Specific Activities Exempt from Agency Review and Approval (Forest Service)
- Tahoe City Public Utility District
- Washoe County Public Works Department

- Land Capability Challenges
  1. Considerations Relative to Geomorphic Units
  2. Requirements for Minimum Size
  3. Creation of Planning Team to Evaluate Land Capability

- Status Report on Ordinance Interpreting Article VI(c) of the Compact Limiting Works of Development Within the Region Until May 1, 1983, or Until the Regional Plan is Amended

- Status Report on Ordinance to Implement the Lake Tahoe Basin Water Quality Management (208) Plan and Fee Schedule for Water Quality Mitigation Fund

- Status Report on the Work Program for Environmental Threshold Development

ENVIRONMENTAL IMPACT STATEMENT

Consideration of Certification of the FIS for the South Tahoe Public Utility District/Community College Well

REPORTS

- Public Interest Comments

- APC Members

RESOLUTIONS

CORRESPONDENCE

PENDING MATTERS

ADJOURNMENT
Mr. Phil Overeynder  
Executive Director  
Tahoe Regional Planning Agency  
P. O. Box 8896  
South Lake Tahoe, CA 95731

Dear Phil:

At February's Advisory Planning Commission meeting you requested the agencies to provide a listing of activities which should be exempt from TRPA review.

As a Federal agency we comply with National Environmental Quality Act and that requires stringent standards of analysis and review of our proposed activities. The final guidelines were published in the Federal Register on July 30, 1979 (Vol. 44 No. 147) and require the Forest Service to develop Environmental Assessments or Environmental Impact Statements for our proposed activities with the following categorical exemptions as listed in section 1952.1:

1. Internal organizational changes, personnel actions and other similar internal, operational administrative decisions.

2. Funding or scheduling of projects - budget proposals and allocations at all administrative levels of the Forest Service. (This does not relieve officials of the responsibility to prepare environmental documents when otherwise required for the projects involved in the program).

3. Unanticipated emergency situations that require immediate action to prevent or reduce risks to public health or safety or serious resource losses - including but not limited to, fire suppression, search and rescue and reduction of flood losses.

4. Routine, generally repetitive, operation and/or maintenance to established standards of transportation, transmission, administrative, fire management or resource improvements unless herbicides are involved.

5. Inventories, studies or research activities that have limited content and no or minimal intensity in terms of changes in the physical, biological, economic or social components of the environment.
Categories not listed herein require documentation of the analysis. The responsible official should recognize, however, that there may be circumstances when the environmental analysis will indicate that an action listed above should be documented.

We recognize the obligation to comply with air quality and water quality standards established by TRPA and will be doing that as we carry out our activities. We have a similar obligation to the Lahontan Water Quality Control Board in water quality matters and to the CTRPA. Because of our environmental analysis and review process, the application of an array of sciences through an interdisciplinary approach, our experience in environmental matters (particularly in relation to water quality), and our track record, we believe the Agency can determine, under Article VI(a), that the attached list of activities, when carried out under the direction of the Forest Service, will not have a substantial effect on the land, water, air, space, or any other natural resources in the region and will be exempt from TRPA review and approval. The Agency would be invited to monitor our performance to ascertain that the determination of no substantial effect remains valid.

The Clearinghouse Review process carried out through the TRPA insures that activities of the Forest Service of greater significance than the usual routine matters will be submitted to the TRPA. Certain of the activities we've listed would be subject to Clearinghouse Review, even without substantial effect being contemplated.

Forest Service actions that have a significant effect on the environment are subject to an Environmental Impact Statement under NEPA. We would suppose that the Agency's process of preparing and approving environmental impact statements for Forest Service activities not exempted under VI(a) could be done coincidentally with our review process and the Agency's Clearinghouse function. That way, the amount of time involved, which is a public cost, would be minimized; and the involvement of the public and other agencies would be simplified.

We are willing to discuss these proposals with you and your lead counsel at any time. Our intent is to avoid unnecessary and duplicative procedures which can be costly to both the Agency and the Forest Service.

Sincerely,

W. A. MORGAN
Forest Supervisor
Forest Service
Lake Tahoe Basin Management Unit
Proposed Activities Which Should be Exempt From TRPA Review

RECREATION

- Control of vehicles and pedestrians in recreation sites.
- Continued management of recreation sites and special use permits to meet Forest Service standards.
- Fee collections and related facilities.
- Visitor information services with no significant change in air quality or traffic congestion.
- Establishment and enforcement of off-road vehicle controls.
- Maintenance and replacement of utilities in recreation and special use sites.
- Landscaping and sign installation.

CULTURAL RESOURCES

- Protection and maintenance of cultural resources.

SPECIAL USE PERMITS

- Issuance of special use permits, or amendments to existing permits, and administration of permits for:
  1. Motion pictures
  2. T.V. programs or commercials
  3. Weather recording stations
  4. Electronic sites
  5. Outfitter guide permits
  6. Club and group activities not involving construction
  7. Underground utilities
  8. Phone lines and power lines
  9. Water tanks and water lines.
  10. Recreation residences and related structures
  11. Snow making and ski run clearing or improvement
  12. Soil stabilization or erosion control activities.
  13. Buildings, parking lots, R.V. parks, and related structures in accord with previously approved master plans.
WILDERNESS

- Management of wilderness areas according to Forest Service standards.

ROADS AND TRAILS

- Maintenance of roads, trails and bridges and related structures.

- Construction or reconstruction of roads, trails, bridges or parking areas serving National Forest lands following a Forest Service EA, negative declaration, but not those requiring a federal EIS.

- Acquisition of rights of way.

STRUCTURES

- Maintenance and improvements to existing dams with no change in holding capacity.

- Maintenance, replacement of demolition of Forest Service buildings and those under Forest Service Special-Use permit.

- Maintenance or replacement of utilities.

- Construction or reconstruction of buildings for Forest Service purposes except when a federal EIS is required.

LANDS

- Land surveys, corner recovery, remonumentation and land-line posting.

- Purchase of real property without use of condemnation (Santini-Burton Act).

- Land exchanges or donations where offered (non-government) property is located within the Basin.

FISH AND WILDLIFE

- Protection of wildlife habitat and fisheries.

- Fish and wildlife habitat improvement activities.

- Maintenance of stream channels to prevent flooding or barriers to fish.

- Establishment of wildlife viewing stations.

- Removal or relocation of wildlife.

MINERALS

- Sale of lease of common variety minerals including collection of construction rock for decorative or building purposes where new borrow areas will not be established.
RANGE MANAGEMENT

- Range improvements such as loading/unloading facilities, revegetation, gully control, fences, spring developments and stock exclusions designed to keep livestock off critical stream environment areas.

- Development of Allotment Management Plans and establishment of seasons and stocking rates.

FIRE PROTECTION

- Fire suppression.

- Fire prevention.

- Slash disposal, prescribed burns and fuel reduction when accomplished under established air quality standards.

- Chipping of forest debris.

- Installing and maintaining weather and electronic instruments.

- Enforcement of fire regulations established by law or regulations.

- Aircraft flights involved in law enforcement, fire prevention and suppression.

WATERSHED MANAGEMENT

- Maintenance of watershed protection projects.

- Monitoring of streamflows, water quality and sedimentation.

- Watershed restoration and improvement activities.

- Acquisition of water rights.

VEGETATION MANAGEMENT

- Timber and fuelwood sales and free-use wood permits conducted under adopted best management practices and Forest Service standards.

- Timber stand improvement projects; pruning, thinning and disposal of wastes by wood permits, chipping, slash burning and scattering.

- Tree, shrub and grass plantings and fertilizing in accord with the adopted best management practices.

- Protection of "sensitive plants".

- Removal of modification for any Forest Management purpose when done in conformance with adopted best management practices.
Mr. Philip Overynder
Executive Officer
Tahoe Regional Planning Agency
P.O. Box 8896
South Lake Tahoe, CA 95731

RE: List of Exempt Activities and Projects

Dear Mr. Overynder:

In accordance with the request of the TRPA staff, we are submitting a comprehensive list of activities and projects that should be exempted from TRPA review. We believe the list represents a reasonable approach to regulatory authority while reserving critical projects for detailed review, at the discretion of TRPA. Your review and comment on this list is requested.

The list has been organized into three major categories for distinguishing among various operational and maintenance activities conducted by the District. Category I includes activities with little or no opportunity for adverse environmental impact. Category II projects and activities result in a discernable modification of facilities, but have no environmental impacts of concern. Category III includes projects that might have environmental impact by reason of soil disturbance if best management practices are not followed. You should keep in mind that the District is now regulated by very stringent waste discharge requirements that mandate state-of-the-art best management practices for all projects and activities involving soil disturbance.

It should be recognized that the proposed list is not exhaustive. We have chosen only those activities and projects in which we believe TRPA would have an interest and we intend to continuously revise the list as we begin using the listings as a reference. We propose that additions and deletions to the list be made by mutual consent between the District and TRPA staff, subject to Governing Board review of any disagreements. In this way, the list can be expeditiously refined as experience is gained and without creating a burdensome and time-consuming regulatory framework.

A similar list has already been submitted to CTRPA and we strongly suggest that the two agencies cooperate closely in review so that the District will have only one consistent list to utilize for reference
purposes. In this way, confusion among different, and possibly contradictory, lists will be eliminated.

Your continued cooperation toward establishment of a workable list of exempt activities will be appreciated. If you should have any questions, please do not hesitate to contact me or David Antonucci.

Sincerely,

[Signature]

Wm. J. Briner
Manager

Attachments
/DCA/sk

cc: CTRPA
CATEGORY I: Maintenance and Operation Activities Involving No Soil Disturbance or Physical Modifications To Facilities.

A. Water Supply Related
1. Check all facilities for proper operation
2. Exercise valves
3. Flush and test fire hydrants
4. Inspect submerged intake lines
5. Adjust mechanical and electrical equipment
6. Operate bleeder system to prevent freezing
7. Locate buried water lines
8. Disinfect water lines
9. Snow removal and ice control
10. Maintain vehicles

B. Wastewater Collection Related
1. Check all facilities for proper operation
2. Clean and flush sewer lines
3. Conduct dye and smoke testing
4. Root control and removal in sewer lines
5. Snow removal and ice control
6. Access, open and inspect flow in manholes
7. Exercise valves
8. Adjust mechanical and electrical equipment
9. Maintain vehicles

C. Parks and Recreation Related
1. Check all facilities for proper operation
2. Adjust mechanical and electrical equipment
3. Clean and maintain parks, public beach areas, and associated public facilities. NOT including grading of beaches.

4. Operate and maintain field and court lighting systems.

5. Vehicle maintenance.

6. Snow removal and ice control.
CATEGORY II: Physical Modifications to Equipment, Above-Ground Structures, and Other District-Owned Facilities That Does Not Result in a Soil Disturbance.

A. Water Supply Related

1. Rebuild, repair and maintain readily accessible waterworks equipment such as pumps, valves, motors, compressors, generators, electrical systems, control systems, alarm systems, fire hydrants, above-ground pipes, screens, wells, water meters, water tanks, and treatment facilities.

2. Replace readily accessible waterworks equipment such as pumps, valves, motors, compressors, generators, electrical systems, control systems, alarm systems, fire hydrants, above-ground pipes, screens, wells, water meters, water tanks, and treatment facilities with equipment of similar type, function, or capacity.

3. Rebuilding, repair, replacement, and maintenance of buildings.

4. Patch, seal, overlay, stripe and otherwise maintain paved surfaces without increasing coverage.

5. Pave previously compacted parking and roadway areas.

B. Wastewater Collection Related

1. Rebuild, repair, and maintain readily accessible collection system related equipment such as pumps, valves, motors, compressors, generators, electrical systems, control systems, alarm systems, above-ground pipes, odor control facilities, meters, and wet wells.

2. Replace readily accessible collection system related equipment such as pumps, valves, motors, compressors, generators, electrical systems, control systems, alarm systems, above-ground pipes, odor control facilities, meters and wet wells with equipment of similar type, function, or capacity.

3. Rebuilding, repair, replacement, and maintenance of buildings.

4. Grouting, sealing, and pressure testing of sewer lines.

5. Patch, seal, overlay, stripe and otherwise maintain paved surfaces without increasing coverage.

6. Pave previously compacted parking and roadway areas.

C. Parks and Recreation Related

1. Repair, rebuilding, replacement, and maintenance of accessory structures, except buildings, associated with public recreation
facilities such as parks, campgrounds.

2. Bicycle trail auto barrier repair and replacement.

3. Oil and seal bicycle trail paving surface.

4. Clean bicycle trail and bicycle trail culverts.

5. Signing and striping of bicycle trails.

6. Rebuilding, repair, replacement, and maintenance of buildings.

7. Reseeding and fertilization of lawn areas.

8. Patch, seal, overlay, stripe and otherwise maintain paved surfaces without increasing coverage.
CATEGOR Y III: Physical Modifications to Facilities That Could Cause a Soil Disturbance.

A. Water Supply Related

1. Replace existing water lines with a new water line of the same capacity within the rights-of-way of existing roads or on lands with Capability Class 1-7.

2. Repair leaks.

3. Install, repair or replace valves and fire hydrants.

4. Trim vegetation around water facilities and within easement areas.

5. Remove dead trees near water facilities within easement areas.

6. Remove and dispose of sediment and excavated material at a legal point of disposal.

7. Install, repair and replace house service connections.

8. Repair or replace intake lines and accessory facilities.

9. Repair or replace water meter boxes.

10. Revegetate or otherwise restabilize disturbed soils.

11. Remove sediment from open-storage reservoirs.

12. Any action taken under emergency conditions to protect the public health or welfare.


14. Pave existing roadway access to existing water facilities.

B. Wastewater Collection Related.

1. Replace existing sewer lines with a new sewer line of the same capacity within the rights-of-way of existing roads or on lands with Capability Class 1-7.

2. Repair forcemain leaks.

3. Revegetate or otherwise restabilize disturbed soils.

4. Emergency repairs to lines, manholes and pump stations.
5. Repair or replacement of house service connections, laterals and cleanouts.

6. Locate lines and manholes by digging.

7. Move and store earthen materials for subsurface construction.

8. Pave existing roadway access to existing sewer facilities.

9. Clean up and mitigate raw wastewater overflows.


11. Clear and trim vegetation around sewer facilities and within easement areas.

12. Remove dead trees near sewer facilities.

13. Remove and dispose of sediment and excavated material at a legal point of disposal.

14. Revegetate or otherwise restabilize disturbed soils.

15. Any action taken under emergency conditions to protect the public health or welfare.

C. Parks and Recreation Related

1. Install, repair and maintain irrigation systems.

2. Replenishment of sandy beaches above the highwater rim of Lake Tahoe. Shorezone CD requires permit.

3. Revegetation, landscaping and stabilization for erosion control.

4. Preparation and maintenance of athletic fields for sporting events.

5. Removal of very small quantities of accumulated sediment at selected sites such as boatramp and stream dams in park areas.

6. Move and store earthen material and top soil.

7. Trimming of vegetation.
3. Removal of dead trees at park and public recreation facilities.

9. Remove and dispose of sediment and excavated materials at a legal point of disposal.
May 5, 1981

Tahoe Regional Planning Agency
P.O. Box 8896
South Lake Tahoe, California 95731

ATTN: Mr. Greg George, Senior Planner

RE: Ordinance 81-1; Request for Waiver of Certain Maintenance Activities
from Permit Requirements

Dear Greg:

This regards our meeting with you last Thursday at Incline Village to discuss Ordinance 81-1 as it relates to Washoe County's road and drainage maintenance activities.

As you may recall, we were advised to list those routine activities for which we could request consideration by T.R.P.A. that a general waiver be granted.

There are just a few basic and routine maintenance practices which are essential. These are listed as follows:

1. Removal of sediment and obstructions from existing roadside ditches and underground storm drains (including the flushing of culverts; see (b) below).

   a) All waste materials would be hauled to less sensitive areas to prevent their reintroduction to other S.E.Z.'s.

   b) A new unit called the "Vacto" has been tentatively approved in the budget for flushing pipes and other culverts. High pressure water is used which is captured and returned to a holding tank which would result in minimal escape of muddied waters beyond the culvert or pipe.

2. Cleaning sand and silt off paved roads.

   a) A new vacuum unit has been approved in the budget which is an innovative piece of equipment particularly developed for replacement of the old "broom" method. It uses a high pressure vacuum system which captures sands, silts and other materials in a palliative enclosure. Escaping pollutants to the atmosphere is very minimal.
3. Pavement repair and limited overlay: removal of damaged pavement, replacement of base as needed, patch or overlay and, apply seal coating.

4. Occasional installation of a roadway drainage culvert of limited length to prevent excessive erosion to the roadway prism.

5. Install limited French Drains (usually not more than two feet deep) to capture seepage and mitigate erosion in the roadway. By experience, such waters are clarified by passage through the drainage rock within a French Drain.

We would propose to rock-line any significant adjustment to existing ditches we maintain. For example, if a ditch needed widening or deepening, it would be rock-lined.

Our plan is to construct sediment traps in each roadside ditch as they are cleaned. Such traps probably would be simple settling holes at each end of the driveway culverts which you concurred would work quite well.

And finally, we recognize the necessity for trapping any siltation and confining it to the immediate work site until it can be appropriately disposed of. To that end, we are prepared to use straw bales, environmental fencing, etc., as required.

Washoe County would appreciate the Agency's consideration for the above basic maintenance practices and that we be permitted, under an administrative approval, to continue them without individual and separate permits because of their routine nature.

Sincerely,

[Signature]

DOUGLAS W. HOPKINS
County Engineer

DWH/cs
cc: Floyd Vice
    Bob Mays
    Lief Nielson
    Bill Grundy
TAHOE REGIONAL PLANNING AGENCY

MEMORANDUM

DATE: June 3, 1981

TO: The Advisory Planning Commission

FROM: The Staff

SUBJECT: Land Capability Challenges

Attached is a proposed revised land capability challenge information check list which will be handed out to applicants desiring to reclassify their property. The check list is divided into four major subject areas that relate to land capability as follows:

I. Topography
II. Soils
III. Hydrology
IV. Geomorphology

At the APC's direction, the geomorphology section has been expanded to include specific criteria to be addressed by the applicant. The criteria is based on the two documents listed in the check list; the latter is attached for your information. In addition, Agency staff has suggested that only a team of qualified experts as noted be permitted to prepare such a report. Agency staff will be prepared to discuss the details of the check list and its ramifications on the TRPA project review process.

The second issue to be discussed is the minimum size criteria for the creation of new land capability districts or geomorphic units. As was discussed at the last meeting, the adjustments of boundary lines presents no size problem; however, the inclusion of new districts or units as islands into an area where no such district or unit has been identified does create problems as to minimum size criteria. A series of alternatives will be presented at the meeting which then can be related to the check list. The check list before you utilizes a 300 foot radius information requirement with no minimum size specifically stated. The TRPA land capability classification system does set 1 square mile as the minimum for geomorphic unit inclusions.
Memo to the APC
Land Capability Challenges
June 3, 1981 page two

The third item to be discussed is the possibility of the creation of a planning team to handle land capability questions, instead of the current process of allowing the applicant to hire qualified consultants. Issues to be discussed are as follows:

1. Who should be on the team and what qualifications should be required?

2. Can this be coordinated with the CTRPA and Lahontan?

3. Should such challenges be handled on a demand basis, on a monthly basis, on a semi-annual basis, or other?

4. Cost effectiveness of such a program?

5. Filing fee for processing a challenge?

- Scientific Team
- Annual Review
Supplemental Report Required for
A Land Capability Challenge
Section 8.25(1) - Nevada Land Use Ordinance
Section 6.15 - California Land Use Ordinance

The following additional information must be submitted to the TRPA before a
determination can be made to approve additional land coverage as outlined in
Section 8.25(1) of the Nevada Side Land Use Ordinance (for Nevada projects)
and Section 6.15 of the California Side Land Use Ordinance (for California
projects). Based on initial determinations, TRPA staff may require only
the information checked below; however, the total information package may
be required if further evidence so indicates.

I  Land Survey Report - A site plan (approximately 24" x 36") and prepared
by a qualified person is to include the following items:

- Accurate contours at two (2) foot intervals for the
  entire property.

- Property boundaries.

- Location of groups of vegetation by type (trees of 6" dbh or
greater must be precisely located and identified).

- Location and identification of rock outcroppings (boulders
  6 feet or larger must be precisely located and identified).

- Stream channels or drainageways.

- Locations and identification of all man-made structures on
  the site (including CMP's, buildngs, pavement, retaining walls,
  etc.).

- Locations, identification and dates of disturbed areas,
  i.e. cuts and fills.

- Contour map of the surrounding area (minimum 100 foot
  radius from subject property - a USGS quad map to
  the scale of 1:24,000 is recommended).
Delineation of soil boundary*.

Evaluation and rating of each soil type as to:

--- erosion hazard;
--- runoff potential; and
--- disturbance hazard.

Delineation of disturbed areas*.

Delineation of areas with poor natural drainage*.

Delineation of areas dominated by rocky and stony lands (50-90%).

Description of soil properties of adjacent lands (300 feet from center of the subject property) for parcel size.

Calculations*:

--- total parcel area;
--- area of each identified district; and
--- proposed land coverage to be permitted in each district.

Soil Conservation Service comments.

*to be included on required site plan.

III Hydrology Report – The criteria and standards set forth in Chapter III of the TRPA Handbook of Best Management Practices shall be the basis of this report. This report must be prepared by a qualified hydrologist and shall include the following:

--- General description of the hydrologic characteristics of the site and surrounding area.

--- 100 year flood calculations.

--- Groundwater profile (optional).

--- Delineation of the stream environment zone:

--- limits of the 100 year flood*;
--- riparian vegetation types and limits*;
--- limits of soil with poor drainage*;
stream channels and buffer strips*

*To be included on required site plan.

IV Geomorphology Report - The criteria and standards set forth in the Land Capability Classification of the Lake Tahoe Basin, a Guide for Planning, 1974, and Geology and Geomorphology of the Lake Tahoe Region shall be the bases of this report. This report must be prepared by a team of experts in geology, geomorphology, soils, vegetation, and hydrology and shall include the following:

_____ Proposed reclassification geomorphic unit and hazard rating.

_____ General location and description of proposed geomorphic unit.

_____ Map of reclassified unit (minimum size - 7 1/2" USGS quad maps).

   Contours at 200'foot intervals;

   Soil boundaries; and

   Stream environment zones.

_____ Geologist report:

   _____ Description of the topography;

   _____ Description of the geological base;

   _____ Classification of substratum or parent material;

   _____ Range in elevation (Lake Tahoe Datum); and

   _____ Description of processes.

_____ Vegetation report.

_____ Climate description.

_____ Soils interpretation:

   _____ Classifications of soils present within the geomorphic unit;

   _____ Percent of soil associations represented in the unit;

   _____ Effective soil depths; and

   _____ Relative erosion potential.
Hydrologist report:

Available water capacity; and

Hydrologic soil group.
POOR QUALITY ORIGINAL (S) TO FOLLOW

HIGH DESERT MICROIMAGING, INC.
1225 FINANCIAL BLVD
RENO, NV 89502
(775) 359-6980
GEOMORPHIC ANALYSIS OF THE LAKE TAHOE BASIN

Geomorphology (geo-, earth; morpho-, form; -logy, science) is the systematic study of the origin and nature of landforms. Equally important in the study of landforms are the processes and stages of development of those forms.

A geomorphic unit is an area of land that is homogeneous with respect to the nature and intensity of natural processes. Such areas are delineated on the basis of homogeneity of geology, topography, climate, soils, vegetation, and hydrologic characteristics. Geomorphic units have strong life zone connotations. Actually they are ecologic land systems and therefore represent the most logical unit for land use management.

The interaction of controlling factors within each system tends to give rise to a characteristic assemblage of such natural processes as soil erosion, mass movement, and stream cutting. If changes are made in system variables, each process interacts with the others and, in turn, conditions the type of response that is probable in the system. Each geomorphic unit can be regarded as a separate process-response model, which has primary relevance in distinguishing the land use capability of each system.

These systems represent a somewhat sensitive dynamic equilibrium with respect to erosion processes. In many areas, natural forces have worked toward establishment of relatively stable slopes and channels. Such balances are often extremely delicate. Failure to recognize the nature of the balance and, consequently, the limits of disturbance permissible before such balances are upset, has led to marked increase in the rates of landsliding and other erosional processes. Apart from the utter disruption of the slope environment, such abnormal erosion has inevitably contributed increased debris to streams, and thereby increased both flooding and a serious deterioration in water quality.

An understanding of natural processes is essential to land use management of the Lake Tahoe basin. This has become increasingly clear in recent years where, under natural conditions, geomorphic units with varying erosion thresholds occur and where artificial changes in vegetation and soil resulting from fire, deforestation, excessive grazing, road building, and other developments have introduced new elements to the environment. By directing attention to the whole landscape assemblage, rather than to single component parts (e.g., soil), we may recognize geomorphic units within which the intensity and relative significance of the various processes are, according to our present information, essentially uniform. The uses of these units in regional planning are important for the following reasons:

1. Geomorphic analysis stratifies the landscape into recognizable units through integration of several complex variables. These can be analyzed for frequency of occurrence of various processes. By this means the planner can isolate critical processes (e.g., stream cutting, soil erosion, landsliding, etc.) and can predict the likelihood and magnitude of their occurrence after various levels of land disturbance. He is thus able to formulate questions which must be answered before planning policy is possible. The geomorphic unit can be used, therefore, as a guide for identifying the need for more detailed information which should be synthesized as a basis for a decision on land use alternatives such as to avoid certain areas completely or to limit disturbance to those levels which are below the expected erosion threshold.

2. Geomorphic units provide a contextual framework by which other parameters of the system may be analyzed and related to one another. For example, rapid erosion on steep slopes over a long period of time produces shallow soils that have low water-holding capacity and results in low potential for revegetation when these slopes are disturbed. In addition, the significance of slope as a source of potential energy for runoff and erosion varies, depending on the nature of the erosion process and the resistance to erosion within the geomorphic unit.

3. The recurrence of a specific type of geomorphic unit, regardless of location, implies a recurrence of the basic characteristics of that unit. Thus research results from plots can be extrapolated on a unit basis for units having similar characteristics so as to better define their performance when disturbed.

\* Study by Dr. Robert G. Bailey, hydrologist, Lake Tahoe Basin Planning Team.
4. By gaining some understanding of the processes operating within the various geomorphic units, and by planning and working within a framework of these natural systems, land planners and managers may be better able to modify the impacts of development before they occur.

GEOMORPHIC GROUPS

For the above reasons, the Lake Tahoe basin has been divided into six major geomorphic groups, as follows:

A. Glaciated granitic uplands
B. Glaciated volcanic flowlands
C. Streamcut granitic mountain slopes
D. Streamcut volcanic flowlands
E. Depositional lands
F. Oversteepened slopes

These geomorphic groups are relatively large areas of land that have similar characteristics and serve to delineate the permanent element of the ecosystem. A number of closely related landforms exists within each major group. A detailed description of the geomorphic groups is given below in "Geomorphic Units." Description of their salient natural features and processes follows.
A. **GLACIATED GRANITIC UPLANDS**

Location: South and southwest crest zone of the Sierra Nevada; also the Desolation Wilderness.

Extent: 33,920 acres, 16.2 percent of Tahoe basin.

Topography: Mountainous uplands, cirques, glacial troughs, colluvial slopes, outwash. Many slopes are steep (50-70%); some are vertical.

Elevation: 7,000 to 10,000 feet.

Geology: Hard massive granite (mainly unweathered) with some joints, foliation, or fractures. Small areas of metamorphic rock representing roof pendants are included in this type.

Soils: Areas with this type have enough rock outcrop, rock rubble, or stones and boulders without or within very shallow soil (less than 10 inches) material to dominate completely the areal extent of the type. Rock outcrops comprise from 50 to 90 percent of the area.

Climate: Cool to cold; humid. MAT 40 to 42°F. MAP 40 to 60 inches.

Vegetation: Vegetation is sparse; most of the area is barren. Some scrub trees, shrubs, and forbs constitute the alpine vegetation.

Processes: Mudflows and landslides are numerous because of oversteepening by glaciation. Vigorous freezing and thawing of melt water causes frost shattering of the rock walls and produces fragments which move by gravity to form talus slopes. Talus flows, debris avalanching, rock glaciers, and rockfalls move debris from oversteepened slopes into bordering stream valleys. Cloudburst floods transport coarse sediment in stream channels and frequently produce mudflows and flood rock that reach canyon mouths.

Limiting land use qualities: Slope stability hazards, high runoff potential, and revegetation problems.
B. GLACIATED VOLCANIC FLOWLANDS

Location: Ward and Blackwood Creeks

Extent: 9,870 acres; 4.9 percent of area.

Topography: Topography varies from steep (30 to 50%) volcanic ridgeland with large cirque basins at the heads of major drainages to gentle slopes in valley bottoms. Hummocky morainal debris fills major stream valleys. Streams have trench the debris forming shallow canyons.

Elevation: 6,800 to 9,500 feet.

Geology: Hard volcanic rocks of Tertiary age in loose to well cemented matrix (mainly mudflow and tuff breccia). Andesite flows are included. Glacial till is in valley bottoms and plastered on the sides of glaciated canyons.

Soils: Rock outcrops with a very thin soil mantle occur on the rocky ridgeland and on the cirque walls. Downslope from these areas are well drained, cobbly coarse sandy loams. Depth of soils in these areas ranges from 20 to 40 inches. Permeability of subsoil is moderately rapid. Runoff is rapid. The available moisture holding capacity is about 3 to 6 inches.

Climate: Cool to cold; subhumid to humid. MAT 40 to 42°F. MAP 35 to 80 inches.

Vegetation: Natural vegetation consists of red fir, white fir, mountain hemlock, and western white pine. Large areas along ridges and cirque basin walls are barren or support only sparse alpine type vegetation. Wet meadows are along valley bottoms.

Processes: Main processes are landslides on steep slopes, particularly where such slopes are overlain by glacial till and are undercut by stream erosion. Active stream cutting produces most of the sediment derived from this type since soil erosion is not important. Snow avalanching is active on steep northerly aspects, particularly along cirque walls.

Limiting land use qualities: Slope stability hazard, channel erosion, high runoff potential.
C. STREAMCUT GRANITIC MOUNTAIN SLOPES

Location: Carson Range.

Extent: 64,880 acres; 32.1 percent of area.

Topography: This area consists mainly of steep (30 to 70%) slopes with minor valley flats. Stream erosion has dissected the area into an intricate arrangement of V-shaped canyons with numerous intermittent drainage channels. Some areas have been denuded of soil by accelerated erosion on oversteepened slopes. Ridgetops are relatively flat and stable but provide high runoff that actively erodes stream channels and forms gullies.

Elevation: 6,500 to 9,000 feet.

Geology: Massive granitic rocks overlain by a thick mantle of grus (decomposed granite in place). Rounded corestones or undecomposed cores of jointblocks are commonly embedded in the grus.

Soils: Soils of this type are excessively drained, very rocky, loamy coarse sands. Rock outcrops occupy about 10 to 25 percent of the area. The soils are generally thin, highly erodible, and have low fertility. Available water holding capacity is low (1 to 3 inches), and runoff is rapid.

Climate: Cool to cold; semiarid to subhumid. MAT 40 to 42°F. MAP 20 to 35 inches. There are strong differences in microclimate and vegetation between north- and south-facing slopes.

Vegetation: Semi-dense to dense stands of mixed conifers and pure pine, mostly Jeffrey pine, red fir, white fir, mountain hemlock, and western white pine. Pinemat manzanita and huckleberry oak make up the shrub understory. Chaparral grows on old burns. Sagebrush is common on drier sites.

Processes: Main processes are varied types of soil erosion, especially on denuded slopes. Concentration of water from flood runoff produces gully and channel erosion. Undercutting of slopes results in gravitational movement of the grus to the immediate channel forming dry creep cones. This gravitational debris is periodically flushed from the channel during storm or snow-melt runoff.

Limiting land use qualities: Soil erosion, channel erosion, high runoff potential, and fire hazard.
D. STREAMCUT VOLCANIC FLOWLANDS

Location: North and northwest sides of the basin.

Extent: 23,640 acres; 11.7 percent of area.

Topography: Gentle mountain slopes and partially opened valleys. Ridgetops and stream valleys are generally rounded. Slopes range from 2 to 50 percent.

Elevation: 6,300 to 8,000 feet.

Geology: Extrusive volcanic rocks of Quaternary age underlie the more gentle slopes near the lake. In the headlands, the bedrock is Tertiary volcanic rock (mainly mudflow and tuff breccia).

Soils: At higher elevations (above 7,600 feet) soils are shallow and stony and have low moisture storage capacities (1 to 3 inches). Below this elevation, soils are composed of sandy loams, 4 to 5 feet deep with 30 to 50 percent rock content. Their water holding capacities are about 3 to 6 inches. In contrast to other areas in the basin, these soils have the highest inherent fertility and lowest erosion hazard.

Climate: Cool to cold; subhumid to humid. MAT 40 to 42° F. MAP 25 to 45 inches.

Vegetation: Dense to semi-dense forest stands are evenly distributed over the area. Fir grows at the higher elevations, and mixed conifers are at lower elevations near the lake.

Processes: Important processes are deep-seated landsliding (mainly slumping). Deep, fine-textured soils locally have high water tables. Sparse vegetation and shallow soils in the headlands periodically produce high runoff; this causes stream cutting and flooding in the lower parts of the drainages.

Limiting land use qualities: Low slope stability and flood hazards.
E. DEPOSITIONAL LANDS

Location: Valley bottoms and plains; predominantly at south end of basin.

Extent: 62,090 acres; 30.6 percent of area.

Topography: Nearly level to moderately sloping (30%) outwash fans, terraces, floodplains, and moraines. Moraines rise 100 to 300 feet above the valley floor and have the greatest local relief. Streams are entrenched into these deposits and form a series of low terraces.

Elevation: 6,300 to 7,300 feet.

Geology: The geologic base varies from unstratified bouldery till to coarse sandy outwash and recent fine-grained alluvial deposits along stream channels and meadow bottoms. Included are lake deposits of variable gradation up to about 6,700 feet.

Soils: Soils are generally good, moderate to deep, and moderate in natural fertility, but low-lying areas have poor natural drainage and are subject to occasional flooding and ponding. All have a high water table. Moraines have thinner soils with moderate to high erosion potential.

Climate: Cool to cold; semiarid to humid. MAT 40 to 42°F. MAP 20 to 45 inches.

Vegetation: Moraines are covered by dense stands of mixed conifers and pines including Jeffrey pine, western white pine, and lodgepole pine; also, white fir, red fir, greenleaf manzanita, and mountain whitehorn. Poorly drained areas have wet meadow associations. Vegetation on the outwash plains is mainly lodgepole pine; some Jeffrey pine grows in drier areas. Alluvial lands are dominated by herbaceous and riparian vegetation.

Processes: Main processes are landsliding on oversteepened morainal slopes, uneven settling of alluvial deposits, channel erosion and flooding, and meandering of perennial streams. Alluvial lands are the most ecologically sensitive in terms of wildlife habitat standpoint. These areas, because of the availability of an efficient transport mechanism (i.e., live water streams) produce high sediment yields when disturbed. This sediment is relatively rich in nutrients as compared to streamcut granitic mountain slopes.

Limiting land use qualities: Gully erosion, channel erosion, flood hazard, and seismic hazard.
F. OVERSTEEPENED SLOPES

Location: Scarp running from Echo Summit to Emerald Bay; Truckee River outlet.

Extent: 8,020 acres; 3.9 percent of area.

Topography: Precipitous fault scarps and narrow canyons. Slopes are very steep (greater than 70%); some are vertical.

Elevation: 6,400 to 9,700 feet.

Geology: Hard competent rocks generally consisting of either glaciated granite, metamorphic, or intrusive volcanic rocks.

Soils: Most of this type is dominated by rock outcrops, rock rubble, talus, and rockslide debris with small inclusions of shallow soil (less than 10 inches).

Climate: Cool to cold; humid. MAT 40 to 42° F. MAP 40 to 45 inches.

Vegetation: Vegetation is sparse; the majority of the type is barren. Conifers and herbaceous types are found along canyon bottoms and spring outcrops.

Processes: Mudflows and landslides are larger and occur more frequently in this unit than any other in the basin. Mass gravity movement of rock and soil is accelerated where slopes are disturbed. Snow avalanches are common.

Limiting land use qualities: Slope stability hazards, runoff potential, and revegetation problems.
GEOMORPHIC UNITS

Geomorphic groups are subdivided into geomorphic units, which represent variations of the group theme.

The geomorphic unit is the basic unit of this report. These units have soils, vegetative, and hydrologic characteristics that can be readily interpreted to identify hazards, suitabilities, and productivity potentials that are reliable for broad planning purposes. The 14 geomorphic units identified for this study and included on the geomorphic unit map are:

Glaciated Granitic Uplands
  A  Glaciated granitic uplands

Glaciated Volcanic Flowlands
  B1  Glaciated volcanic flowlands
  B2  Rocky ridge lands

Streamcut Granitic Mountain Slopes
  C1  Strongly dissected lands
  C2  Steep strongly dissected lands
  C3  Moderately dissected weakly glaciated lands
  C4  Subalpine rim lands

Streamcut Volcanic Flowlands
  D1  Toe slope lands
  D2  Headlands

Depositional Lands
  E1  Moraine land undifferentiated
  E2  Outwash, till, and lake deposits
  E3  Alluvial lands

Oversteepened Slopes
  F1  Canyon lands
  F2  Escarpment lands

The problem of how to identify and inventory the natural processes within each unit was solved by differentiating micro-landform and soil variations that indicate natural processes. These smaller areas which subdivide the geomorphic units are soil-landform types as delineated and defined by the Soil Conservation Service (1970).

This section includes a summary description of each geomorphic unit (Table 1) containing the following information:

/ Detailed data on slope, rock type, soil association, soil type, and vegetation type are presented in Tables 2 through 6 in the Appendix. /
Map Symbol

Symbol for the geomorphic unit as delineated on the Geomorphic Units map.

Geomorphic Unit

Gives the name of the unit. Under the name, the unit is divided into major soil associations as defined by the Soil Conservation Service (1970). Parentheses denote symbol used on General Soil Map. The soil associations differ from each other by having contrasting properties or by differing in potentials. For example, one association may be dominated by deep soils but another may have mostly shallow soils; or one association might be steeper than another.

Percent of Unit

Percent of the geomorphic unit represented by that soil association. Miscellaneous soil associations with minor percentages make up the remainder.

Slope

This column gives the range in percent for the slope gradient.

Substratum or Parent Material

Gives the name of the weathered bedrock or transported material on which the soil developed.

Soil Texture

Classification name of soil by texture according to the Soil Survey Manual of the U.S. Department of Agriculture.

Effective Soil Depth

Inches to restrictions such as weathered bedrock or cemented horizons.

Available Water Capacity

Total available water holding capacity within effective soil depth. Available water is used by a plant.

Hydrologic Soil Group

Hydrologic soil groups are used in watershed planning in estimating runoff. Four groups are used based on soil properties that influence runoff. These properties are depth to high water table, intake rate, permeability after prolonged wetting, and depth to a layer of slow permeability. The influence of ground cover is treated independently and is not considered in making hydrologic groupings.

Group A: Soils have high infiltration rates even when thoroughly wetted and consist chiefly of deep, well to excessively drained coarse-textured soils. These soils have a high rate of water transmission and have low runoff potential.

Group B: Soils have moderate infiltration rates even when thoroughly wetted and consist chiefly of moderately deep and deep, moderately well and well drained soils with moderately fine and moderately coarse textures. Soil permeabilities are moderately slow to moderately rapid. These soils have a moderate rate of water transmission and have moderately low runoff potential.

Group C: Soils have slow infiltration rates when thoroughly wetted and consist chiefly of well drained and moderately well drained soils with slowly and very slowly permeable layers. These soils have a slow rate of water transmission and have moderately high runoff potential.
Group D: Soils have very slow infiltration rates when thoroughly wetted and consist chiefly of shallow soils over nearly impervious materials or soils with high permanent water tables. These soils have a very slow rate of water transmission and have high runoff potential.

Relative erosion potential

The relative hazard of loss of soil from the surface by running water. It represents the combined effect on the soil of slope, climate, and erodibility. Soil erodibility is based on the detachability and transportation of soil particles, infiltration, and permeability of the soil. Slope (length and shape) and climate are evaluated and integrated into the erosion potential. In making erosion ratings, it is assumed that the vegetation cover is removed and the soil bare.

High: Unprotected bare soil erodes sufficiently to severely and permanently damage the productive capacity of the soil or yields excessively high volumes of sediment.

Moderate: Sufficiently resistant to erosion to permit limited and temporary exposure of bare soil during development or use.

Slight: No appreciable hazard of surface erosion.
<table>
<thead>
<tr>
<th>Map symbol</th>
<th>Geomorphic unit</th>
<th>Percent of unit</th>
<th>Slope</th>
<th>Substratum or parent material</th>
<th>Soil texture</th>
<th>Effective soil depth</th>
<th>Available water capacity</th>
<th>Hydrologic soil group</th>
<th>Relative erosion potential</th>
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<tbody>
<tr>
<td>A</td>
<td>Glaciated Granitic Uplands</td>
<td>Percent</td>
<td></td>
<td>Granodiorite</td>
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<td>B</td>
<td>Glaciated Volcanic Flowlands</td>
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<td><strong>C 4</strong></td>
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<td>5. Umba-Fugawe (E-5)</td>
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<td>6. Tahoma-Jorge (E-1, E-2)</td>
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<tr>
<td><strong>E 1</strong></td>
<td>Moraine Land Undifferentiated</td>
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<tr>
<td>1. Tallac (C-5)</td>
<td>10 0-9 Glacial outwash with cemented pans</td>
<td>Gravelly coarse sandy loam</td>
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<td>Map symbol Geomorphic unit</td>
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<td>Slope Percent</td>
<td>Substratum or parent material</td>
<td>Soil texture</td>
<td>Effective soil depth Inches</td>
<td>Available water capacity Inches</td>
<td>Hydrologic soil group</td>
<td>Relative erosion potential</td>
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<tr>
<td>2. Meeks (C-5)</td>
<td>9</td>
<td>15-30</td>
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<td>&gt;40</td>
<td>1.3</td>
<td>C</td>
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<tr>
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<td>8</td>
<td>Alluvium</td>
<td></td>
<td>Coarse sand to silt loam</td>
<td>&gt;40</td>
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<td>4. Meeks (C-4)</td>
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<td>&gt;40</td>
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<td>C</td>
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<td>7. Tallac (C-6)</td>
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**E, Outwash, Till and Lake Deposits**

<table>
<thead>
<tr>
<th>E, Outwash, Till and Lake Deposits</th>
<th>Percent of unit</th>
<th>Slope Percent</th>
<th>Substratum or parent material</th>
<th>Soil texture</th>
<th>Effective soil depth Inches</th>
<th>Available water capacity Inches</th>
<th>Hydrologic soil group</th>
<th>Relative erosion potential</th>
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<tr>
<td>1. Elmira-Gefo (B-1)</td>
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<td>Outwash fans or moraines</td>
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<td>A</td>
<td>Slight</td>
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<td>2. Tallac (C-5)</td>
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<td>Outwash with cemented pan</td>
<td>Gravelly coarse sandy loam</td>
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<td>C</td>
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<td>3. Jabu-Ivville (B-3)</td>
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<td>Outwash with cemented pan</td>
<td>Coarse sandy loam</td>
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<tr>
<td>4. Ivville (B-5)</td>
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<td>0-9</td>
<td>Alluvial fans and terraces</td>
<td>Stony sandy loam</td>
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<td>3.6</td>
<td>B</td>
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<tr>
<td>5. Poorly drained soils (A-1)</td>
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<td>Alluvium</td>
<td>Coarse sand to silt loam</td>
<td>&gt;40</td>
<td>3.6</td>
<td>A</td>
<td>Slight</td>
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<tr>
<td>6. Cagvin (D-1)</td>
<td>9</td>
<td>5-15</td>
<td>Weathered granodiorite</td>
<td>Very rocky loamy coarse sand</td>
<td>20-40</td>
<td>1.3</td>
<td>B</td>
<td>Moderate</td>
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<td>7. Cagvin (D-2)</td>
<td>6</td>
<td>15-30</td>
<td>Weathered granodiorite</td>
<td>Very rocky loamy coarse sand</td>
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<td>8. Jabu (B-4)</td>
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<td>Outwash terrace</td>
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**E, Alluvial Lands**

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<th>E, Alluvial Lands</th>
<th>Percent of unit</th>
<th>Slope Percent</th>
<th>Substratum or parent material</th>
<th>Soil texture</th>
<th>Effective soil depth Inches</th>
<th>Available water capacity Inches</th>
<th>Hydrologic soil group</th>
<th>Relative erosion potential</th>
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<tr>
<td>1. Poorly drained soils (A-1)</td>
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<td>Alluvium</td>
<td>Coarse sand to silt loam</td>
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<td>D</td>
<td>Slight</td>
</tr>
<tr>
<td>Map symbol Geomorphic unit</td>
<td>Percent of unit</td>
<td>Slope</td>
<td>Substratum or parent material</td>
<td>Soil texture</td>
<td>Effective soil depth</td>
<td>Available water capacity</td>
<td>Hydrologic soil group</td>
<td>Relative erosion potential</td>
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<tr>
<td>2. Elmira-Gefo (B-1)</td>
<td>14</td>
<td>0-9</td>
<td>Outwash fans or moraines</td>
<td>Gravely loamy coarse sand</td>
<td>&gt;40</td>
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<td>A</td>
<td>Slight</td>
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<tr>
<td>3. Cagwin (D-3)</td>
<td>7</td>
<td>30-70</td>
<td>Weathered granodiorite</td>
<td>Very rocky loamy coarse sand</td>
<td>20-40</td>
<td>1.3</td>
<td>B</td>
<td>High</td>
</tr>
<tr>
<td>4. Jabu-Inville (B-3)</td>
<td>3</td>
<td>0-9</td>
<td>Outwash with cemented pan</td>
<td>Coarse sandy loam</td>
<td>&gt;40</td>
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<td>C</td>
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<tr>
<td><strong>F_1</strong> Canyon Lands</td>
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<td></td>
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<tr>
<td>1. Jorge-Tahoma (E-4)</td>
<td>51</td>
<td>30-50</td>
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<td>Stony sandy loam</td>
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<td>3.6</td>
<td>B</td>
<td>High</td>
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<tr>
<td>2. Volcanic stone (H-2)</td>
<td>23</td>
<td></td>
<td>Volcanic</td>
<td></td>
<td>&lt;20</td>
<td>&lt;1</td>
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<tr>
<td>3. Volcanic Rockland (H-1)</td>
<td>11</td>
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<td>Volcanic</td>
<td></td>
<td>&lt;20</td>
<td>&lt;1</td>
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<td><strong>F_2</strong> Escarpment Lands</td>
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<tr>
<td>1. Granite Rockland (H-1)</td>
<td>70</td>
<td>30-70</td>
<td>Granodiorite</td>
<td></td>
<td>&lt;20</td>
<td>&lt;1</td>
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<td>Slight</td>
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<tr>
<td>2. Cagwin (D-3)</td>
<td>9</td>
<td></td>
<td>Weathered granodiorite</td>
<td>Very rocky loamy coarse sand</td>
<td>20-40</td>
<td>1.3</td>
<td>B</td>
<td>High</td>
</tr>
<tr>
<td>3. Meeks (C-4)</td>
<td>2</td>
<td>30-60</td>
<td>Cemented gravel</td>
<td></td>
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</table>
HAZARD GROUPINGS OF GEOMORPHIC UNITS

The land of the Lake Tahoe basin has been separated into fourteen recurring reconnaissance-level geomorphic units. These fourteen units have been divided into three broad groups that aggregate the units by a combination of land characteristics that identify the hazard potential probability. The major hazards for these lands are floods, landslides, high water tables, fragile soil-plant relations, and easily erodible soils; the whole area has been classified as high-, moderate-, and low-hazard lands, as described below. Some of the characteristics affecting the hazards are the depth to the water table, occurrence of floods, soil texture, slope gradients, climate, and the depth to bedrock. The grouping in this system is based on the magnitude of the hazards that are encountered. The magnitude considers the degree of the hazard relative to other hazards found on all units; the percentage and pattern of the hazardous land within a unit and the versatility of the land to sustain a multitude of activities without conflict to the land.

Group I — High-hazard Lands (122,160 acres)

On a Group I geomorphic unit, one or more of the above-mentioned potentially hazardous situations exist. The land characteristics of a particular geomorphic unit are quite uniform in having the same potential hazard over much of its area. Because of this uniformity, trying to avoid hazardous situations by proper location of a conflicting activity is more difficult on Group I lands than on the lands of the other groups.

These lands are not hazardous for all activities, but are limiting for more activities than Group II or Group III lands. They also conflict most with activities which disturb the soil.

Group I Geomorphic Units are:

A Glaciated granitic uplands
B1 Glaciated volcanic flowlands
B2 Rocky ridge lands
C1 Strongly dissected lands
C2 Steep strongly dissected lands
C3 Moderately dissected weakly glaciated lands
C4 Subalpine rim lands
E1 Alluvial lands
F1 Canyon lands
F2 Escarpment lands

Group II — Moderate-hazard Lands (51,060 acres)

Group II geomorphic units also have hazardous characteristics, but differ from Group I lands by not having these characteristics uniformly distributed over the area. Hazardous areas are a smaller percentage of these lands and tend to be obvious and scattered so that land-disturbing activities have a good chance of avoiding them through careful location. There is a better opportunity for a wider variety of activities on Group II lands than on the Group I lands because of the lower percentage of hazardous areas. High impact activities (e.g., road construction) which are most disturbing to the landscape can be designed to occupy the more stable portions of these lands.

Group II geomorphic units are:

D1 Headlands
E Moraine land undifferentiated

Group III — Low-hazard Lands (29,200 acres)

Group III is the least fragile of the geomorphic units. Hazardous areas are minor; so there is better chance to avoid them. These lands can support the widest range of activities, but care must be taken to avoid abusing them. Even on these lands, project sites need to be checked for hazards by a geologist.

Group III geomorphic units are:

D2 Toe slope lands
E2 Outwash, till, and lake deposits
TAHOE REGIONAL PLANNING AGENCY

MEMORANDUM

DATE: June 3, 1981

TO: The Advisory Planning Commission

FROM: The Staff

SUBJECT: Proposed Ordinance for Implementing Article VI(c) of the Compact

At the May, 1981 Governing Body meeting, the Agency staff presented the draft outline of the subject ordinance that the APC had reviewed in May; the APC’s comments were included in the presentation. The Governing Body has directed staff to prepare the ordinance with some modifications, and staff will discuss these modifications with the APC at the Wednesday meeting. If the ordinance has been drafted by legal counsel, copies will be made available.
TAHOE REGIONAL PLANNING AGENCY

MEMORANDUM

DATE: June 3, 1981

TO: The Advisory Planning Commission

FROM: The Staff

SUBJECT: Status Report on Ordinance to Implement the Lake Tahoe Basin Water Quality Management (208) Plan

At the May meeting, the Advisory Planning Commission reconsidered its previous recommendations on the Lake Tahoe Basin Water Quality Management Plan. This included a recommendation from the APC to adopt the Modified Case-by-Case Review Alternative as presented to the APC.

The Governing Board accepted the APC's recommendations with additional provisions to satisfy several concerns of the Governing Board. These modifications include incorporation of the California Water Resources Control Board's 208 Plan on an interim basis for the California portion of the Basin, establishment of a May 1982 cutoff date for acceptance of applications for case-by-case review and establishing the burden of proof for the applicant to positively demonstrate the effectiveness of the proposal on a case-by-case basis.

Enclosed is a preliminary copy of the implementing ordinance for the 208 Plan as adopted by the Board. The ordinance introduced for first reading incorporates the changes itemized above as well as additional findings and other corrections. Also enclosed is a copy of the May Addendum to the EIS which has been similarly revised as a result of the Board's action.
TAHOE REGIONAL PLANNING AGENCY

ORDINANCE NO. 81-

AN ORDINANCE AMENDING ORDINANCE NO. 79-10 OF THE TAHOE REGIONAL PLANNING AGENCY IMPLEMENTING THE LAKE TAHOE REGION WATER QUALITY MANAGEMENT PLAN; IMPLEMENTING AMENDMENTS TO SAID WATER QUALITY MANAGEMENT PLAN; IMPLEMENTING AMENDMENTS TO SAID WATER QUALITY MANAGEMENT PLAN; REGULATING AND PROHIBITING DEVELOPMENT OF HIGH HAZARD LANDS, PENDING ADOPTION OF A REVISED REGIONAL PLAN UNDER THE TAHOE REGIONAL PLANNING COMPACT, AS AMENDED; PROHIBITING DEVELOPMENT OF STREAM ENVIRONMENT ZONE LANDS, PENDING ADOPTION OF SAID REVISED PLAN; PRESCRIBING MITIGATION MEASURES AND FEES; PROHIBITING NEW SUBDIVISIONS, PENDING ADOPTION OF SAID REVISED PLAN; PRESCRIBING A REGULATORY PROGRAM FOR ON-SITE RUNOFF, A PLAN FOR CONSTRUCTION OF REMEDIAL MEASURES AND IMPLEMENTATION OF BEST MANAGEMENT PRACTICES ON FOREST LANDS; PRESCRIBING PENALTIES; AND PROVIDING FOR OTHER MATTERS PROPERLY RELATING THERETO.

The Governing Body of the Tahoe Regional Planning Agency does ordain as follows:

Section 1.00 Findings

1.10 Section 208 of the Federal Clean Water Act requires the preparation of regional water quality control plans ("208 plans"). In 1974 the States of California and Nevada jointly designated the Tahoe Regional Planning Agency as the agency responsible for preparation of a 208 plan for the Lake Tahoe Region, which plan must be certified by said states prior to submission to the United States Environmental Protection Agency for final approval. In 1978 the Tahoe Regional Planning Agency approved the "Lake Tahoe Basin Water Quality Management Plan", which plan, while assessing water quality problems in the Lake Tahoe Region, eliminated several major control measures proposed in the draft of said plan and lacked commitment for enforcement of the controls incorporated therein.

1.20 The State of Nevada conditionally certified the 208 plan approved by the Tahoe Regional Planning Agency, but the California State Water Resources Control Board rejected it for failure to include the control actions and enforcement commitments considered by said board to be necessary to protect Lake Tahoe. Said board further revoked the Tahoe Regional Planning Agency's designation as the 208 planning agency for the California portion of the Lake Tahoe Region, and in October 1980 prepared its own 208 plan for said
portion. Said board, however, recognized the desirability of a bi-state 208 plan, recommending that the Tahoe Regional Planning Agency adopt certain changes in its 208 plan, and indicating that adoption thereof would result in certification by the State of California of said agency's plan.

1.30 On December 19, 1980 the Tahoe Regional Planning Compact was amended requiring, among other things, that the Tahoe Regional Planning Agency adopt environmental threshold carrying capacities and, based thereon, a revised regional plan on or before June 19, 1983. The amendments to said compact also provide limitations upon development in the Lake Tahoe Region that might otherwise absorb the capability of the region for further development or direct development out of harmony with the revised regional plan. While the Section 208 planning process commenced prior to and is separate and independent from the amendments to said compact, said process, including the provisions of this ordinance, is in accordance with the letter and spirit of said amendments, particularly with respect to the need, pending adoption of a revised regional plan, to restrict or prohibit development upon environmentally sensitive lands as provided herein.

1.40 As required by law, the Governing Body of the Tahoe Regional Planning Agency, prior to the adoption of this ordinance and the amendments to said agency's Lake Tahoe Basin Water Quality Management Plan implemented hereby, conducted duly noticed public hearings, at which hearings considerable oral testimony and documentary evidence were received and considered by the Governing Body. Evidence in the record of said hearings, which evidence is hereby determined substantial, showed that serious degradation of the quality of the water of Lake Tahoe is occurring, which degradation, absent at least the land use controls set forth in this ordinance, may irreversibly damage Lake Tahoe and the Lake Tahoe Region.

1.50 This ordinance is necessary and desirable to promote, and is reasonably related to, the public health, safety and general welfare of the Lake Tahoe Region, complies in all respects, procedural and substantive, with the Tahoe Regional Planning Compact and the regional plan, including the water quality management plan as amended to date, ordinances, rules, regulations and policies of the Tahoe Regional Planning Agency, and is necessary to effectuate and implement the same. This ordinance and the amendments to said agency's Lake Tahoe Basin Water Quality Management Plan implemented hereby are in furtherance of a bi-state approach to Section 208 planning in the Lake Tahoe Region, as opposed to such planning upon an otherwise undesirable single-state basis, and are in compliance with the Federal Clean Water Act.

1.60 The amendments to the water quality management plan and the provisions of this ordinance implementing same were the subject of an environmental impact statement, which statement was prepared, circulated, certified and otherwise processed, reviewed and approved by the Tahoe Regional Planning Agency in accordance with the substantive and procedural provisions of Article VII of the
Section 2.00 Amendment Regulating Development on High-Erosion and High-Runoff Hazard Lands.

Section 12.00 of Ordinance No. 79-10 of the Tahoe Regional Planning Agency is hereby amended to read as follows:

Section 12.00 Regulation of Development on High-Erosion and High-Runoff Hazard Lands.

12.10 Classification of Areas for Review of Residential Development.

The regulation or prohibition under this ordinance of residential development upon lots or parcels lawfully of record as of December 19, 1980 and within land capability districts la, 1c, 2 and 3 shall be pursuant to classification of the development characteristics of the subdivision or area in which the lot or parcel is situated. The Governing Body or executive officer of the Agency shall appoint a planning team consisting of a team leader, hydrologist, soil scientist, engineer and architect, which team shall evaluate the development characteristics of the pertinent subdivision or area for classification for purposes of this ordinance as "adequate", "potentially adequate" or "in need of further consideration". In the case of a subdivision, such evaluation shall be pursuant to consultation with a representative of the subdivision.

12.11 Standards for Classification.

Classification by the planning team of subdivisions and areas for purposes of this ordinance shall be pursuant to the following standards:

(a) "Adequate" - proper placement of roads and drainage structures in relationship to natural features; proper maintenance of all facilities, including, without limitation, those relating to drainage and erosion control; stable cuts and fills; few downstream impacts or adverse environmental effects as a result of land coverage within the subdivision or area; stable internal and downstream drainages and waterways; and absence of difficulties in access to the subdivision or area as a result of placement of building sites in relationship to roadways.

(b) "Potentially adequate" - proper placement of roads in relationship to natural features; proper placement generally of drainage structures, with the need of some additional drainage structures; proper stabilization generally of cuts and fills, with the need of some
additional stabilization thereof; construction of improvements in the subdivision or area may have caused minor downstream impacts or adverse environmental effects upon drainages and waterways; and land coverage is generally below that permitted by the Agency's Land Use Ordinance.

(c) "In need of further consideration" - poor placement of roads and drainage structures in relationship to natural features; unstable cuts and fills, which are incapable of satisfactory rehabilitation; unstable internal and downstream drainages and waterways; land coverage generally exceeds that permitted by the Agency's land use ordinance; and the lack in individual cases of substantial construction of roads, utilities or drainage structures.

12.12 Application of Standards.

(a) The nature and characteristics of the subject regulated by this ordinance dictate that the standards set forth in subsection 12.11 be general. The duty of the planning team in applying said standards to a particular subdivision or area shall be to determine the adequacy, potential adequacy or clear inadequacy of the subdivision or area, including all improvements therein, to minimize the adverse effects of further development therein upon the quality of water in the region.

(b) In determining and classifying the "area" for purposes of residential development upon a parcel, the planning team pursuant to subsection 12.11 shall evaluate that area of land situated in the vicinity and in the watershed of the parcel, to which area the parcel reasonably relates for purposes of determining the effect on the quality of water in the region of development on the parcel.

(c) The entire subdivision or area, as the case may be, shall be evaluated and classified by the planning team pursuant to section 12.11, notwithstanding that a part thereof is within land capability districts other than 1a, 1c, 2 and 3.

12.13 Appeal of Classification.

Any aggrieved person may appeal the classification by the planning team of a subdivision or area by lodging a written notice of appeal with the Agency. Such appeal shall be heard by the Governing Body, which may affirm, reverse or modify the determination by the planning team. The decision by the Governing Body on any such appeal shall be final.
12.20 Review of Permitted Development.

12.21 Permit Required.

Except as otherwise provided by this ordinance, no person shall perform any construction, work, use or activity, including without limitation, grading, clearing, removal of vegetation, filling or creation of land coverage, upon land within land capability districts 1a, 1c, 2 and 3 without first obtaining a permit from the Agency. The application for such permit shall be reviewed and approved as a "project" pursuant to the Compact and the Rules and Regulations of Practice and Procedure of the Agency. Such application shall not be accepted or reviewed, and no permit pursuant thereto issued, by the Agency unless the construction, work, use or activity proposed is for a single-family house to be constructed on a lot located within a subdivision classified pursuant to section 12.10 as adequate or potentially adequate or on a parcel within an area so classified.

12.22 Consideration of Permit Application.

The application for a permit pursuant to subsection 12.21 shall be reviewed with respect to all potential effects upon water quality of the construction of a single-family house on the pertinent lot or parcel. Such review shall include, but need not be limited to, the factors of vegetative cover, proximity of the project to a stream or wet land, runoff potential and land stability, as set forth in the document entitled "1981 TRPA Case-by-Case Lot Review Criteria," as the same may be amended from time-to-time by resolution of the Governing Body. In addition to findings otherwise required by Article VI(b) of the Compact, such application shall not be approved unless it is found by the Agency that the construction, work, use or activity proposed thereby will not adversely affect the quality of water within the region, and that it is in accordance with the Handbook of Best Management Practices, the Plan and all other applicable plans, ordinance rules, regulations and policies of the Agency. The following additional findings shall be made with respect to any project proposing land coverage in excess of that permitted by the pertinent land capability district:

(a) The project may individually and cumulatively contribute to continued erosion and nutrient increases causing degradation of Lake Tahoe; and

(b) Mitigation measures have been incorporated into the project, including application of construction or contribution toward construction of offsite remedial erosion control measures which will offset any
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(a) The project may individually and cumulatively contribute to continued erosion and nutrient increases causing degradation of Lake Tahoe; and

(b) Mitigation measures have been incorporated into the project, including application of construction or contribution toward construction of offsite remedial erosion control measures which will offset any
anticipated adverse effects. These measures constitute changes or alterations required in or incorporated into such project which avoid or reduce the significant adverse environmental effects to a less than significant level pursuant to Article VII of the Compact.

12.23 Permitted Land Coverage.

No permit issued pursuant to subsection 12.21 shall authorize and no person shall create, or perform any construction, use or activity for the purpose of creation of, land coverage in excess of that permitted pursuant to section 9.24 of the Agency's Land Use Ordinance (Ordinance No. 4) or twenty percent (20%) of the area of the pertinent lot or parcel, whichever is less. For this purpose, "lot" within the meaning of said section 9.24 shall include "parcel" as used in this ordinance, and land coverage shall be calculated in accordance with Sections 8.22, 8.23 and 8.24 of said Land Use Ordinance.

12.30 Residential Remodeling, Additions and Reconstruction.

12.31 Application Procedure.

Applications for remodeling and reconstruction of, and additions to, single-family houses existing on May 27, 1981 on land within land capability districts 1a, 1c, 2 and 3, which involve grading, clearing, removal of vegetation or filling and result in remaining land coverage in excess of that permitted by the pertinent land capability district, shall be processed pursuant to section 9.21 of the Agency's Land Use Ordinance, to the extent such section is applicable. If section 9.21 is not applicable, or cannot be feasibly applied to the application, and the nonconforming land coverage pertaining to such application cannot be eliminated by the consolidation of the subject lot or parcel with another lot or parcel, such application shall be processed, reviewed and approved pursuant to sections 12.10 and 12.20.

12.32 Mitigation.

Approval by the Agency of a permit for remodeling or reconstruction of, or an addition to, a single-family house shall be conditioned upon mitigation to offset any increase in erosion as a result of the creation of new land coverage, which mitigation shall be based upon the square-footage of new land coverage in accordance with section 12.50.


Approval by the Agency of a permit for the remodeling or reconstruction of, or an addition to, a single family house shall be conditioned upon application of best management
practices to the entire lot or parcel upon which such house is situated.


12.41 Prohibition.

Except as otherwise provided in this subsection, the Agency shall accept and review applications, and issue permits, for new commercial construction, uses and activities within the region pursuant to the Compact and otherwise applicable ordinances of the Agency. No such application shall be accepted or reviewed, and no permit thereunder issued, by the Agency unless the construction, use or activity proposes land coverage in accordance with that permitted by the pertinent land capability district. For purposes of this subsection, the term "new commercial construction, uses and activities" includes commercial remodeling, additions and reconstruction involving creation of new land coverage.

12.42 Exceptions to Prohibition.

Land coverage in excess of that permitted by the pertinent land capability district, and otherwise authorized by the Agency's Land Use Ordinance, may be approved by the Agency for commercial construction, uses or activities occurring within land capability districts 4, 5, 6 and 7, provided such approval is pursuant to:

(a) Replacement of nonconforming land coverage pursuant to section 2.21 of said Land Use Ordinance;

(b) The consolidation of the lot or parcel upon which the construction, use or activity is to occur with another lot or parcel, upon which there is to be created no additional land coverage, such consolidation resulting in land coverage in accordance with the pertinent land capability district; or

(c) The transfer, by an appropriate recorded document prescribed by the Agency, of permitted land coverage from a lot or parcel within the same watershed as the lot or parcel upon which the construction, use or activity is to occur, such transfer resulting in land coverage in accordance with the land capability district or districts applicable to the transferor and transferee lots or parcels as a whole.

12.43 Application of Provisions.

"Commercial" for purposes of this section refers to construction, uses or activities lawfully permitted within the
General Commercial and Tourist Commercial Districts as set forth in the Regional Plan as well as any other commercial use permitted within any other district set forth therein. Calculation of land coverage pursuant to this section shall be in accordance with sections 8.22, 8.23 and 8.24 of the Agency’s Land Use Ordinance.

12.50 Mitigation Measures.

12.51 Required Measures.

The approval or issuance by the Agency of any permit or other authorization for any construction, use or activity, whether pursuant to this ordinance or any other ordinance of the Agency, shall be expressly conditioned upon the construction, implementation or use, as the case may be, of remedial erosion control measures determined by the Agency as adequate to offset or compensate for any increased erosion caused by such construction, use or activity. Such measures shall be in addition to any best management practices otherwise required as a condition upon such approval or issuance.

12.52 Mitigation Fee.

In the event the applicant is unable to demonstrate his or her ability to implement the remedial erosion control measures determined necessary by the Agency pursuant to subsection 12.51, the applicant shall pay to the Agency a mitigation fee based upon an assessment of one hundred fifty percent (150%) of the amount of mitigation necessary to offset or compensate for any such increased erosion. Such fee shall be set pursuant to resolution of the Governing Body, as amended from time-to-time, which resolution shall relate the amount of the fee to the nature and extent of the mitigation required. The Agency shall deposit proceeds of the mitigation fee into a trust fund, to be known as the Water Quality Mitigation Fund, which fund shall be distributed by the Agency to other appropriate governmental agencies for expenditure upon the most cost-effective remedial control measures set forth in the Plan. The mitigation fee established by the Agency shall be based upon the following factors:

(a) The estimated increased erosion taking place after development of the site, assuming application of best management practices, which estimate shall relate to the number of square feet of land coverage to be created and the pertinent land capability district;

(b) The incremental cost of correction of existing erosion, based on reduction of an estimated one hundred fifty percent (150%) of the amount of erosion actually to be reduced; and
(c) The least cost-effective remedial control strategies set forth in the Plan.

12.60 Prohibition of Other Uses.

Except as otherwise provided by this ordinance, and subject to the exceptions set forth in this section, no person shall perform any grading, clearing, removal of vegetation, filling or creation of land coverage upon land within land capability districts 1a, 1c, 2 and 3. Said prohibition and the provisions of sections 12.10, 12.20, 12.30 and 12.40 do not apply to:

12.61 Approved Subdivisions.

Land within subdivisions approved by the Agency after February 10, 1972 in accordance with the Agency's land capability district regulations, without reliance upon or reference to Sections 7.83, 8.25(2), 8.28, 8.34 or 9.23 of the Agency's Land Use Ordinance, as amended or renumbered from time-to-time, and it is determined in writing by the Agency that erosion controls, drainage devices and other facilities for the protection of water quality, required by the Agency at the time of approval, have been properly installed and maintained.

12.62 Public Works.

Construction of a public work by a public entity, provided the Agency finds that such work is necessary for implementation of the Nonattainment Air Quality Plan or the transportation element of the Regional Plan, or is necessary for public recreation or the protection of the public health, safety or general welfare, and all other feasible alternatives not involving construction within said districts have been exhausted.

12.63 Man-Modified Areas.

Land within such districts, which the Agency finds has been so substantially modified as to alter the land capability, soil characteristics, hydrology, geomorphic characteristics and vegetation prior to February 10, 1972, as determined pursuant to Section 8.29 of the Land Use Ordinance.

12.64 Approved Erosion Control Work.

Erosion control work approved by the Agency.

12.70 Administrative Challenge to Land Capability District Classification.

Any interested person may challenge the land capability district classification of land pursuant to section 8.25(1) of the
Agency's Land Use Ordinance, whereupon an appropriate classification may be determined as provided in such section.

Section 3.00 Amendment Prohibiting Development In Stream Environment Zone.

Section 13.00 of Ordinance No. 79-10 of the Tahoe Regional Planning Agency is hereby amended to read as follows:

Section 13.00 Prohibition of Development in Stream Environment Zone.

13.10 Prohibition.

Notwithstanding any other provision of this ordinance or of any other ordinance of the Agency, no person shall perform any grading, clearing, removal of vegetation, filling or creation of land coverage, within or upon a stream environment zone ("SEZ"), as described or depicted upon maps contained in the Plan.

13.20 Development on Lots or Parcels Containing Stream Environment Zones.

Notwithstanding any other provision of this ordinance or of any other ordinance of the Agency, no person shall perform any construction, work, use or activity upon a lot or parcel containing an SEZ without first obtaining a permit from the Agency, the application for which permit shall be reviewed and approved as a "project" pursuant to the Compact and the Rules and Regulations of Practice and Procedure of the Agency. Such application shall not be approved unless it is found by the Agency that it proposes no grading, clearing, removal of vegetation, filling or creation of land coverage within the SEZ, and that it is in accordance with the Handbook of Best Management Practices, the Plan and all other applicable plans, ordinances, rules, regulations and policies of the Agency.

13.30 Exception For Certain Public Projects and Man-Modified Areas.

The prohibition upon construction, work, use or activity within or upon an SEZ does not apply to:

13.31 Public Works.

Construction of a public work by a public entity, provided the Agency finds that such work is necessary for implementation of the Nonattainment Air Quality Plan or the transportation element of the Regional Plan, or is necessary for public recreation or the protection of the public health, safety or general welfare, and all other feasible alternatives not involving construction within the SEZ have been exhausted.
13.32 Man-Modified Areas.

SEZ lands, which the Agency finds have been so substantially modified as to alter the land capability, soil characteristics, hydrology, geomorphic characteristics and vegetation prior to February 10, 1972, as determined pursuant to Section 8.29 of the Land Use Ordinance.

13.33 Approved Erosion Control Work.

Erosion control work approved by the Agency.

13.40 Administrative Challenge to Stream Environment Zone Boundary.

Any interested person may challenge the accuracy of the boundary of an SEZ pursuant to section 10.30, whereupon an appropriate boundary may be fixed as provided in such section.

Section 4.00 Amendment Prohibiting Land Coverage In Excess of Land Capability System for Districts 4 through 7.

Ordinance No. 79-10 of the Tahoe Regional Planning Agency is hereby amended by adding new Section 14.00, to read as follows:

Section 14.00 Prohibition of Land Coverage In Excess of Land Capability System for Districts 4 through 7.

14.10 Prohibition

Notwithstanding any other provision of this ordinance or of any other ordinance of the Agency, including without limitation, the provisions of the Agency's Land Use Ordinance authorizing land coverage in excess of that permitted by the pertinent land capability district, no person shall create, or perform any construction, work, use or activity for the purpose of creation of, land coverage in excess of that permitted by land capability districts 4, 5, 6 and 7. Land coverage shall be calculated in accordance with sections 8.22, 8.23 and 8.24 of the Agency's Land Use Ordinance, provided that land coverage shall be calculated only with reference to the land owned or controlled by the applicant, thus excluding improvements not located upon such land, such as public streets and other off-site public facilities. The prohibition of this section applies to construction, work, use or other activities not otherwise prohibited by this ordinance or any other ordinance of the Agency.

14.20 Exceptions to Prohibition.

The prohibition of this section does not apply to:  

-11-
14.21 Replacement.

Replacement of existing nonconforming land coverage pursuant to the Agency's Land Use Ordinance.

14.22 Approved Subdivisions.

The creation of land coverage upon a lot located within a subdivision approved by the Agency after February 10, 1972 in accordance with the Agency's land capability district regulations, without reliance upon or reference to sections 7.83, 8.25(2), 8.28, 8.34 or 9.23 of the Agency's Land Use Ordinance, as amended or renumbered from time-to-time, and it is determined in writing by the Agency that erosion controls, drainage devices and other facilities for the protection of water quality, required by the Agency at the time of approval, have been properly installed and maintained.

14.23 Net Reduction of Coverage.

Creation of land coverage upon a lot or parcel within a subdivision or planned unit development, the otherwise permitted nonconforming land coverage for which is reduced to that authorized by the land capability district within which the subdivision or development is located, or, if there is more than one such district, such coverage is reduced to that complying with the total coverage authorized by such districts.

14.24 Public Works.

Creation of land coverage for a public work by a public entity, provided the Agency finds that such work is necessary for implementation of the Nonattainment Air Quality Plan or the transportation element of the Regional Plan, or is necessary for public recreation or the protection of the public health, safety or general welfare, and all other feasible alternatives not involving creation of land coverage in excess of that permitted by the pertinent land capability district have been exhausted.

14.25 Approved Erosion Control Work.

Erosion control work approved by the Agency.

14.30 Administrative Challenge to Land Capability District Classification.

Any interested person may challenge the land capability district classification of land pursuant to section 8.25(1) of the Agency's Land Use Ordinance, whereupon an appropriate classification may be determined as provided in such section.
Section 5.00 Amendment Providing Remedial Erosion Control and Drainage Projects.

Ordinance No. 79-10 of the Tahoe Regional Planning Agency is hereby amended by adding new section 15.00, to read as follows:

Section 15.00 Remedial Erosion Control and Drainage Projects.

The Agency shall oversee and, to the extent legally permissible, cause to be implemented, a 20-year phased implementation schedule for remedial erosion control and drainage projects contained in the Plan in accordance with the provisions of "Alternative Action 2 - remedial measures constructed on a phased 20-year implementation schedule", as set forth in section III.F.2. in the Plan. The Agency shall evaluate the need for a mandatory regulatory program, pursuant to ordinance of the Agency, subsequent to one (1) year after the commencement of efforts to gain commitments to such program upon a voluntary basis.

Section 6.00 Amendment Prohibiting Subdivisions.

Ordinance No. 79-10 of the Tahoe Regional Planning Agency is hereby amended by adding new section 16.00, to read as follows:

Section 16.00 Prohibition of Subdivisions.

16.10 Prohibition.

No subdivision shall be approved, and no person shall perform any construction, work, use or activity in connection with off-site improvements for a subdivision, including without limitation, roads and utilities. This section shall not apply to construction of off-site improvements for a subdivision approved by the Agency, which construction is not otherwise limited or prohibited by this ordinance. The meaning of "subdivision" for purposes of this section is the same as the meaning of that term for purposes of Article VI(c)(1) of the Compact.

16.20 Exceptions to Prohibition.

The prohibition of this section does not apply to the subdivision of land owned by a general improvement district, which existed and owned the land before December 19, 1980, provided such subdivision is necessary to avoid insolvency of the district, and it is demonstrated by the applicant that water quality objectives will be attained through appropriate mitigation measures or pollution offsets.

Section 7.00 Amendment Providing Best Management Practices On Forest Lands.

Ordinance No. 79-10 of the Tahoe Regional Planning Agency is hereby
amended by adding new section 17.00, to read as follows:

Section 17.00 Best Management Practices On Forest Lands.

The Handbook of Best Management Practices shall be implemented for correction of water quality problems on forest lands without issuance by the Agency of a development or use permit. In addition to otherwise applicable requirements of Handbook of Best Management Practices (Volume II), the following practices shall be used for the following uses or activities:

17.10

Best Management Practice XII A (Volume II) shall be used as a guideline for livestock confinement activities.

17.20

Best Management Practice XII B (Volume II) shall be used as a guideline for ski area use and development.

17.30

Best Management Practice XII C (Volume II) shall be used as a guideline for operation of golf courses, including but not limited to the limitations upon application of fertilizer and prohibition of fast-release fertilizer.

17.40

Best Management Practice XII D (Volume II) shall be used as a guideline for logging operations. Except as otherwise provided in this section, clear-cut logging operations are prohibited timber harvesting activities. Such prohibition of clear-cut logging operations shall not apply to clear-cuts up to five (5) acres in size for purposes of appropriate forest management practices, consisting of management of timber resources, wildlife habitats, insect and disease control and the long-range visual quality of the Region. Selective harvest techniques shall be utilized in logging operations, except for removal of diseased trees or trees infected by insects, which removal is necessary to maintain the health and diversity of the timber stand.

17.50

Best Management Practice XII E (Volume II) shall be used as a guideline for off-road vehicular use. The Agency shall designate areas closed and restricted to off-road vehicular use in coordination with the U. S. Forest Service.
Revegetation, resurfacing or other measures to control erosion from dirt roads on forest lands shall be consistent with the recommendations of the Handbook of Best Management Practices.

Section 8.00 Amendment Specifying Relationship to Compact and Other Agency Ordinances.

Ordinance No. 79-10 of the Tahoe Regional Planning Agency is hereby amended by adding new Section 18.00, to read as follows:

Section 18.00 Relationship to Compact and other Agency Ordinances.

18.10 Compact.

The provisions of this ordinance are subject to the Compact, including without limitation, the provisions of Article VI(c) thereof relating to the allocation of building permits for residential units and commercial square-footage.

18.20 Other Ordinances.

In the event a provision of this ordinance conflicts with a provision of any other ordinance of the Agency, the provision of this ordinance, to the extent of such conflict, prevails. A residential or commercial construction, use or activity, otherwise permitted by this ordinance, shall also comply with the Regional Plan and all other applicable Agency ordinances.

Section 9.00 Amendment Providing Penalties for Violation.

Ordinance No. 79-10 of the Tahoe Regional Planning Agency is hereby amended by adding new Section 19.00, to read as follows:

Section 19.00 Penalties for Violation.

Any person who violates any provision of this ordinance or of any condition of approval imposed by the Agency is subject to civil penalties in accordance with Article VI(I) of the Compact.

Section 10.00 Amendment Specifying Applicability of Regulations.

Ordinance No. 79-10 of the Tahoe Regional Planning Agency is hereby amended by adding new Section 20.00, to read as follows:

Section 20.00 Applicability of Provisions of Ordinance.

20.10 Nevada.

The provisions of section 12.00 of this ordinance, excluding sections 12.50, 12.51 and 12.52, inclusive, apply exclusively to the portion of the Region located within the State of Nevada.
All other provisions of this ordinance, including without limitation said sections 12.50, 12.51 and 12.52 apply to the entire Region.

20.20 California.

With respect to the portion of the Region located within the State of California, in addition to applicability and enforcement by the Agency of the provisions of this ordinance applicable to the entire Region, the Agency shall review "projects", as that term is defined in Article VII(h) of the Compact, in accordance with all provisions of the Compact, including without limitation, the requirement under Article VI(b) thereof that no project may be approved unless it is found, pursuant to written findings on the basis of substantial evidence in the record, that it is consistent with the Regional Plan or the Agency then in effect and with applicable plans, ordinances, regulations and standards of federal and state agencies relating to the protection, maintenance and enhancement of environmental quality in the Region.

20.30 Exemptions.

The provisions of this ordinance do not apply to the construction of a new single-family house or the reconstruction or remodeling of, or the construction of an addition to, a single-family house lawfully in existence on December 19, 1980, if the following conditions are met:

20.31

The single-family house is within, or is to be built within the portion of the Region located within the State of California, and the applicant for permits pertaining thereto received either of the following:

(a) An approval or "release" for final construction drawings by the California Tahoe Regional Planning Agency, receipt of which occurred prior to December 19, 1980; or

(b) A 1980 sewer allocation, receipt of which occurred prior to October 29, 1980.

20.32

The single family house is within, or is to be built within, the portion of the Region located within the State of Nevada, and the applicant for permits pertaining thereto received both of the following:

(a) Sewer and water permits, receipt of which occurred prior to December 19, 1980; and

(b) An allocation for a building permit within the limitations imposed for calendar year 1980 pursuant to Article VI(c) of the Compact.
Section 11.00 Amendment Providing Expiration of Provisions.

Ordinance No. 79-10 of the Tahoe Regional Planning Agency is hereby amended by adding new Section 21.00, to read as follows:

Section 21.00 Expiration of Provisions.

The provisions of section 12.00, excluding sections 12.50, 12.51, and 12.52, and the provisions of sections 13.00, 14.00 and 16.00 of this ordinance shall expire upon the adoption by the Agency of amendments to the Regional Plan pursuant to Article V(c) of the Compact or June 19, 1983, whichever occurs first.

Section 12.00 Amendment of Existing Definitions.

Section 3.00 of Ordinance No. 79-10 of the Tahoe Regional Planning Agency is hereby amended by causing the following definitions therein to read in the following manner, with the other definitions set forth in said Section 3.00, not modified by this ordinance, to remain as presently set forth in said section:

Plan - The Lake Tahoe Basin Water Quality Management Plan as described in Ordinance No. 79-3, as amended by Ordinance No. 81-

Region - All that area described in Article II(a) of the Tahoe Regional Planning Compact, as amended.

Section 13.00 Amendment Adding Definitions.

Section 3.00 of Ordinance No. 79-10 of the Tahoe Regional Planning Agency is hereby amended by adding the following definitions thereto:

Compact - The Tahoe Regional Planning Compact, as amended.

Land Capability District - One of the seven (7) land capability districts as depicted or described in the Regional Plan of the Tahoe Regional Planning Agency and the Land Capability Map, with accompanying text, contained in said Regional Plan.

Section - Unless otherwise specified, a section set forth in this ordinance, including all subsections; e.g. Section 12.00 includes all subsections therein such as 12.10, 12.11, 12.20, 12.21 et seq.

The definitions of the following terms contained in Section 3.00 of the Lake Use Ordinance of the Tahoe Regional Planning Agency are incorporated herein by this reference as though fully set forth: Governing Body; Land Coverage; Lot; Parcel; Person; Regional Plan; Single-family dwelling unit; and single-family house.

The definitions of the following terms contained in Section 3.00 of the Grading Ordinance of the Tahoe Regional Planning Agency are incorporated herein by this reference as though fully set forth: Clearing of Vegetation; and Fill.
Section 14.00  Technical Amendments to Sections 4.10, 6.10, 10.20 and 10.40.

Sections 4.10, 6.10, 10.20 and 10.40 of Ordinance No. 79-10 of the Tahoe Regional Planning Agency are hereby amended to read as follows, respectively:

4.10 Adoption of Plan

By Ordinance No. 79-3, as amended by Ordinance No. 81— , the Agency adopted the Plan as a portion of the land use element of the Regional Plan. This ordinance implements the Plan.

6.10 Findings

The Governing Body, in accordance with the provisions and purposes of Article V and Article VI of the Compact, and in accordance with the Federal Clean Water Act hereby finds it necessary to adopt water quality standards and objectives for the Region, as well as the limitations and prohibitions upon development set forth in this ordinance.

10.20 Development on SEZ

Except as otherwise prohibited or limited by this ordinance, development on SEZ land shall comply with the appropriate provisions of the Handbook of Best Management Practices.

10.40 Development on Other Land.

Except as otherwise prohibited or limited by this ordinance, development on lands within the Region shall comply with the appropriate provisions of the Handbook of Best Management Practices.

Section 15.00  Interpretation and Severability.

The provisions of this ordinance shall be liberally construed to effect their purposes. If any section, clause, provision or portion of this ordinance is declared unconstitutional or invalid by a court of competent jurisdiction, the remainder of this ordinance shall not be affected thereby. For this purpose, the provisions of this ordinance are hereby declared severable.

Section 16.00  Effective Date.

This ordinance shall be effective sixty (60) days after the date of its adoption.

FIRST READING:

SECOND READING:

PASSED AND ADOPTED by the Governing Body of the Tahoe Regional Planning
Agency at a regular meeting held ________________________ by the
following vote:

Ayes:

Nayes:

Abstentions:

Absent:

Roland D. Westergard, Chairman
MEMORANDUM

DATE: June 3, 1981

TO: The Advisory Planning Commission

FROM: The Staff

SUBJECT: Fee Schedule for Water Quality Mitigation

Background

In recommending that the Governing Board adopt the modified case-by-case review alternative, the APC was unable to make specific recommendations regarding the adoption of a fee schedule at its regular meeting due to a lack of information. The staff was requested to develop a number of alternative fee schedules for water quality mitigation and present those alternatives at a continued meeting of the APC the following week.

Members of the APC reviewed four alternatives (Tables 2-1 through 2-4, attached) presented by the staff. Although there was no quorum of APC members present, there was a consensus on the general principles regarding projection of costs and the requirement for a safety factor. This resulted in the preparation of two additional alternatives (Table 2-5 and Table 2-6, attached) which most closely approximate the suggestions of the APC members present at the continued meeting.

Analysis

There are two issues which must be addressed in establishing a mitigation fee program for water quality. First, since specific additional erosion control projects beyond those contained in the 208 Plan adopted in 1977 have not been identified, assumptions regarding the costs of these additional erosion controls must be made. Second, since there is an uncertainty regarding the ability to offset all water quality impacts from development on high hazard lands, a safety factor must be incorporated into the fees to be collected.

I. Increased Erosion

II. Cost of Erosion Controls

$ 17,000/METRIC TON - High 57% Avg.

$ 8800/METRIC TON - High 59% Avg.

III. Affs. Describe

IV. Rec. → Alt. 6
**Alternative 1**

150% offset based on costs of least cost effective measures identified in existing 208 Plan.

**A. Assumptions**

1. Based on 150% offset of cost of erosion control for amount equivalent to that generated by development.
2. Unit costs for erosion control to be implemented by remedial erosion projects is based on least cost effective control projects.

**B. Computations**

1. Unit erosion control costs
   a. 1979 cost of last 5% of erosion control projects
      \[ = \$14,908 / \text{ton of sediment removed} \]
   b. Use 14.5% inflation factor for 1981 dollars
      \[ = \$17.072 / \text{ton} \]

2. Sediment increase due to development
   \[ S.S. = \left[ 0.2901 - 0.0395(LCC) \right] \cdot DA \]
   \[ \text{where} \quad S.S. = \text{suspended sediment increase in tons} \]
   \[ DA = \text{disturbed area in square feet} \]
   \[ LCC = \text{land capability classification} \]
3. Total Equation

\[
FEE = 1.5 \times 17,072 \times \frac{40(0.290 - 0.395(LCC))}{107,640} \times 0.100 DA
\]

\[
= (6.344 - LCC) \times 9.397 DA
\]

2-1

See attached table for offset fees

Other Considerations

Erosion control costs are based on least-cost effective and currently invented erosion control programs. Identification of specific erosion control projects and development of specific cost data could either raise or lower the unit cost figures. The assumption in this alternative is that the unit costs for new erosion control programs, to be identified at a later date, will be at least as high as the cost of construction of storm drains on high and moderate hazard lands. This assumption may lead to an additional factor of safety being incorporated into the fee program and assurances that adequate funds are generated if the estimated unit costs are higher than actual costs incurred. However, if estimated unit costs for remedial measures are lower than actual costs, other entities would
be required to make up the cost difference in cost. This alternative would minimize the risks of underestimating unit costs for an expanded erosion control program.
## Table 2 (1)

**Offset Fees for Development Projects**

*Based upon 150% offset of water quality impacts*

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**Alternative 2**

150% offset based on average costs of last half of remedial control measures

A. Assumptions

1. Based on 150% offset of costs of erosion control for amount equivalent to that generated by development

2. Unit costs for erosion control to be implemented by remedial projects is based on the average cost of the last half of the remedial program

B. Computations

1. Unit Erosion Control Costs
   a. 1981 cost of last 1/2 of projects
      \[ \text{\$8800/MT metric ton} \]
   b. Includes 14.5% inflation factor to adjust 1979 # to 1981 #.

2. Sediment Increase Due to Development
   Same as previous alternative

3. Total Equation
   \[ \text{fee} = (7.344 - LCC) \cdot .4844 \cdot DA \]
   where DA = Disturbed Area
   LCC = Land Capability Classification

See attached Table 2-2 for offset fees
C. Other Considerations

1. Erosion control costs are based on average costs for last 50% of erosion control program. Identification of additional specific erosion control projects and development of specific cost data may raise the unit cost figures. The assumption in this alternative is that the unit costs for the additional erosion control programs, to be identified at a later date, will be at least as high as the costs of construction of curvy and gullies as high-horse and stabilization of unpaved roads. This assumption may significantly reduce the safety factor included in the 65% offset if, costs are found to be higher than those under this assumption. This alternative significantly raises the risk of underestimating the total cost for the remedial erosion control work and may shift these costs to other state and local entities. If this alternative is selected, the reimbursement of a regulatory program to ensure implementation of the entire erosion control program (including the currently unspecified measures) would be most desirable.
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**Notes:**
- The data represents fees for development projects based on criteria of the "basic case" alternative.
Alternative 3

150% Offset based on costs shared costs of required remedial measures

A. Assumptions

1. Lot owner is responsible for remedial erosion control only to extent that land coverage exceeds land capability limits

2. Offset costs for increased erosion attributable to coverage shared by matching grant programs

Computation

1. Unit erosion control costs
   - Same as Act. 1
   
   \[ \text{TON} = \frac{17,072}{\text{TON}} \]

2. Sediment increase due to development

   a. Coverage in excess of land capability limits

   \[ SS = \left( 0.2901 - 0.0345 \times \text{LC} \right) \times \text{PD} \times \frac{\text{AD}}{\text{HC}} \]

   where
   - PD = Percent Disturbance
   - AD = Allowable Disturbance (i.e., Cap. Class 7 = 30%)
   - SS = TON sed. / HA / YEAR
   - Cap. Class 1 = 1%

   b. Coverage in accordance with land capability limits

   \[ SS = \left[ 0.2901 - 0.0345 \times \text{LC} \right] \times \text{AD} \]

   c. Total sediment increase = a + b
3. **FEE: EXAMPLE COMPUTATIONS**

10,000 ft² lot = .0929 ha.  
2000 ft² disturbed area

For Land Capability Class 1

Allowed Coverage = 19% ; Excess of L.C = 19.7%  
S.S. (Excess of L.C.) = \[ .2901 - .0345 \] \( \times .0929 = .4512 \)  
S.S. (Within L.C.) = \[ .2901 - .0345 \] \( \times .0929 = .0237 \)  
FEE (Excess L.C.) = \( 1.5 \) \( (17,072)(.4512) = \$11,554 \)  
FEE (Within L.C.) = \( 1.5 \) \( (17,072)(.0237) = \$667 \) (local)

For Land Capability Class 2

Same as Class 1

For Land Capability Class 3

Allowed Coverage = 57% ; Excess Coverage = 42%  
S.S. (Excess of L.C.) = \[ .2901 - (.0345 \times 2) \] \( \times .0929 = .3903 \)  
S.S. (Within L.C.) = \[ .2901 - (.0345 \times 2) \] \( \times .0929 = .0205 \)  
FEE (Excess L.C.) = \( 1.5 \) \( (17,072)(.3903) = \$9,994 \) (local)  
FEE (Within L.C.) = \( 1.5 \) \( (17,072)(.0205) = \$525 \) (local)

For Land Capability Class 4

Allowed Coverage = 20% ; No Excess Coverage

FEE (Within L.C.) = \$285 \) (local)

Other: 5-7 : Same as Table 2-1 \( (\text{local}) \)
**Other Considerations**

This alternative would involve sharing the costs due to offsets by local jurisdictions which would require additional funding by local jurisdictions. This could be made in the form of assessments or user charges for existing property. The percentage of costs assessed to local jurisdiction or through matching with state and federal grants. The percentage of costs assessed to the local jurisdiction is dependent on the land capability and land coverage, i.e., lands that comply with land capability would be assessed no direct charges. Coverage in excess of land capability would pay proportionately to the excess coverage.
Alternative 4:
150% shared offset based on lower cost projections

A. Assumptions
This alternative is identical to Alternative 3 except the assumed cost for remedial erosion controls have been reduced to $8800/ton.

B. Computations
Costs in Alt. 3 would be reduced by a factor of 1.94.
ALTERNATIVE 5

VARIABLE OFFSET BASED ON AVERAGE COSTS OF LAST HALF OF REMEDIAL CONTROL MEASURES

A. Assumptions

1. Based on 175% offset for land capability districts 1-3, 150% offset for capability district 4, and 125% offset for capability classes 5-7.

2. Unit costs for erosion control to be implemented by remedial projects is based on the average cost of the last half of the remedial program.

B. Computations

1. Unit Erosion Control Costs.
   a. 1981 cost of last 1/2 of projects
      $8,800/metric ton
   b. Includes 4.5% inflation factor to adjust to 1981

2. Sediment Increase Due to Development
   Same as previous

3. Land Capability Districts
   1-3: 175% offset
   4: 150% offset
   5-7: 125% offset

See attached Table 2-5 for offset fees
C. OTHER CONSIDERATIONS

This alternative places a variable requirement for offsetting remedial measures based on the extent of risk in each land capability districts. In other words, for land capability districts 1-3, the uncertainty of effectiveness of best management practices and ability to correct existing problems is higher which establishes a higher risk factor. For capability districts 5-7 the risk factors are lower.
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ALTERNATIVE 6

VARIABLE OFFSET FOR EROSION CAUSED IN EXCESS OF LAND CAPABILITY COVERAGE LIMITS

A. Assumptions

1. Based on 175% offset for land capability districts 4-7 and 150% offset for coverage in excess of land capability.

2. For capability classes 4-7, only a percentage of the total costs of remedial erosion controls is applied since there is no excess land coverage permitted in these areas.

B. Computations

1. Unit Erosion Control Costs
   a. 1981 costs = $8800/Metric Ton
   b. Includes 14.3% inflation factor

2. Sediment Increase Due to Development

   Only includes coverage in excess of land capability same as previous equation except based on excess of land capability allowance

3. Total Equation
   
   Capability 1-3: Same as Alt. 5 except coverage is only excess coverage
   
   Capability 4-7:

   See attached Table 2-7 for offset fees
C. OTHER CONSIDERATIONS

1. This alternative provides two incentives. First, the fees increase proportionately with excess land coverage and therefore there is an incentive to comply with the land capability system. Second, larger lots are given credit since the fees are based on the coverage in excess of the land capability system. This encourages mechanisms such as lot consolidations which would not be taken into account in other alternatives.

2. The risk factors are minimized by utilization of a 175% offset for high hazard lands and offset fees for “baseline” contribution from all development.
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Note: Maximum Grandfathered = 4000 ft².