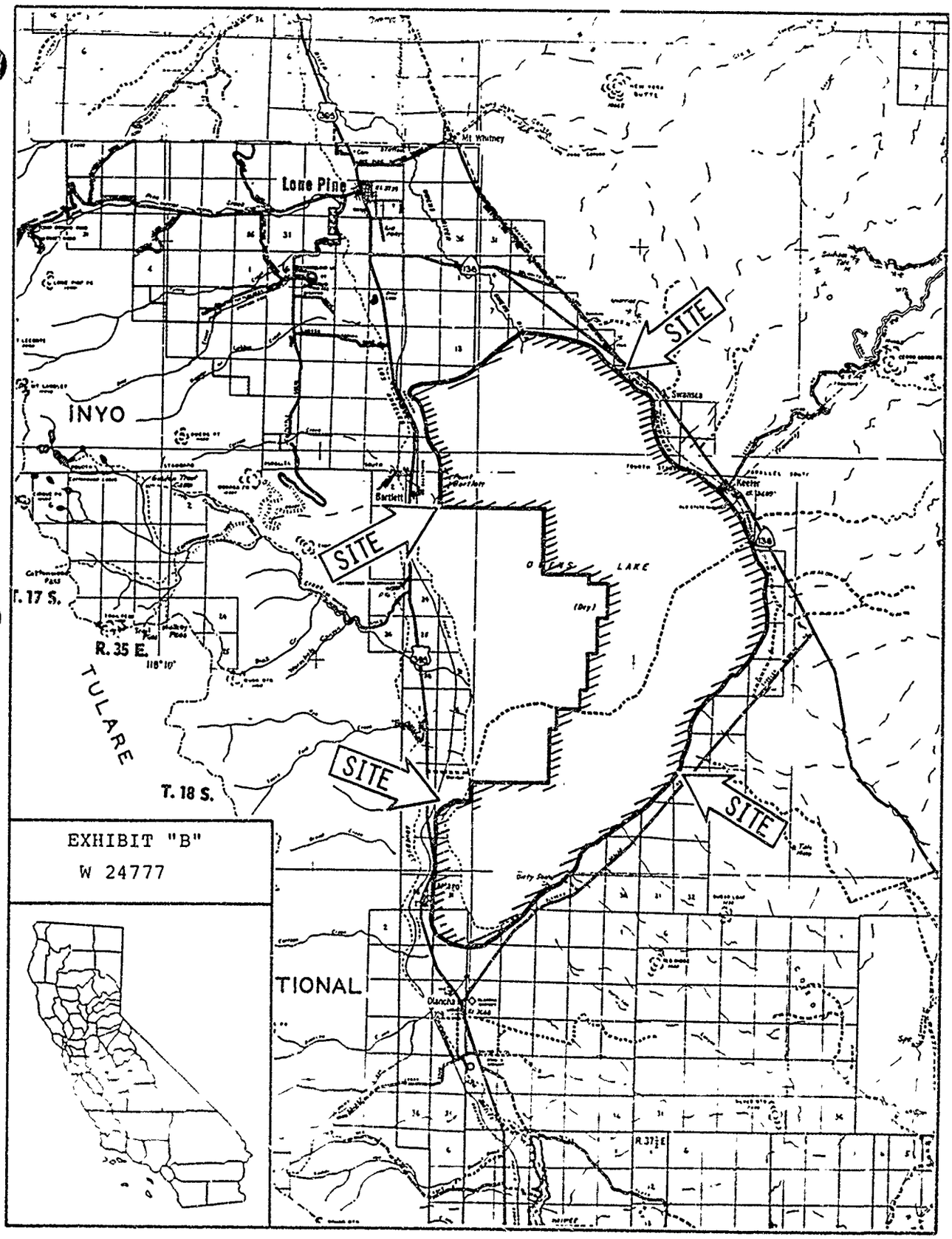



CALENDAR PAGE 309.6
MINUTE PAGE 1055

EXHIBIT C

STATE OF CALIFORNIA — PETE WILSON, *Governor*


**STATE LANDS COMMISSION**

LEO T. McCARTHY, *Lieutenant Governor*
GRAY DAVIS, *Controller*
THOMAS W. HAYES, *Director of Finance*

EXECUTIVE OFFICE
1807 - 13th Street
Sacramento, CA 95814

CHARLES WARREN
Executive Officer


March 27, 1992
File: W 24777
ND 587

**NOTICE OF PUBLIC REVIEW OF A PROPOSED NEGATIVE DECLARATION (SECTION 15073 CCR)**

A Negative Declaration has been prepared pursuant to the requirements of the California Environmental Quality Act (Section 21000 et seq., Public Resources Code), the State CEQA guidelines (Section 15000 et seq., Title 14, California Code Regulations), and the State Lands Commission Regulations (Section 2901 et seq., Title 2, California Code Regulations) for a project currently being processed by the staff of the State Lands Commission.

The document is attached for your review. Comments should be addressed to the State Lands Commission office shown above with attention to the undersigned. All comments must be received by April 29, 1992.

Should you have any questions or need additional information, please call the undersigned at (916) 322-0530.

GOODYEAR K. WALKER
Division of Environmental
Planning and Management

Attachment

STATE OF CALIFORNIA

PETE WILSON *Governor*

STATE LANDS COMMISSION

LEO T. McCARTHY, *Lieutenant Governor*
GRAY DAVIS, *Controller*
THOMAS W. HAYES, *Director of Finance*

EXECUTIVE OFFICE
1807 - 13th Street
Sacramento, CA 95814

CHARLES WARREN
Executive Officer

# PROPOSED NEGATIVE DECLARATION

File: W 24777
ND 587
SCH No. 92032104

| | |
|---|---|
| Project Title: | Proposed Dust Remediation Pilot Program -- Owens Lake |
| Proponent: | State Lands Commission |
| Project Location: | Owens Lake, Inyo County |
| Project Description: | Pilot program to reduce dust emissions from the bed of Owens Lake, consisting of nine components. |
| Contact Person: | Goodyear K. Walker Telephone: 916/322-0530 |

This document is prepared pursuant to the requirements of the California Environmental Quality Act (Section 21000 et seq., Public Resources Code), the State CEQA Guidelines (Section 15000 et seq., Title 14, California Code Regulations), and the State Lands Commission regulations (Section 2901 et seq., Title 2, California Code Regulations).

Based upon the attached Initial Study, it has been found that:

/__/ this project will not have a significant effect on the environment.

/X/ mitigation measures included in the project will avoid potentially significant effects.

STATE LANDS COMMISSION

# ENVIRONMENTAL IMPACT ASSESSMENT CHECKLIST – PART II

Form 13.20 (7/82)

File Ref.: W24777

## I. BACKGROUND INFORMATION

A Applicant: State Lands Commission
1807 13th Street
Sacramento, CA 95814

B. Checklist Date: 3 / 26 / 92

C Contact Person: G. K. Walker

Telephone: ( 916 ) 322-0530

D Purpose: Pilot program to reduce dust emissions from Owens Dry Lake bed.

E Location: Owens Dry Lake – Inyo County

F Description: Pilot program to test nine components in order to study possible dust bioremediation strategies and their possible effects on the environment.

G Persons Contacted:
Great Basin Unified APCD – Ellen Hardebeck
University of California – Davis – Thomas A. Cahill
California Dept. of Fish and Game (Bishop Branch Office) Denise Racine

## II ENVIRONMENTAL IMPACTS. *(Explain all "yes" and "maybe" answers)*

A *Earth* Will the proposal result in.

| | Yes | Maybe | No |
|---|---|---|---|
| 1 Unstable earth conditions or changes in geologic substructures? | ☐ | ☐ | ☒ |
| 2 Disruptions, displacements, compaction, or overcovering of the soil? | ☐ | ☒ | ☐ |
| 3 Change in topography or ground surface relief features? | ☐ | ☒ | ☐ |
| 4 The destruction, covering, or modification of any unique geologic or physical features? | ☐ | ☐ | ☒ |
| 5 Any increase in wind or water erosion of soils, either on or off the site? | ☐ | ☒ | ☐ |
| 6 Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet, or lake? | ☐ | ☐ | ☒ |
| 7 Exposure of all people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards? | ☐ | ☐ | ☒ |

| | Yes | Maybe | No |
|---|---|---|---|
| B. *Air.* Will the proposal result in: | | | |
| 1. Substantial air emmissions or deterioration of ambient air quality? | ☐ | ☒ | ☐ |
| 2. The creation of objectionable odors? | ☐ | ☐ | ☒ |
| 3. Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally? | ☐ | ☐ | ☒ |
| C. *Water.* Will the proposal result in: | | | |
| 1. Changes in the currents, or the course or direction of water movements, in either marine or fresh waters? | ☐ | ☒ | ☐ |
| 2. Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff? | ☐ | ☐ | ☒ |
| 3. Alterations to the course or flow of flood waters? | ☐ | ☐ | ☒ |
| 4. Change in the amount of surface water in any water body? | ☐ | ☐ | ☒ |
| 5. Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity? | ☐ | ☐ | ☒ |
| 6. Alteration of the direction or rate of flow of ground waters? | ☐ | ☒ | ☐ |
| 7. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations? | ☐ | ☒ | ☐ |
| 8. Substantial reduction in the amount of water otherwise available for public water supplies? | ☐ | ☒ | ☐ |
| 9. Exposure of people or property to water-related hazards such as flooding or tidal waves? | ☐ | ☐ | ☒ |
| 10. Significant changes in the temperature, flow or chemical content of surface thermal springs? | ☐ | ☐ | ☒ |
| D. *Plant Life.* Will the proposal result in: | | | |
| 1. Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, and aquatic plants)? | ☐ | ☒ | ☐ |
| 2. Reduction of the numbers of any unique, rare or endangered species of plants? | ☐ | ☒ | ☐ |
| 3. Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species? | ☐ | ☒ | ☐ |
| 4. Reduction in acreage of any agricultural crop? | ☐ | ☐ | ☒ |
| E. *Animal Life* Will the proposal result in: | | | |
| 1. Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, or insects)? | ☐ | ☒ | ☐ |
| 2. Reduction of the numbers of any unique, rare or endangered species of animals? | ☐ | ☒ | ☐ |
| 3. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals? | ☐ | ☐ | ☒ |
| 4. Deterioration to existing fish or wildlife habitat? | ☐ | ☒ | ☐ |
| F. *Noise.* Will the proposal result in: | | | |
| 1. Increase in existing noise levels? | ☐ | ☒ | ☐ |
| 2. Exposure of people to severe noise levels? | ☐ | ☐ | ☒ |
| G. *Light and Glare* Will the proposal result in: | | | |
| 1. The production of new light or glare? | ☐ | ☐ | ☒ |
| H. *Land Use* Will the proposal result in | | | |
| 1. A substantial alteration of the present or planned land use of an area? | ☐ | ☐ | ☒ |
| I. *Natural Resources* Will the proposal result in | | | |
| 1. Increase in the rate of use of any natural resources? | ☐ | ☒ | ☐ |
| 2. Substantial depletion of any nonrenewable resources? | ☐ | ☐ | ☒ |

| | | Yes | Maybe | No |
|---|---|---|---|---|
| J | *Risk of Upset* Does the proposal result in | | | |
| | 1. A risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals, or radiation) in the event of an accident or upset conditions? | ☐ | ☐ | ☒ |
| | 2 Possible interference with emergency response plan or an emergency evacuation plan? | ☐ | ☐ | ☒ |
| K. | *Population* Will the proposal result in. | | | |
| | 1 The alteration, distribution, density, or growth rate of the human population of the area? | ☐ | ☐ | ☒ |
| L. | *Housing.* Will the proposal result in: | | | |
| | 1. Affecting existing housing, or create a demand for additional housing? | ☐ | ☐ | ☒ |
| M. | *Transportation/Circulation.* Will the proposal result in. | | | |
| | 1. Generation of substantial additional vehicular movement? | ☐ | ☐ | ☒ |
| | 2. Affecting existing parking facilities, or create a demand for new parking? | ☐ | ☐ | ☒ |
| | 3. Substantial impact upon existing transportation systems? | ☐ | ☐ | ☒ |
| | 4. Alterations to present patterns of circulation or movement of people and/or goods? | ☐ | ☐ | ☒ |
| | 5. Alterations to waterborne, rail, or air traffic? | ☐ | ☐ | ☒ |
| | 6. Increase in traffic hazards to motor vehicles, bicyclists, or pedestrians? | ☐ | ☐ | ☒ |
| N | *Public Services* Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas: | | | |
| | 1. Fire protection? | ☐ | ☐ | ☒ |
| | 2. Police protection? | ☐ | ☐ | ☒ |
| | 3. Schools? | ☐ | ☐ | ☒ |
| | 4. Parks and other recreational facilities? | ☐ | ☐ | ☒ |
| | 5. Maintenance of public facilities, including roads? | ☐ | ☐ | ☒ |
| | 6. Other governmental services? | ☐ | ☐ | ☒ |
| O. | *Energy.* Will the proposal result in: | | | |
| | 1. Use of substantial amounts of fuel or energy? | ☐ | ☐ | ☒ |
| | 2. Substantial increase in demand upon existing sources of energy, or require the development of new sources? | ☐ | ☐ | ☒ |
| P | *Utilities.* Will the proposal result in a need for new systems, or substantial alterations to the following utilities. | | | |
| | 1. Power or natural gas? | ☐ | ☐ | ☒ |
| | 2 Communication systems? | ☐ | ☐ | ☒ |
| | 3. Water? | ☐ | ☐ | ☒ |
| | 4. Sewer or septic tanks? | ☐ | ☐ | ☒ |
| | 5. Storm water drainage? | ☐ | ☐ | ☒ |
| | 6. Solid waste and disposal? | ☐ | ☐ | ☒ |
| Q | *Human Health* Will the proposal result in: | | | |
| | 1 Creation of any health hazard or potential health hazard (excluding mental health)? | ☐ | ☐ | ☒ |
| | 2 Exposure of people to potential health hazards? | ☐ | ☐ | ☒ |
| R | *Aesthetics* Will the proposal result in | | | |
| | 1 The obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view? | ☐ | ☒ | ☐ |
| S | *Recreation* Will the proposal result in | | | |
| | 1 An impact upon the quality or quantity of existing recreational opportunities? | ☐ | ☐ | ☒ |

359

1001

T. *Cultural Resources.*

| | Yes | Maybe | No |
|---|---|---|---|
| 1. Will the proposal result in the alteration of or the destruction of a prehistoric or historic archeological site? | ☐ | ☐ | ☒ |
| 2. Will the proposal result in adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object? | ☐ | ☐ | ☒ |
| 3. Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values? | ☐ | ☐ | ☒ |
| 4. Will the proposal restrict existing religious or sacred uses within the potential impact area? | ☐ | ☐ | ☒ |

U. *Mandatory Findings of Significance.*

| | | | |
|---|---|---|---|
| 1. Does the project have the potential to degrade the quality of the environment, reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | ☐ | ☐ | ☒ |
| 2. Does the project have the potential to achieve short term, to the disadvantage of long-term, environmental goals? | ☐ | ☐ | ☒ |
| 3. Does the project have impacts which are individually limited, but cumulatively considerable? | ☐ | ☐ | ☒ |
| 4. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | ☐ | ☐ | ☒ |

## III. DISCUSSION OF ENVIRONMENTAL EVALUATION *(See Comments Attached)*

## IV. PRELIMINARY DETERMINATION

On the basis of this initial evaluation:

☐ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION will be prepared

☐ I find the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Date: / /

For the State Lands Commission

209.12

Form 1520-1/82

## PROPOSED DUST REMEDIATION PILOT PROGRAM FOR OWENS LAKE

### Initial Study -- Introduction

The California State Lands Commission (SLC) has prepared the following Initial Study to analyze components of a proposed pilot program to reduce dust emissions from the bed of Owens Lake. The bed of the Lake is under the jurisdiction of the State Lands Commission and the Commission is the Lead Agency for purposes of the California Environmental Quality Act (CEQA). This document is prepared pursuant to the requirements of the CEQA, Section 21000 et seq. of the Public Resources Code, the State CEQA Guidelines, Section 15000 et seq.of Title 14, California Code of Regulations, and the Commission's regulations, Section 2901 et seq.of Title 2, California Code of Regulations.

This Initial Study concludes that the program, as proposed, incorporates mitigation measures which will avoid potentially significant environmental impacts and that the program and its respective components will not have any significant impacts on the environment. A Negative Declaration is therefore appropriate under the provisions of Section 15070 (b) of the State CEQA Guidelines.

### Detailed Project Description

In 1987, the Environmental Protection Agency (EPA) revised the National Ambient Air Quality Standards (NAAQS) for suspended particulate matter less than 10 microns in diameter ($PM_{10}$). This change was intended to measure and reduce the fraction of suspended particles in the air which is injurious to human health. Later in that same year, EPA identified the southern Owens Valley as one of the many areas in the nation which, based on air quality monitoring, would likely exceed the $PM_{10}$ NAAQS. Subsequent monitoring has verified that the highest $PM_{10}$ readings in California occur downwind of the dry bed of Owens Lake (See Figure 1). Consequently, the EPA has required the State of California to prepare a State Implementation Plan (SIP) to bring the southern Owens Valley into compliance with the NAAQS. The SIP, prepared by the Great Basin Unified Air Pollution Control District (GBUAPCD), identifies Owens Dry Lake as the major contributor to the violations of the $PM_{10}$ NAAQS in the Valley. This SIP was approved by the California Air Resources Board in September of 1989 and again in 1992 and forwarded to EPA.

As a part of the SIP, the GBUAPCD has developed a Long Range Dust Bioremediation Plan (Plan) that lays out the goals and some possible approaches to mitigating the effects of area dust storms. The Plan identifies the need to understand the current lake bed ecosystem and relies on that understanding to develop and implement an overall dust reduction/bioremediation program to facilitate the

attainment of air quality standards. The SLC, as the major landowner in the area, and the GBUAPCD and other agencies are proposing this pilot program to study possible dust bioremediation strategies and their possible effects on the environment. The current program consists of nine components. Taken together, these components are designed to provide some of the necessary knowledge of the lake bed's surface and subsurface conditions, natural ecosystems and dust bioremediation strategies that will be used to decide on a comprehensive strategy to bring the Valley into compliance with EPA air quality standards.

Each of these program components is a pilot or exploratory project. The final design of a dust mitigation strategy will be based on the scientific information developed by each of these pilot projects. Upon review of the test data gathered under the proposed program, the decision on a final remediation plan will be made by the Owens Lake Technical Group which consists of staff from the GBUAPCD, the SLC and the University of California, Davis. GBUAPCD will have responsibility to develop and adopt a State Implementation Plan in conjunction with the State Air Resources Board and the U.S. Environmental Protection Agency. The final dust mitigation plan will require additional environmental documentation prior to its adoption and implementation. The pilot program is scheduled to begin in the 1992-93 fiscal year beginning in July, 1992 and is expected to take more than a year to complete.

The work proposed for each of these components is on a small scale, and requires no major construction operations. Initial construction or instrumentation for four of the components (1,2,3 and 7) will require some vehicular access to the lake bed. No more than five standard four-wheel drive vehicles will be used for this purpose at any one time. The conduct of the remaining components, as well as their on-going maintenance, will be done on foot or with a single vehicle. The existing network of roads or trails on the Lake bed will be used for most of the work. Any new access routes to specific sites will begin at the existing network.

The components of the proposed program are:

1. Wetlands Dust Bioremediation Test
2. Sand Dune Array Bioremediation Test
3. Shallow Groundwater Investigation
4. Deep Aquifer Investigation
5. Surface Water Investigation
6. Vegetation Research
7. Aeolian Transport Study
8. Physical Characterization of the Lake Bed
9. Pre-Bioremediation Engineering Studies

Component 1-Wetlands Dust Bioremediation Test

Dust emissions from moist, wet or ponded areas are very low to nonexistent. Long term pump tests, in excess of 90 days,were carried out in 1991. These tests provided water to areas of up to

two square miles of the Lake bed with relatively small flow rates. The purpose of this component is to determine the effectiveness and feasibility of using wetland development on a large scale to control dust at Owens Lake. Such a bioremediation strategy will reduce the $PM_{10}$ levels and previous work indicates that affected areas will quickly return to pre-flooded conditions if this strategy is not adopted on a large scale. At a minimum, such a bioremediation project will enhance the wetland values of the Owens Lake area.

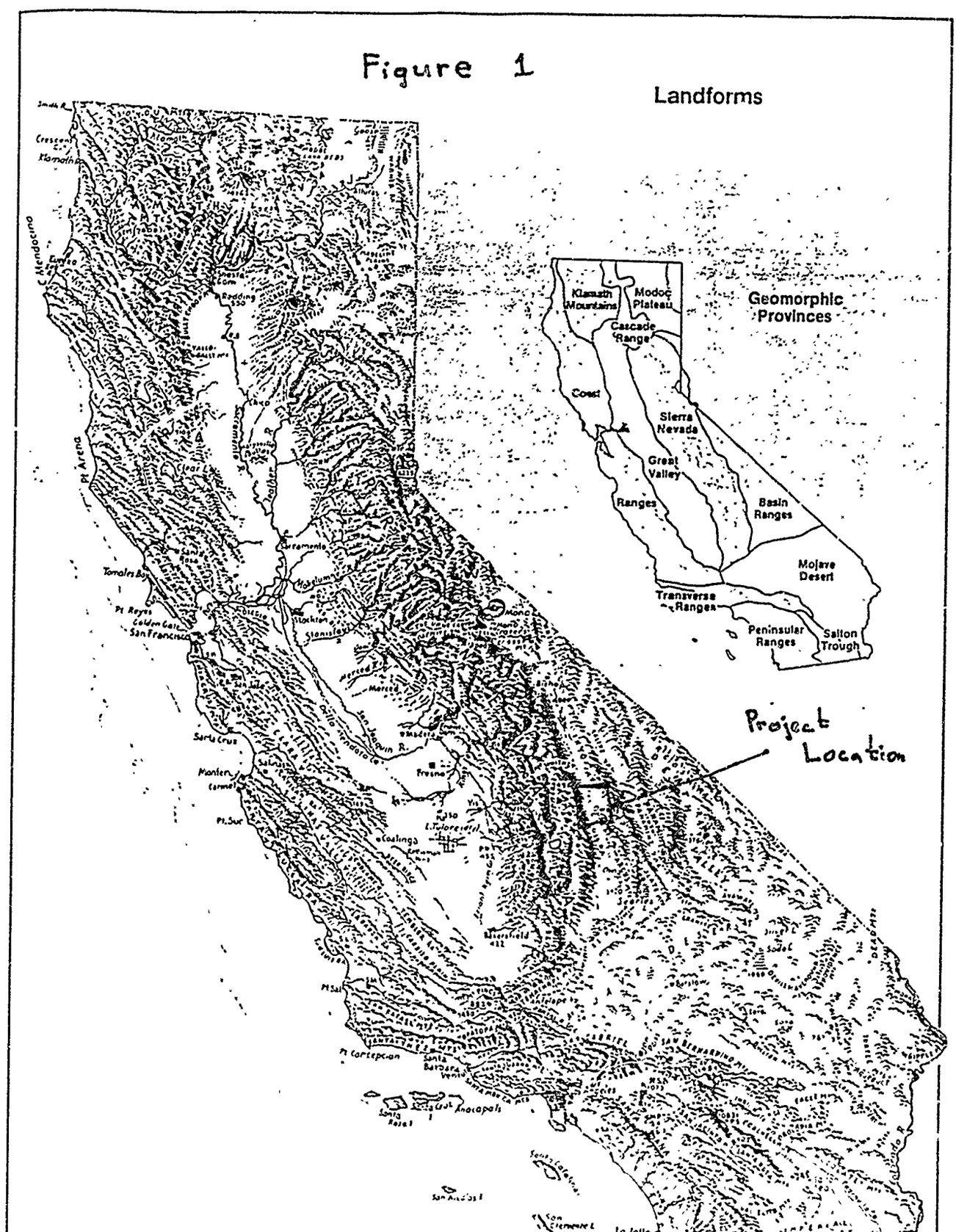
The objectives of this component are to: 1) determine the ability of wetlands to control fugitive dust emissions; 2) determine the most efficient technique of maintaining a non-emissive surface establishing wetlands with a minimum flow of water per acre; 3) determine the usefulness of wetlands in establishing vegetation directly on the lake bed; 4) determine the effect of wetlands on the surface and near surface soil chemistry; 5) evaluate the wildlife enhancement values of wetlands on the Lake bed; 6) document the effect that pumping has on the affected aquifer; and 7) evaluate the availability of water resources for expansion of the wetlands concept.

This strategy will be tested at two separate sites on the Lake bed, one in the northern, sand-dominated part of the Lake bed, and one in the southern, salt-efflorescent dust area (see Figures A-C). The test area will be divided into continuous and intermittent water flow areas at both sites . At the northern site three test areas will be tested with vegetation, and two without (see Figures 2 a-c). Water will be pumped from GBUAPCD's existing wells on the north and east shores of the Lake. Water for the northern test site will be transported from the two existing River Wells by an existing and proposed pump stations near the Owens River delta via 25,000 feet of 10-inch water line to the northeast shore. The southerly 8,000 feet of pipe will form the easterly boundary of the test area. The test area will extend from the pipeline out toward the center of the Lake. This test site is a known dust source at the northern end of a sand dominated area of very low relief (about 4 feet per thousand). The northern test site will be divided into five subsections, each of which can be flooded from the pipeline. The planned scenarios for each section is as follows:

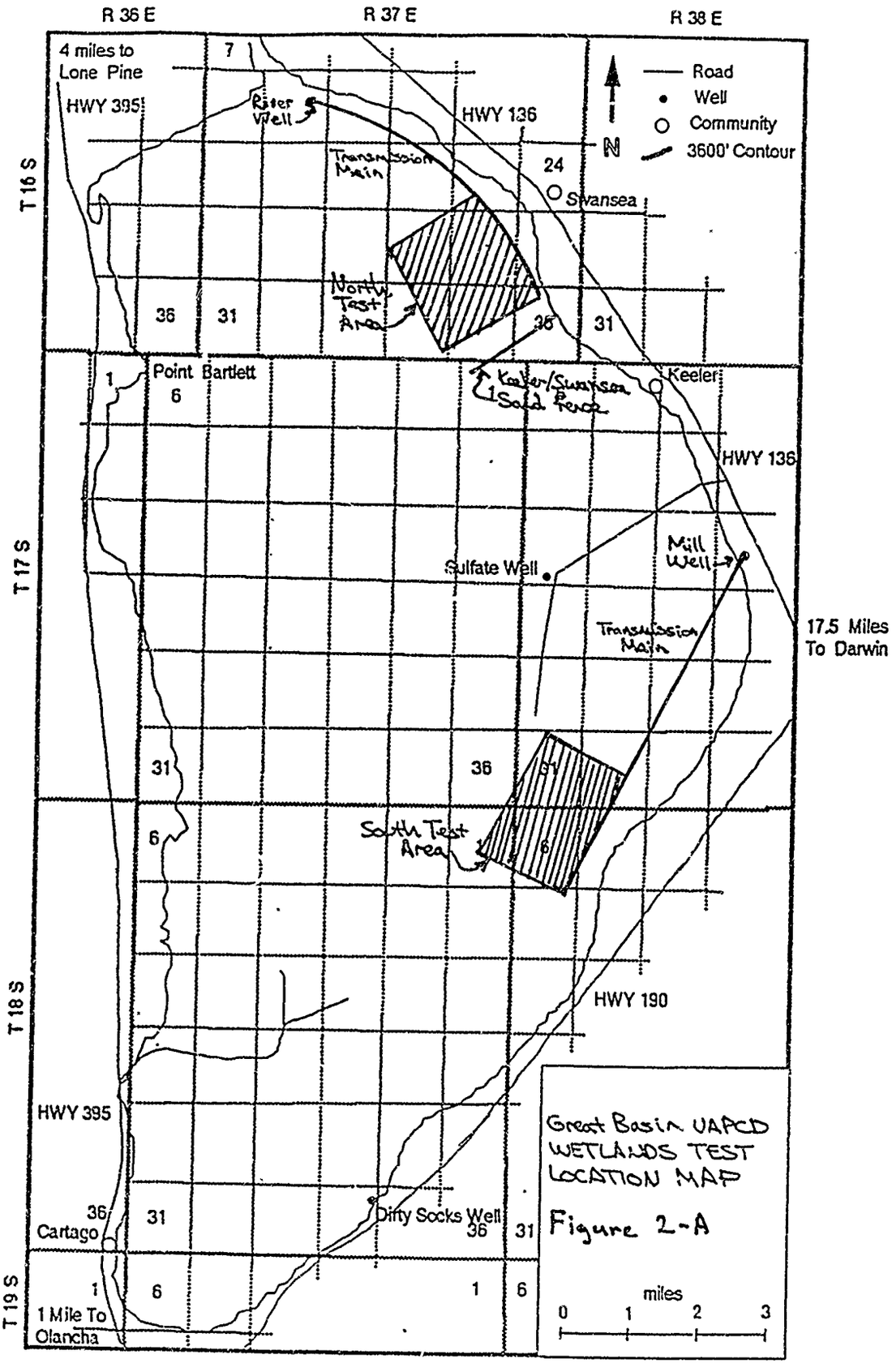
1) Continuous flows - unvegetated
2) Intermittent flows - unvegetated
3) Continuous flows - vegetated with nutrients
4) Continuous flows - vegetated without nutrients
5) Intermittent flows - vegetated

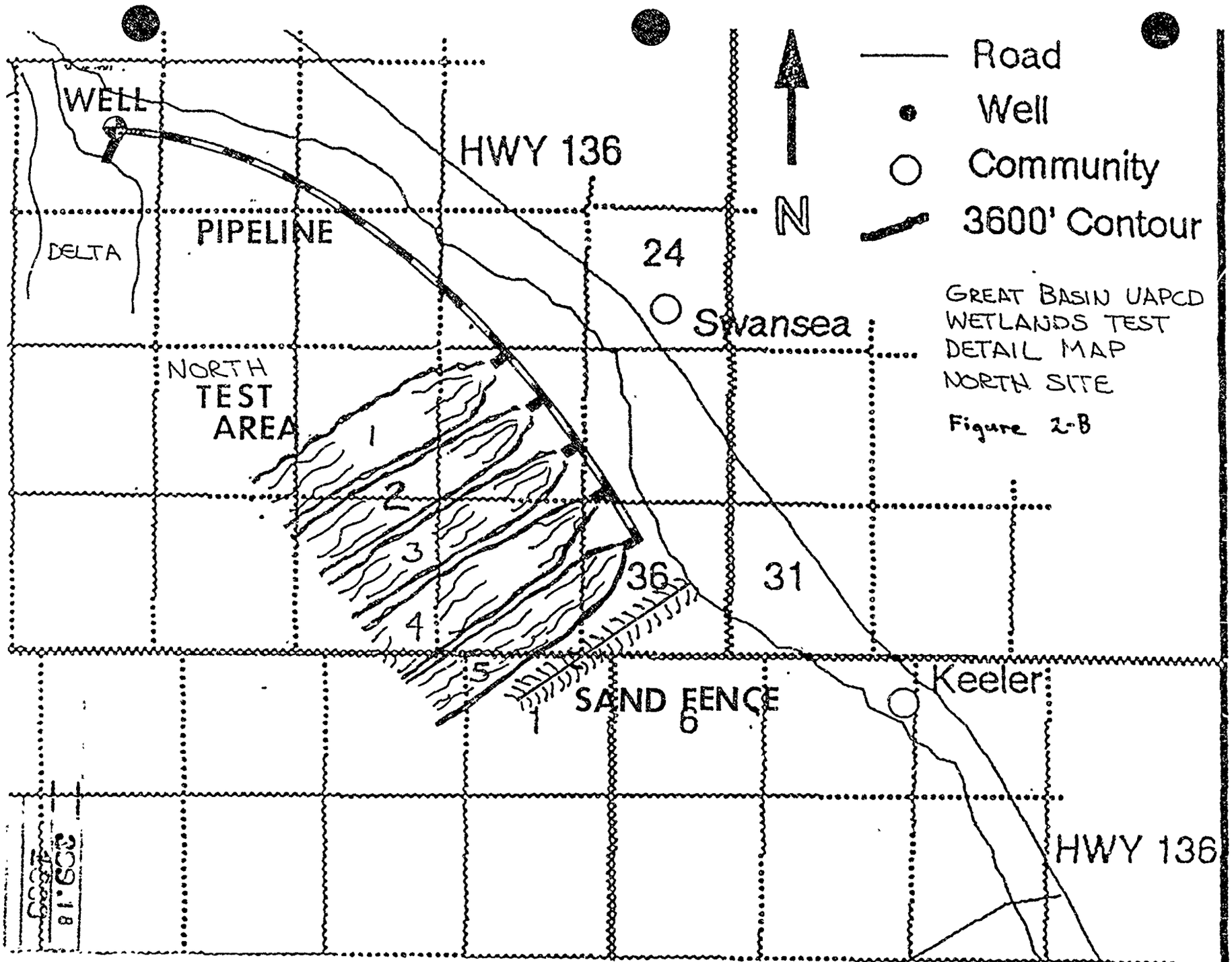
The southern test site will use water from the GBUAPCD Mill Site Well. A pump station will be constructed at this site, as only the well exists at the present time. Water will be taken to the test site with 28,000 feet of rented irrigation pipe laid on the surface of the Lake. Water will be distributed from the southerly 10,000 feet of pipe. The soils in this area are predominantly clay and the surface consists of mudflat type areas

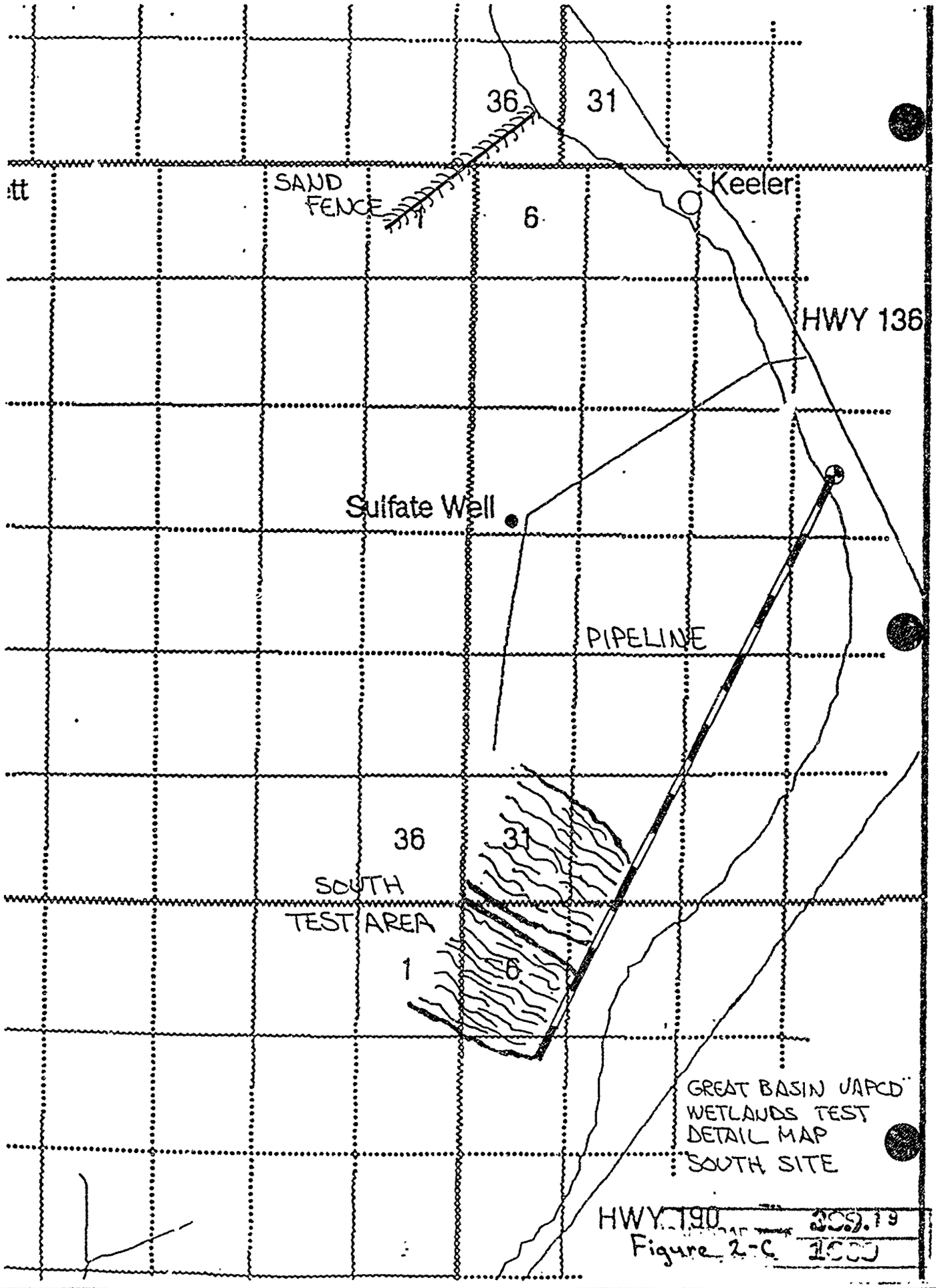
# Figure 1




Map adapted from E. Raisz, Landform Map of the United States


R 36 E
R 37 E
R 38 E
4 miles to Lone Pine
HWY 395
7
River Well
HWY 136
Transmission Main
24
Swansea
Road
Well
Community
3600' Contour
N
T 16 S
North Test Area
36
31
36
31
Point Bartlett
6
1
Keeler/Swansea 1 Solid Fence
Keeler
HWY 136
T 17 S
Sulfate Well
Mill Well
Transmission Main
17.5 Miles To Darwin
31
36
31
South Test Area
6
6
T 18 S
HWY 190
HWY 395
36
31
Cartago
Dirty Socks Well
36
31
T 19 S
1
6
1
6
1 Mile To Olancha
Great Basin UAPCD
WETLANDS TEST
LOCATION MAP
Figure 2-A
miles
0
1
2
3


WELL
HWY 136
PIPELINE
DELTA
N
Road
Well
Community
3600' Contour
24
Swansea
NORTH
TEST
AREA
1
2
3
4
5
6
36
31
SAND FENCE
Keeler
HWY 136
GREAT BASIN UAPCD
WETLANDS TEST
DETAIL MAP
NORTH SITE
Figure 2-B


36
31
SAND FENCE
Keeler
6
HWY 136
Sulfate Well
PIPELINE
36
31
SOUTH TEST AREA
1
6
GREAT BASIN UAPCD
WETLANDS TEST
DETAIL MAP
SOUTH SITE
HWY 190
Figure 2-C

subject to salt efflorescence. The test area will be divided into a continuous flow and an intermittent flow sections. The testing of vegetation is not planned for this site. Work will extend over three years as follows: 1) pilot design and installation of a larger pump at the River Site well will be done in FY 1992-93; 2) implementation in FY 1993-94; and 3) data acquisition and analysis will be done in FY 1994-95.

Water will be allowed to flow naturally over the test areas at both sites. The test will take advantage of the "micro-relief" of the Lake bed to create random, braided, naturally ponded and unponded areas. The ponds will be very shallow, on the order of one inch deep. Minor berms may be required to keep the test sections separate or to prevent loss of the water to the salt pan in the center of the Lake. The construction of such berms, if necessary, will be done by hand with a shovel or with a small tractor.

There will be an attempt to establish vegetation on three of the five test sections at the northern site. The results of initial baseline water and soil chemistry tests, along with preliminary soil nutrient, plant propagation, and other greenhouse tests will allow decisions to be made regarding the most appropriate species and planting techniques for the component. Only materials from native species will be used. Provision will be made to avoid the genetic contamination of local plant populations. Both the planted test species and any natural plant establishment in the unplanted areas will be monitored.

Both test sites have only sparsely used wildlife habitat. Wildlife surveys will be done before, during and after the pilot, to document the nature and extent of any wildlife benefits associated with the establishment of these wetlands. Survey methodology and personnel will be approved by the California Department of Fish and Game (CDFG).

**Component 2-Sand Dune Array Bioremediation Test**

Sand and sand-sized particles saltating (bouncing) across Owens Lake are known to generate large amounts of dust from the Lake bed during high wind events. A significant reduction in the air concentration of $PM_{10}$ dust released can be achieved by controlling the migration of these particles.

Weaver and Giroux designed and installed three demonstration-scale fences in 1986-88 to determine if sand fences can create dunes that will capture saltating sand grains. The first fence, known as the Keeler fence, was a one-mile long structure designed to shelter the northern sand area from strong winds. The second fence, the South Fence, also one mile long, was designed as a capture structure, to protect the salt crust areas from abrasion. The last fence, the Dirty Sock Fences, was actually a series of

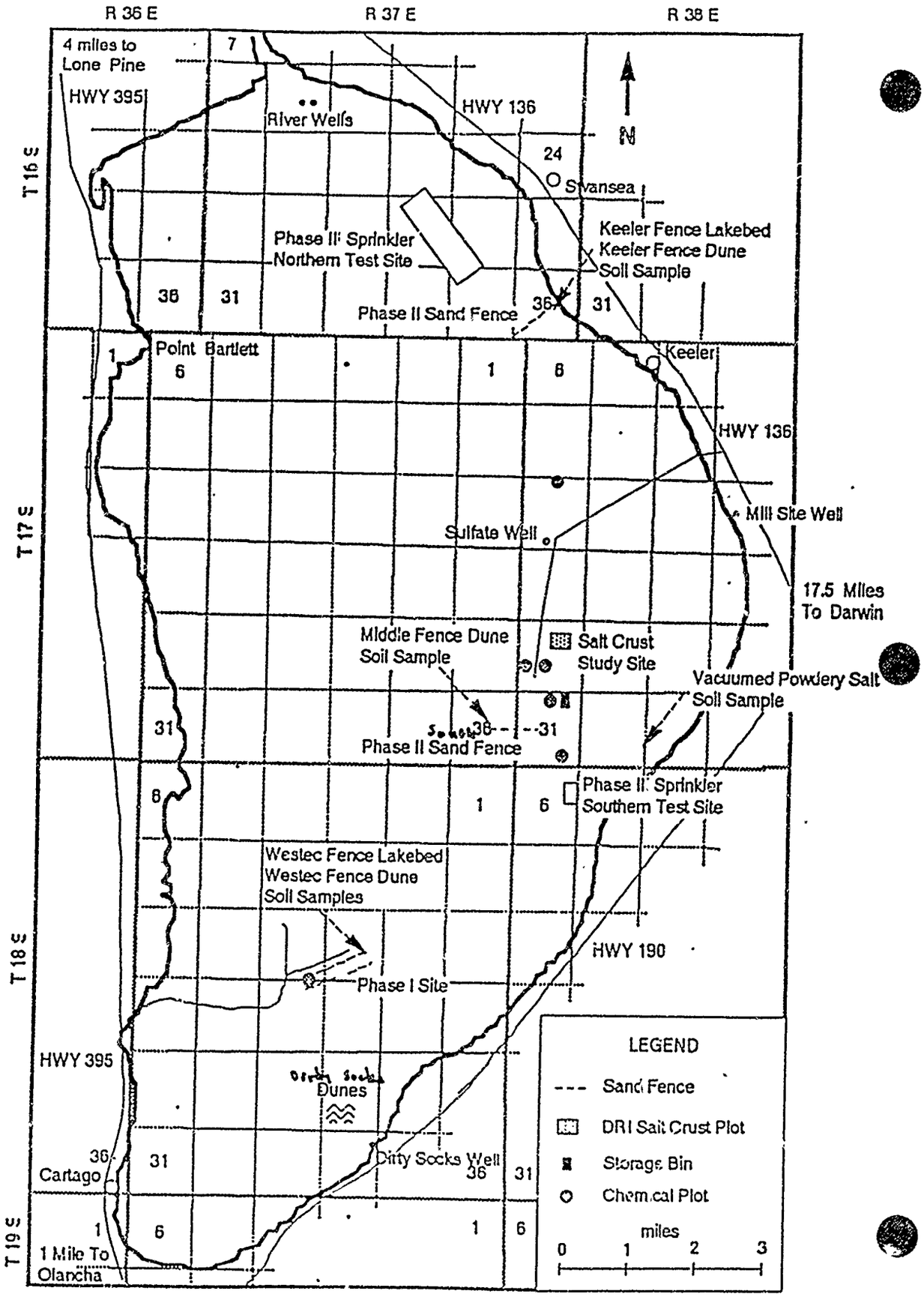



Figure 3

209.21
1071

eight short fences, each rotated 45 degrees from each other, designed to stabilize existing dunes. The three test sites are shown on Figure 3. These fences provided data on sand capture, as well as data on differing construction and maintenance procedures.

This component will test the ability and effectiveness of various arrays of sand dunes, as opposed to the single dunes tested previously, to capture and control saltation and to reduce the erosion potential of wind at the surface. In four demonstration areas, arrays of sand fences will be built and monitored as the dunes fill and after the fences reach capacity. The fences will be constructed of UV-stabilized plastic mesh, with a 42 percent porosity, strung from metal fence posts. The fences will be about 4 to 6 feet high, and will extend for just under 400 feet in a curved pattern with support posts every 30 feet (see Figure 4).

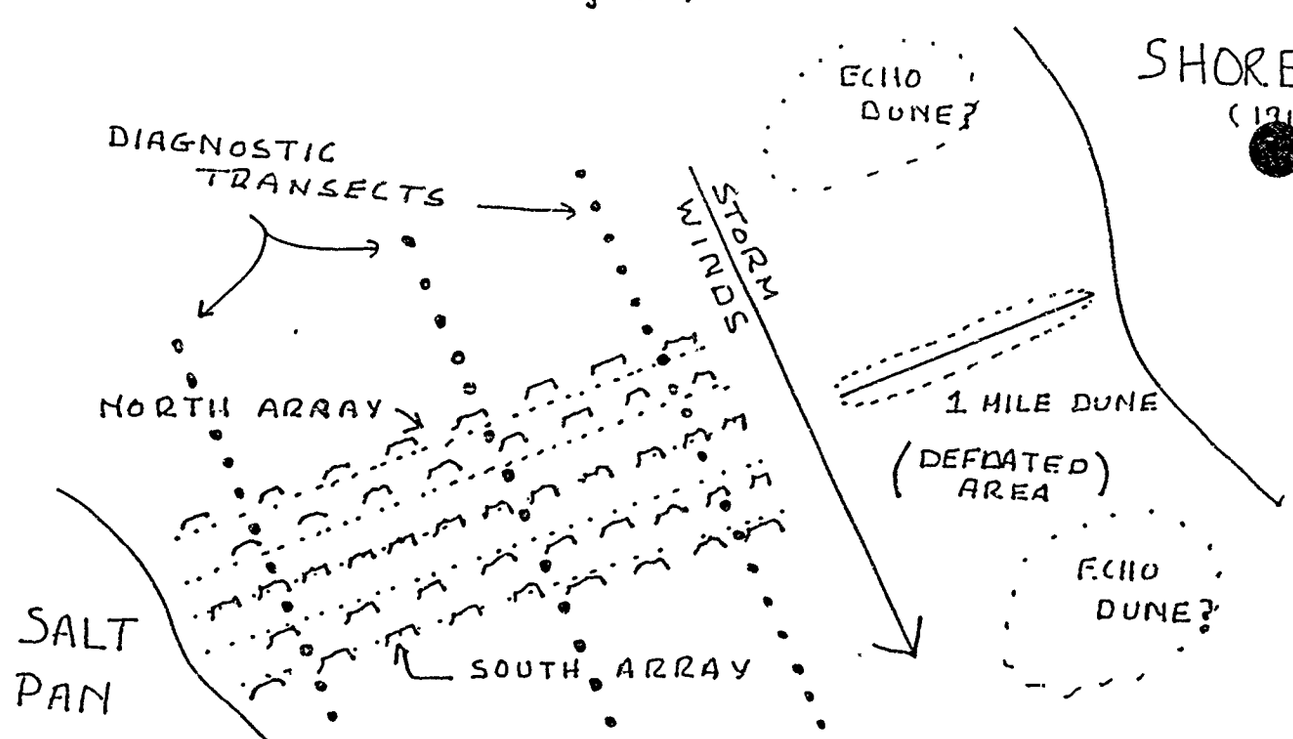
Based on experience gained from the earlier experiments, several construction procedures will be used to minimize damage to the salt crusts and Lake bed environment during the emplacement of the dune arrays. Access trails will be surveyed and clearly marked prior to the start of construction. Fence emplacement shall always begin at the edge of the salt pan and proceed up-slope. The fences will be built on the access road itself which will then be blocked by the fence and guy ropes. Only a single trip will be required for each fence emplacement, after which no visits will be made by equipment to the fences except in the case of fence failure. The Lake bed will be reached from existing access points. Construction staff will also be briefed by U.C. Davis biologists trained in Plover nest site recognition and avoidance.

The first array is proposed near the northeast margin of the Lake, near the town site of Swansea. The storm that generated the highest dust loading event in Keeler in 1991 originated at this location. The array would cover about half the sand corridor at this point on the Lake bed with 30 dunes arranged in a double staggered array 1/2 miles wide. Two fences would be built each day over four work weeks beginning in mid-July, 1992.

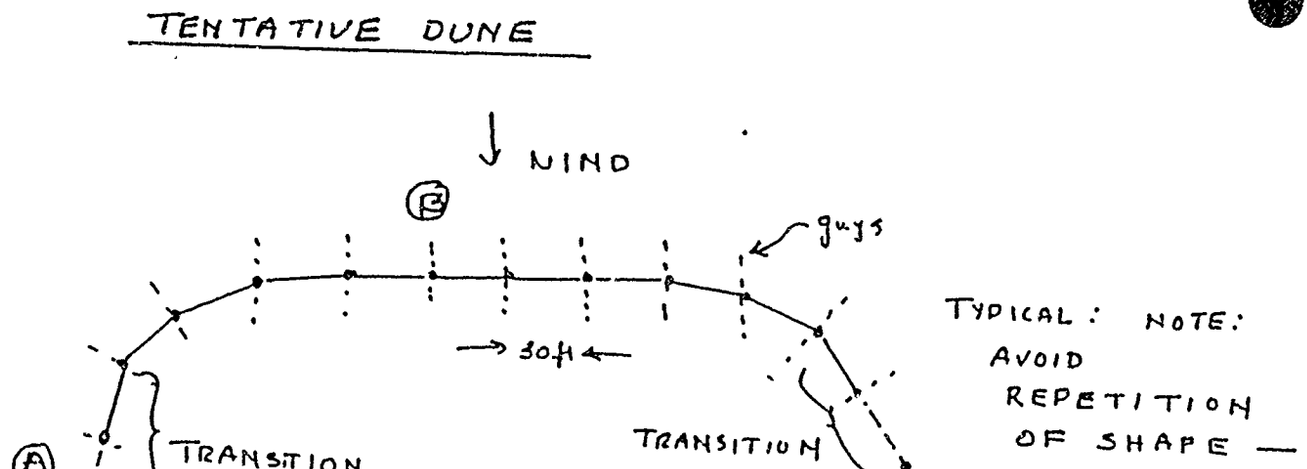
The second array would extend and widen the existing one mile Keeler fence. Sixty (60) or more fences would be built in five rows to capture both northern and southern storm winds. The array would extend from the existing fence to the salt pan in the middle of the Lake bed. Construction is planned to begin upon completion of the first array and will extend from about mid-August through mid-October, 1992.

The third array is planned to protect and further enhance the Sulfate Well riparian corridor. This band of water and vegetation has formed downslope from the Sulfate Well , but can be overrun by sand blowing in from the Lake bed (see map, Figure 5). A small array of dunes would be established to the west of the corridor to form a barrier for the corridor. Construction would begin in early

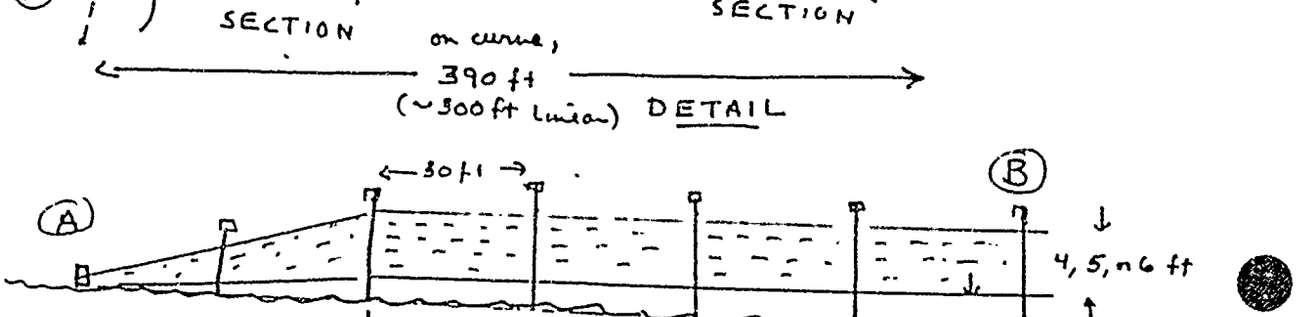
Figure 4




TENTATIVE DUNE




TYPICAL: NOTE: AVOID REPETITION OF SHAPE —



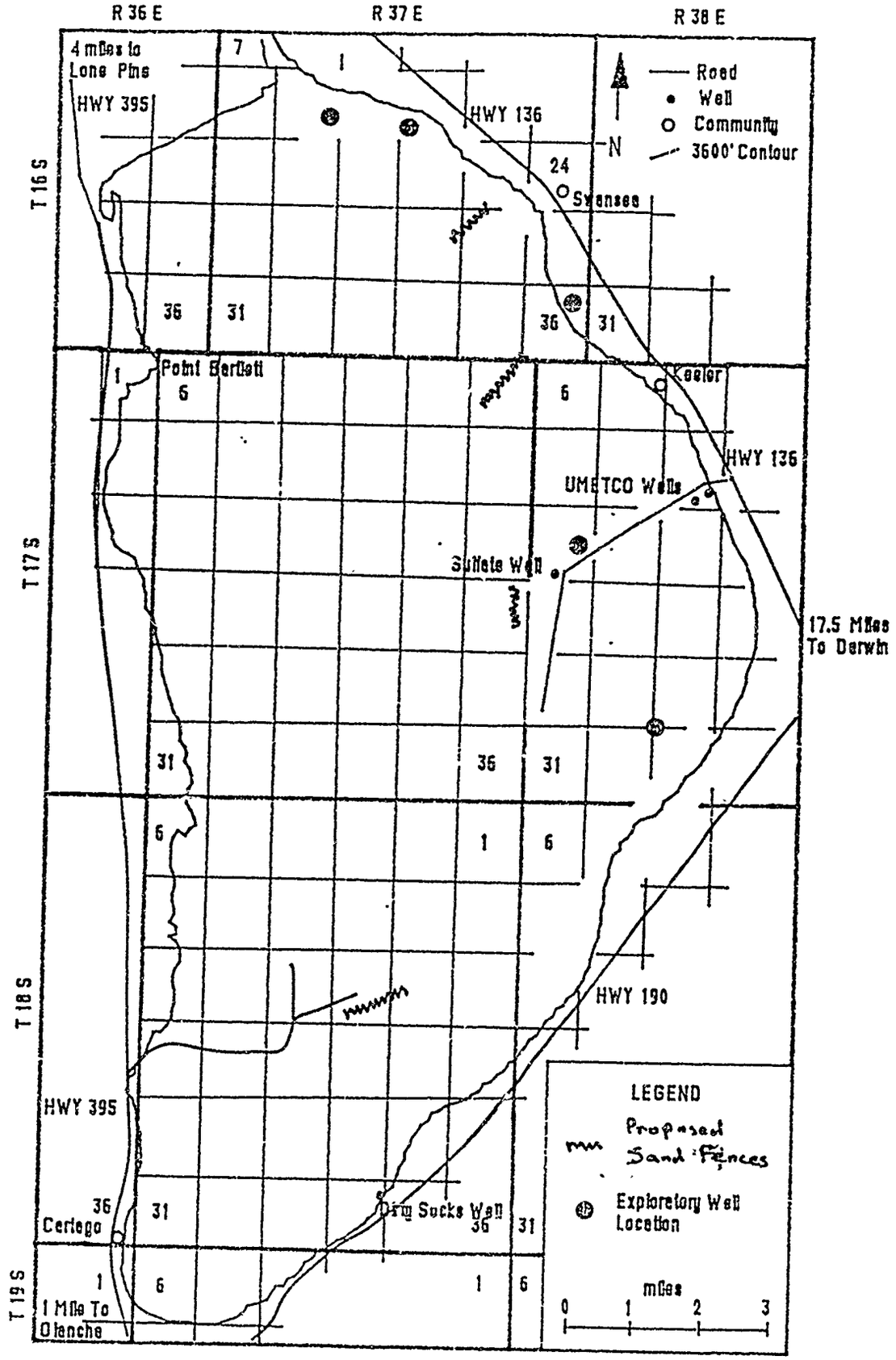



Figure 5

July, 1992, and be complete by the end of August, 1992.

The last array is planned for the south end of the Lake bed at a site studied by WESTEC. About sixty (60) fences would be installed from mid-July through the first of September, 1992.

**Component 3-Shallow Groundwater Investigation**

The near surface groundwater system of Owens Lake is largely unstudied. It is essential to understand this potential water resource prior to any consideration of large scale bioremediation efforts on the Lake surface. This component will be looking at interactions between the shallow groundwater and surface salt distribution, the production of efflorescent salt "fluff", interactions between the shallow and deep aquifer systems, the chemistry of the shallow water resource and the physical distribution of shallow groundwater.

The proposed design of the component involves transects that would run from the Lake margin out toward the center of the Lake bed (See Figure 6). Each transect will consist of piezometer sites spaced at half-mile intervals with a piezometer set into a shallow hole of up to 6 inches in diameter. The exact placement, length and number of transects and piezometer sites will be determined from information gathered from soil sampling programs, aerial photographs, surface observations and studies using a groundwater flow meter. The purpose of the component is to determine water levels and hydraulic gradients as well as their change over time. The chemistry of the shallow groundwater and surface crust will be measured as well. The component design is the responsibility of the Desert Research Institute working in conjunction with the GBUAPCD. Crews of less than five people would be installing the transects, one at a time.

**Component 4-Deep Aquifer Investigation**

Many of the proposed long-range bioremediations have, as a common component, the use of water. Before the feasibility of such proposals can be determined, more information on the amount and quality of the deep aquifers is required. Information on both water quality and quantity is required. Some information has been gathered by the GBUAPCD's testing of the River wells, the Swansea-Keeler well and the Mill Site well, but not enough information is available to characterize the aquifer system as a whole at Owens Lake. Evaluation of the water producing capabilities from the deep aquifers is impossible until more data is obtained on the areal extent, depth, thickness and hydrology of aquifers identified as having the potential for water development.

This project is broken into two separate subprojects: a high resolution shallow seismic reflection survey and a Transient Electromagnetic (TEM) survey.

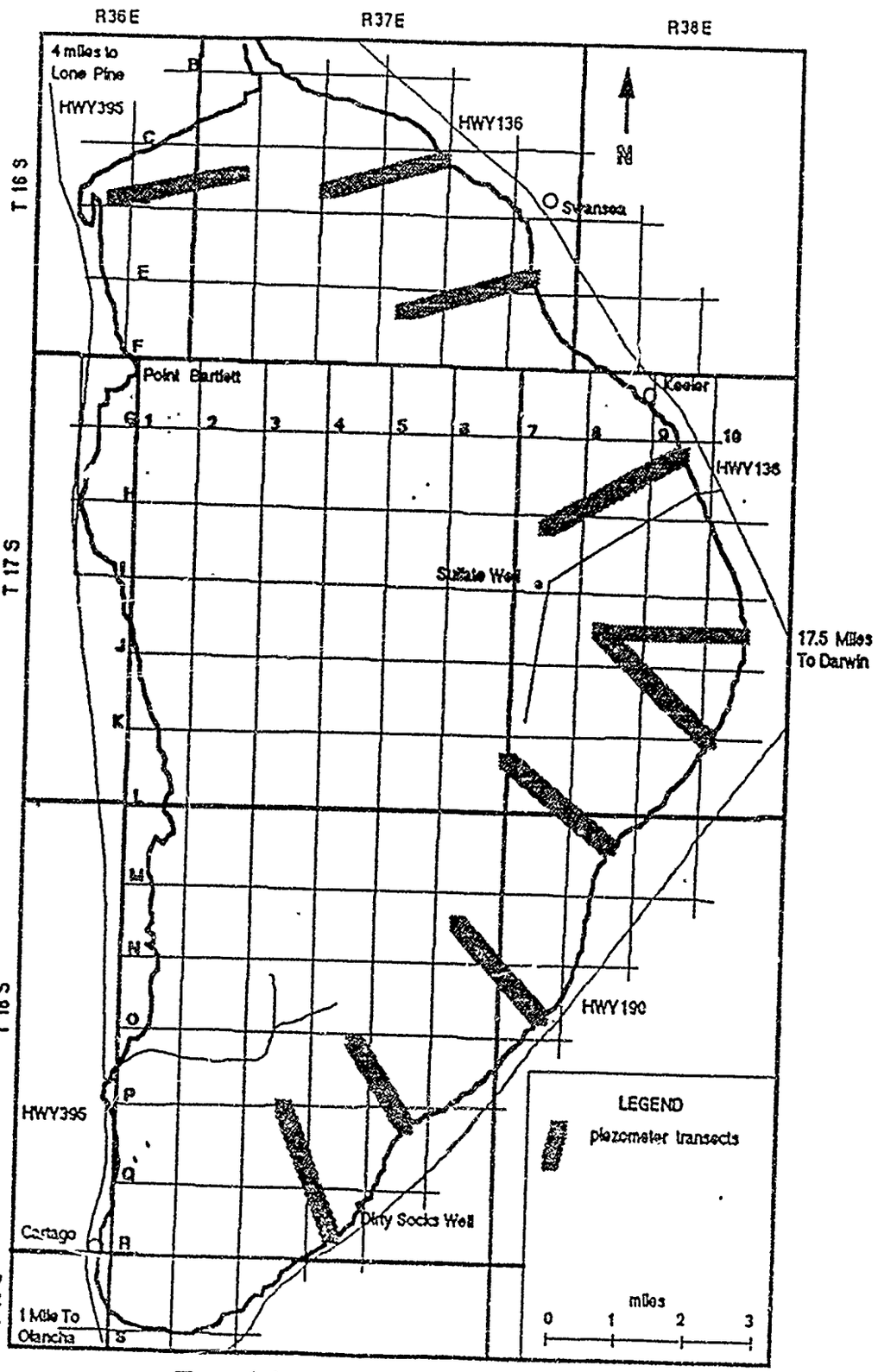



Figure 6 Location of piezometer transects