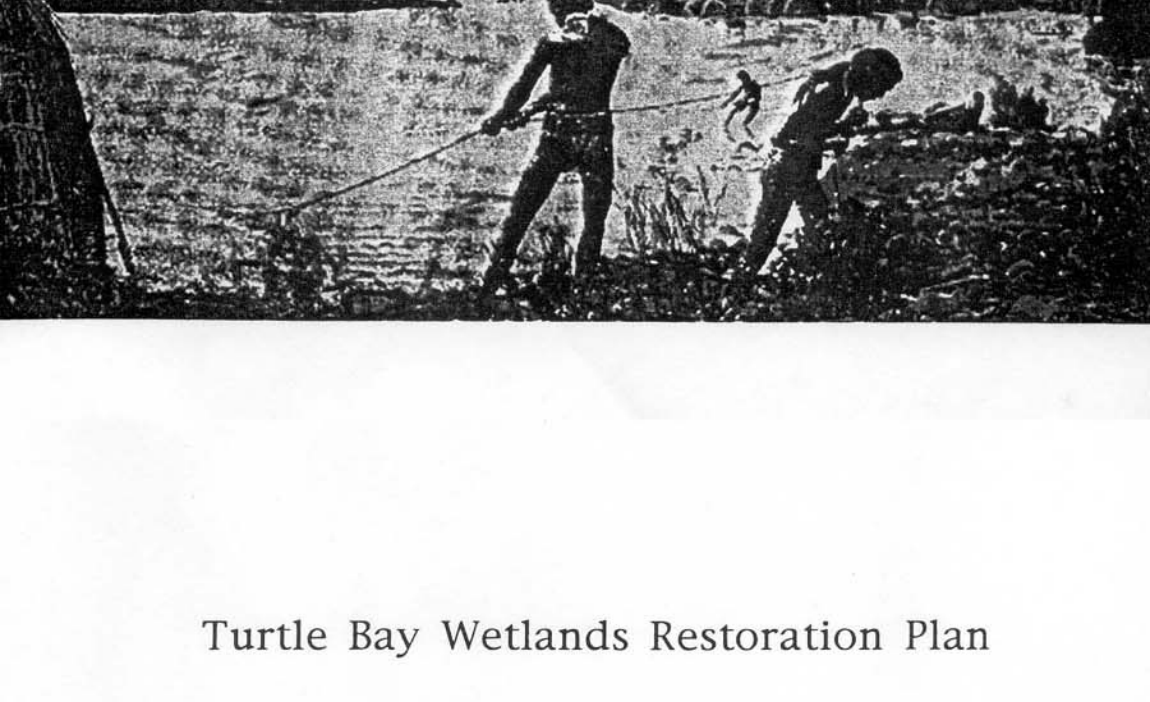


# -The Elem Nation-

## Turtle Bay Wetlands Restoration Plan

January 20, 2000



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- Prepared by-

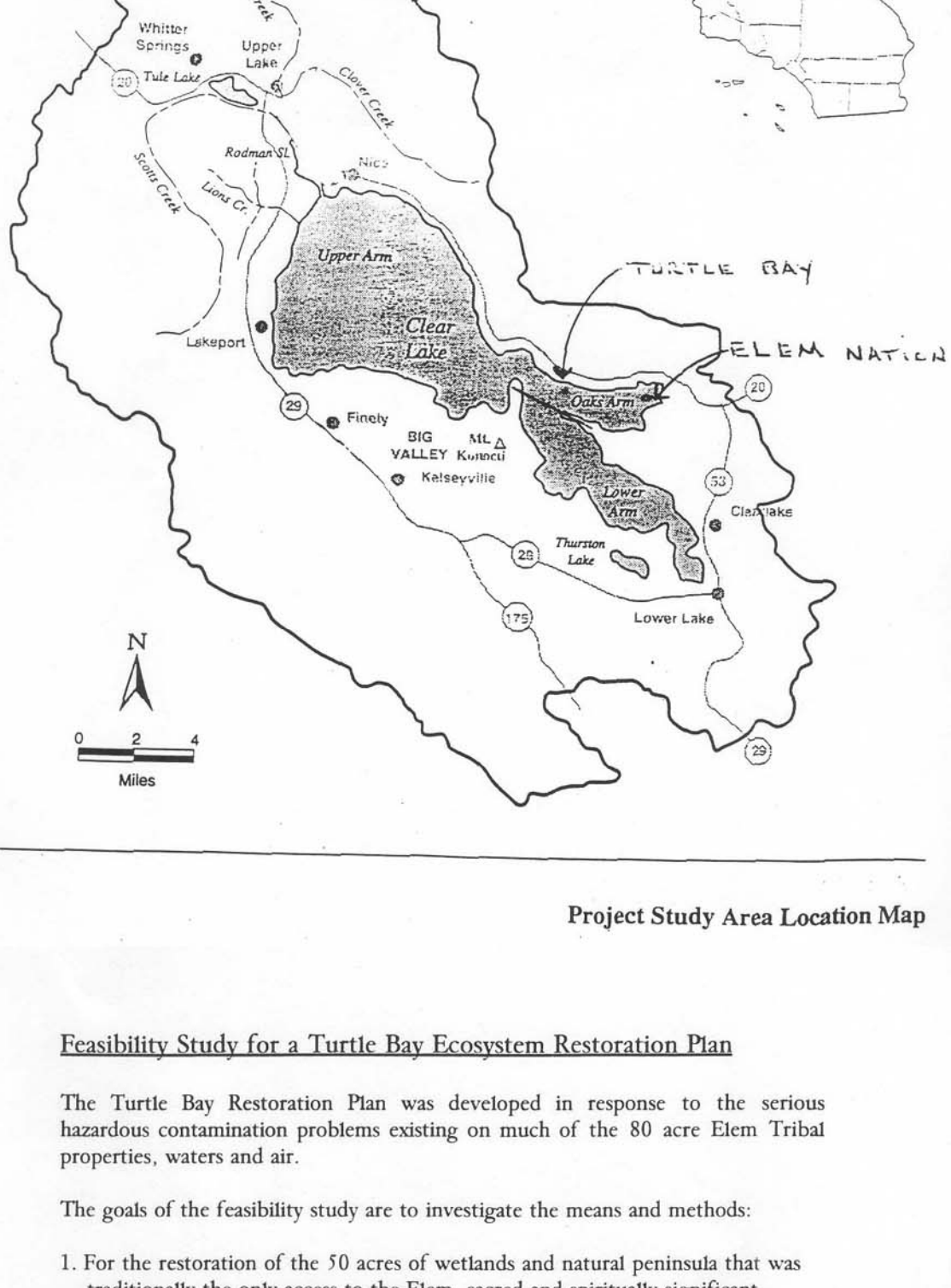
Jim Brown, III Elem Nation Tribal Chairman

and

John Pepin and Associates

with the

Cooperation of the Elem Nation Community



Project Study Area Location Map

### Feasibility Study for a Turtle Bay Ecosystem Restoration Plan

The Turtle Bay Restoration Plan was developed in response to the serious hazardous contamination problems existing on much of the 80 acre Elem Tribal properties, waters and air.

The goals of the feasibility study are to investigate the means and methods:

1. For the restoration of the 50 acres of wetlands and natural peninsula that was traditionally the only access to the Elem sacred and spiritually significant land now known as Rattlesnake Island. The peninsula, access and Island land were lost by the Elem community due to the removal of thousands of cubic yards of soils and tulle marshes of Rattlesnake Island wetlands.
2. For the restoration of Buckeye Island and the surrounding 60 acres of Turtle Bay wetlands. Buckeye Island and surrounding wetlands were lost because thousands of cubic yards of contaminated mercury mine waste rock were illegally dumped onto Buckeye Island and throughout all of the Tribal lands and wetlands. Mercury mining activities have resulted in the environmental degradation of the sacred and spiritually significant Buckeye Island and surrounding wetlands.
3. For controlling contaminated runoff from flowing onto Elem Tribal land and waters. The source of this runoff has been identified as the mercury mine tailings that are located upstream on the Bradley Mercury Mines Site.
4. To restore the biological and Elem cultural resources that were historically flourishing in and around Turtle Bay. This will include problem species removal, and other biological problems on Elem Tribal property and waters.
5. To establish a cultural preservation program for the Elem Tribe by identifying and recording of traditional and sacred sites in the Turtle Bay Area.
6. For the purpose of enhancing wildlife habitats, and tribal and public use opportunity, and to plan a course of action program for implementation.

### Elem Partnerships

The Turtle Bay Restoration Plan is an attempt to bring together the diverse interest groups around Clear Lake for the united purpose of restoring the biological and social values of the Elem Culture. We are soliciting support and partnership of all groups, Agencies and Tribal Governments for a comprehensive Turtle Bay Restoration Plan. Partnerships will be valuable for the procurement of funding for specific projects, and allow a more diverse population to participate in Turtle Bay cleanup and enhancement.

### Water shed Inventory and Analysis

Our first priority is establishment of baseline conditions affecting Turtle Bay through a comprehensive Inventory and Analysis program, and to then assess the feasibility of various projects. It will be necessary to know such things as the location of mussel & snail beds, tules and riparian habitats, nutrient inflows by type and degree, mosquito breeding areas, etc.

Turtle Bay has been divided into 5 areas that have differing resources and contributions to Lake ecology, as follows:

#### Southern Turtle Bay

1. Rattlesnake Island wetlands,
2. Buckeye Island chain wetlands
3. Elem Beach
4. Clear Lake Oaks wetlands
5. Glenhaven Wetlands

### Areas 1+2 Rattlesnake and Buckeye Islands and Wetlands

#### Restitution of Historical Resources

Rattlesnake and Buckeye Islands and the historic wetlands of Turtle Bay once functioned to filter sediments from runoff and provide significant nutrient and chemical balances for Turtle Bay. The restitution of marshland and riparian filters in this area has been proposed by the Elem Tribe in the Turtle Bay Ecosystem Restoration Plan and the program is proposed as a cooperative project between the Elem Indian tribe and the Sierra Club.

The Elem Tribe and the Sierra Club support this project as one of the most important programs for habitat enhancement and biological filtering for Clear Lake that has yet been proposed. It is a known fact that Mercury has been identified in many areas and in different life forms of Clear Lake. The Mercury is leaching from the Bradley mine site and onto surrounding Tribal properties.

Implementing restoration of wetlands most near the mining waste soils can drastically improve existing degrading environmental conditions affecting all of Turtle Bay and Clear Lake.

The Elem Tribe has developed a special program called the Elem Anthropological and Archeological Preservation Program. All the Turtle Bay Restoration Plan proposed activities will be accomplished in accordance with the Elem Cultural Preservation Code, Sections 400.0-400.8.

All potential significant, traditional, sacred, religious or archeological sites of Native American Culture will be identified and incorporated into the inventory and analysis of any and all proposed Turtle Bay Restoration activities. This procedure of identification of potential Native American archeological sites will allow for the establishment of the preservation of the ancient cultural resources of the Elem Nation.

### Vacuum Dredging of Hydrilla Areas 1 and 2

The use of vacuum dredging in the restoration of Turtle Bay has the potential for removal of hydrilla as well as deepening the navigational portions of the Bay. The primary considerations appear to be the amount and location of dredging, and the cleaning, placement and replacement of spoils. Considerations are muscle and snail beds, fish structures, and other aquatic habitats.

Under this program, underwater inventory and analysis would occur first. Hydrilla could be removed from the top down, through a controlled program of eradication from the South Bay and then following currents north through the southeastern arm of Clear Lake. This program could substantially aid the present chemical treatments, and may significantly reduce control time in the Lake. Sediments dredged out can be cleaned of hydrilla, and either reused for island or marsh construction in the Lake or disposed of as fill.

### Shoreline Restoration

Shoreline restoration would involve the placement of soils to repair eroded or previously excavated areas.

### Habitat Restoration

Habitat restoration in Turtle Bay proper will depend upon the success of hydrilla removal. At present time, marsh habitats are on the decline from the herbicide treatments for hydrilla, and enhancement can only occur after hydrilla eradication. Hydrilla removal needs to be accelerated so that we can stop chemical applications and use restoration technologies.

One natural technology for habitat restoration is called bioremediation. Bioremediation allows a body of water to clean itself 'naturally' by utilizing water and soil pollutants as a 'food source' for microbes. (Microbes are small living matter, plant or animal, that naturally live and grow in water and soil). This technology activates beneficial local water bacteria to digest waste and other pollutants. Bioremediation is based on a living system that preserves and improves the natural plant and animal life.

### Agricultural Runoff Areas 1 and 2

The need to promote sustainable farming practices is critical to the restoration of Turtle Bay. The existing application of agricultural herbicides and insecticides in the Clear Lake Basin have lead to chemical residuals being released into surface runoff, local ground water and ultimately into the lake. The Elem Tribe supports the use of organic farming methods in agriculture.

### Urban Surface Runoff

Identify and assess runoff from urban areas. Establish marsh areas to help filter out sediments and urban pollutants in streams and drainage ditches.

### Erosion Control

Road runoff and stream erosion transports soils and pollutants into the lake. Erosion control projects such as planting along upstream watersheds will improve Turtle Bay water quality.

### Vacuum Dredging of Mine Tailings

Since 1990 the Sulfur Bank Mercury Mine has been designated as a U.S. Environmental Protection Agency Hazardous Superfund Site. Toxic levels of hazardous substances have been measured in the surface water and sediments near the mine area. Appropriate and safe removal of potentially contaminated sediments would be implemented.

Vacuum dredging would be utilized to cleanup mine tailings. Sediments from mining operations and erosion have piled up on the lake bottom. These sediments would be removed and possibly be used as fill at another site.

### Areas 3 through 5

Area 3 Elem Beach, Area 4 ClearLake Oaks Wetlands, Area 5 Glenhaven Wetlands

### Action Plan Summary

Because of Turtle Bay's size and diversity, there is no single solution to its restoration. Turtle Bay is not a homogenous entity but is instead composed of a series of distinct micro-environments, each with distinct conditions. Each micro-environment will require a specific solution to its pollution problems.

### Feasibility Studies

Studies will be accomplished to determine what type of treatments would be suitable and logical to utilize in each of the five areas.

### Habitat Restoration - Please see Area 1 -

### Shoreline Restoration

Shoreline restoration would involve the placement of soils to repair eroded areas.

### Marina Channel Restoration

Identify, assess and rectify marina problems associated with weeds, waste water, odors, algae and the depth of boating channels.

### Septic System Control

Homeowners should use only biodegradable soaps and cleaners to maintain a biologically balanced septic tank environment. Also, the addition of bioremediation products may be necessary. These products are specifically designed to improve the water quality of septic systems.

### Urban Surface Runoff

Identify and assess runoff from urban areas. Establish marsh areas to help filter out sediments and urban pollutants in streams and drainage ditches.

### Agricultural Runoff Areas 3 through 5

The need to promote sustainable farming practices is critical to the restoration of Turtle Bay. The existing application of agricultural herbicides and insecticides in the Clear Lake Basin have lead to chemical residuals being released into surface runoff, local ground water and ultimately into the lake. The Elem Tribe supports the use of organic farming methods in agriculture.

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