UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105-3901

EPA Five-Year Review of the Remedial Action at the Celtor Chemical Works Superfund Site in Humboldt County, California

I. INTRODUCTION

1. Scope and intent of current five-year review

This report is the statutory five-year review of the remedial action performed at the Celtor Chemical Works Superfund Site (CERCLIS Number CAD980638860) in the Hoopa Valley Indian Reservation of Humboldt County, California. This document is based on a review of the Remedial Investigation and Feasibility Study, the Record of Decision, the Site Close Out Report, and ATSDR's Site Review and Update, an ARARs review, interviews with the US Army Corps of Engineers personnel who were responsible for the remedial action and the one-year operation and maintenance efforts, and a site visit.

The purpose of this five-year review is to confirm that the remedy selected in the Record of Decision and specified in the Remedial Design remains effective at protecting human health and the environment. Further, this review is to evaluate whether the original cleanup objectives remain sufficient to protect human health and the environment.

2. Summary of review results

The results of the five-year review of the remedial action at the Celtor Chemical site are that: (1) the re-vegetation and post-closure maintenance was successful at insuring that the vegetation survived, (2) the vegetation cover is in good condition and there is no evidence of erosion, (3) there is no need to impose additional operation and maintenance requirements, (4) the original cleanup objectives remain protective of human health and the environment, and (5) there are no new ARARs which would make the remedial action insufficient.

II. SITE SUMMARY

1. Site description and history

The Celtor Chemical Works Superfund Site is a 2.5-acre parcel within the boundaries of the Hoopa Valley Indian Reservation in

Humboldt County, California (see Figure 1). The land had been held in trust by the US Bureau of Indian Affairs and by the US Department of the Interior. In 1957, the trustees leased the site to the Celtor Chemical Corporation for commercial sulfide ore processing. Ore removed from the nearby Copper Bluff Mine was processed to yield copper, zinc, and precious metals. The ore concentrates were trucked off-site for further processing while waste tailings were stockpiled in the plant site area. In 1962, an uncontrolled discharge of waste tailings from Celtor's settling ponds was released to the adjacent Trinity River. The California Department of Fish and Game subsequently cited the Celtor Chemical Corporation for pollution and fish kills. The plant ceased operations in June, 1962, and in March, 1963, the Bureau of Indian Affairs, as the trustee for the Hoopa Valley Indian Tribe, cancelled the leases of both the Copper Bluff Mine and the Celtor Chemical Works Mill.

In 1981, the site was identified as part of an abandoned site program industrial waste facility survey conducted by the California Department of Health Services, Toxic Substances Control Division. At the time of discovery, the settling ponds were no longer visible and were thought to have disappeared in the flood of 1964. Random sampling was done at the site by the California Department of Health Services. The Indian Health Services then submitted to the US Environmental Protection Agency (EPA) a hazardous waste site notification under CERCLA. The EPA Field Investigation Team conducted more sampling and analyses. The sampling performed by the EPA Field Investigation Team and the previous sampling by the California Department of Health Services showed high concentrations of heavy metals in the soil and in the surface water.

In April, 1982, the site was added to the California State Priorities List and on December 30, 1982, the site was proposed for inclusion to the National Priorities List and made final in September, 1983.

In 1983, the California Department of Health Services performed a more extensive analysis and discovered that the surface samples had concentrations above the California Assessment Manual Total Threshold Limit Concentrations for copper, zinc, cadmium, arsenic, and mercury. In addition, surface water was shown to be acidic.

Because of the proximity of a housing development and possible impact to the Trinity River, EPA conducted an Initial Remedial Measure Investigation and Focused Feasibility Study. The study concluded that the removal of all visible contaminants (not including concrete structures) and some topsoil would be sufficient for the Initial Remedial Measure. Approximately 1400-cy of contaminated material were removed by EPA by December 18, 1983. During this remedial measure, however, contamination was found in locations not previously identified as areas of concern. Based on this discovery, it was determined that a more thorough investigation was needed.

In October, 1984, EPA began the Remedial Investigation which concluded that zinc, arsenic, copper, cadmium, and lead were present at high concentrations on the site. However, analysis of groundwater samples indicated that contamination had not migrated to the groundwater aquifer. Although run-off water from the site was found to exceed both the Drinking Water Standard and the Federal Ambient Water Quality Criteria for Aquatic Life, the dilution upon entering the Trinity River was so great that the Trinity River was not expected to exceed standards resulting from the surface water discharges at the Celtor Chemical site.

On September 30, 1985, EPA signed a Record of Decision which identified the contaminants of concern to be arsenic, cadmium, copper, lead, zinc, mercury, selenium, and cyanide, and which selected excavation and off-site removal to a RCRA approved Class I Landfill of all soils contaminated above the site-specific action levels as the remedial action for the site. EPA entered into an Interagency Agreement with the US Army Corps of Engineers which funded the US Army Corps of Engineers to produce the design documents and to manage the remedial action.

At the start of the remedial action, the site contained various concrete foundations and remnants of haul roads. The concrete was heavily stained with what was believed to be iron oxide, and white powdery material thought to be zinc oxide was evident on the ground's surface. Vegetation at the site consisted of pasture grasses on the level areas and mixed forestry in the gully area, with willow, fir, and laurel tress being the most prominent on site. Much of the area about the concrete structures, as well as part of the pasture, was devoid of vegetation, presumably due to the contamination. Wildlife observed on-site included eagle, fox, bear, and skunk.

2. Description of selected remedy and work performed

Based on the Remedial Investigation and Feasibility Study, EPA, the State of California, the Hoopa Valley Indian Tribe, the Bureau of Indian Affairs, and the Department of the Interior agreed that excavation and off-site removal of all soil contaminated above site-specific action levels would be the most cost-effective long term remedial action fully protective of human health and the environment.

Initial remedial action efforts divided the site into six areas to be excavated to various depths. After excavation, soil samples were to be taken at designated grid points for all the contaminants of concern (see Figure 2). It was estimated that 3220-cy of soil and 890-tons of concrete was to be removed and transported to a RCRA approved Class I Landfill. However, the acceptance of a value engineering proposal to perform deeper, and therefore more thorough, sampling decreased the actual volume of excavated soil to 1,163-cy.

The activities under contract included soil sampling, concrete sampling, water sampling, excavation of contaminated material, stockpiling, and the loading and hauling of the contaminated material, all of which were performed in Level C protective gear supplemented with total skin coverage. In addition, the remedial action included confirmation testing, backfilling and compaction, re-vegetation, and demobilization.

The level areas of the site were returned to a condition similar to that prior to excavation. Excavated pits were filled and compacted, and a layer of topsoil was added. A mixture of grasses was seeded in the pasture, and the gully was backfilled and mulched with straw. Gravel was placed along the bottom of the drainage channel to prevent erosion, and native species of willow trees, grape trees, and blackberry vines were planted in the open areas of the gully to protect against erosion from run-off waters and flood waters.

The hillside where the concrete remnants of the chemical works were abandoned was backfilled and sloped to give the hillside a more even contour and more natural appearance, erasing the traces of the disturbances caused by the mining activities. The active spring on the hillside was diverted to the upper end of the gully to prevent erosion as vegetation developed. The entire hillside was seeded with a mixture of grasses on top of the layer of topsoil.

3. Operation and maintenance

The operation and maintenance was performed for a one-year period by the US Army Corps of Engineers. Efforts included monthly site visits to inspect for evidence of erosion and problems with re-vegetation, and maintenance of the perimeter fence.

III. REMEDIAL OBJECTIVES

The objective of every remedial action is to mitigate and minimize damage to and provide adequate protection of public health, welfare, or the environment. For this particular site, the general remedial goals were to prevent human exposure to soil and water that were contaminated at concentrations which may have posed threat to public health or the environment.

The water flowing through the gully is intermittent and insufficient to support most aquatic life. Accordingly, water quality standards for the gully, the surface water running into the gully, and the groundwater, which is a known drinking water resource, were based on action levels necessary to protect human health.

IV. ARARs REVIEW

The environmental and public health laws imposed at the Celtor site are cited in the Record of Decision. The remedy which is in place remains in compliance with these standards.

The site-specific action levels for the contaminants were developed in compliance with the applicable or relevant and appropriate requirements to prevent human exposure to the contaminated soil and water. To date, these action levels remain protective of human exposure and, although the action levels at the Celtor site are not the most stringent when compared to similar sites nationwide, these action levels for each of the contaminants of concern remain in the average range for cleanup standards (see Figure 3).

V. SUMMARY OF SITE VISIT

A site visit was conducted by the Remedial Project Manager on September 10, 1993. The purpose of this visit was to inspect the condition of the vegetation in and around the site area and to inspect for possible signs of erosion.

The site was found to be in very good condition. A wood-staked wire fence has been built around the previously contaminated pasture where livestock now graze (see Photo 1 and Photo 2); the grasses that were seeded in the pasture form a healthy layer of vegetation (see Photo 3); the blackberry bushes and various trees which were planted under the remedial action contract appear natural to the surroundings (see Photo 4); and the hillside where the chemical works previously existed is now dense with vegetation with no indication of erosion (see Photo 5). The property appears to require almost no maintenance and, other than an old sign along the gravel road which leads to the Trinity River (see Photo 6), there exists little evidence that this site was once a health threat (see Photo 7).

VI. AREAS OF NONCOMPLIANCE

There were no areas or conditions of noncompliance with the objectives of the remedial action at the site.

VII. STATEMENT OF PROTECTIVENESS

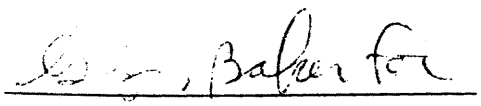
The remedial action selected in the Record of Decision, 1985, has been reviewed in preparation of this document. The remedial action has been found to be protective of human health and the environment.

VIII. NEXT REVIEW

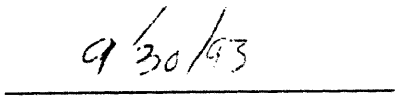
Although soil with contaminants in concentrations above the site-specific action levels has been removed from the Celtor site, the remedy does not allow for unlimited use and unrestricted exposure since the contaminants of concern, i.e. arsenic, cadmium, copper, lead, zinc, mercury, selenium, and cyanide, remain on-site in lower concentrations. Despite EPA's current position that the levels of contaminants remaining on-site are nonthreatening to human health and the environment, future developments in environmental or public health research could impact the applicable or relevant and appropriate requirements governing the Celtor site. Therefore, another five-year review is to be conducted in fiscal year 1998 to evaluate the protectiveness of the applicable or relevant and appropriate requirements to ensure that the standards remain protective.

IX. IMPLEMENTATION REQUIREMENTS

Presently there are no implementation requirements at this site. The remedial action and the operation and maintenance efforts were sufficient.



David B. Jones, Chief
Remedial Action Branch



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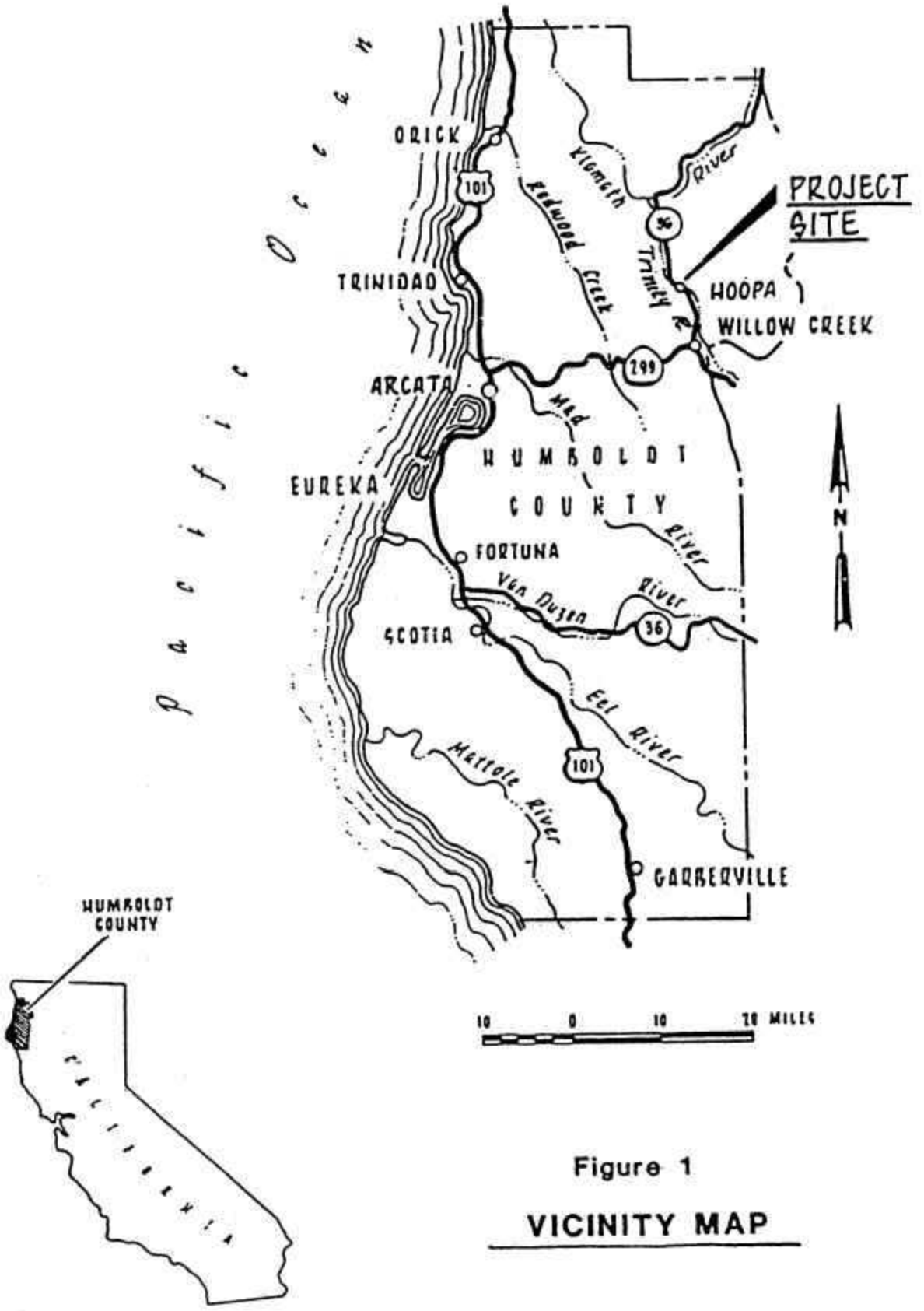


Figure 1

VICINITY MAP

CELTOR CHEMICAL WORKS

APRIL 1985

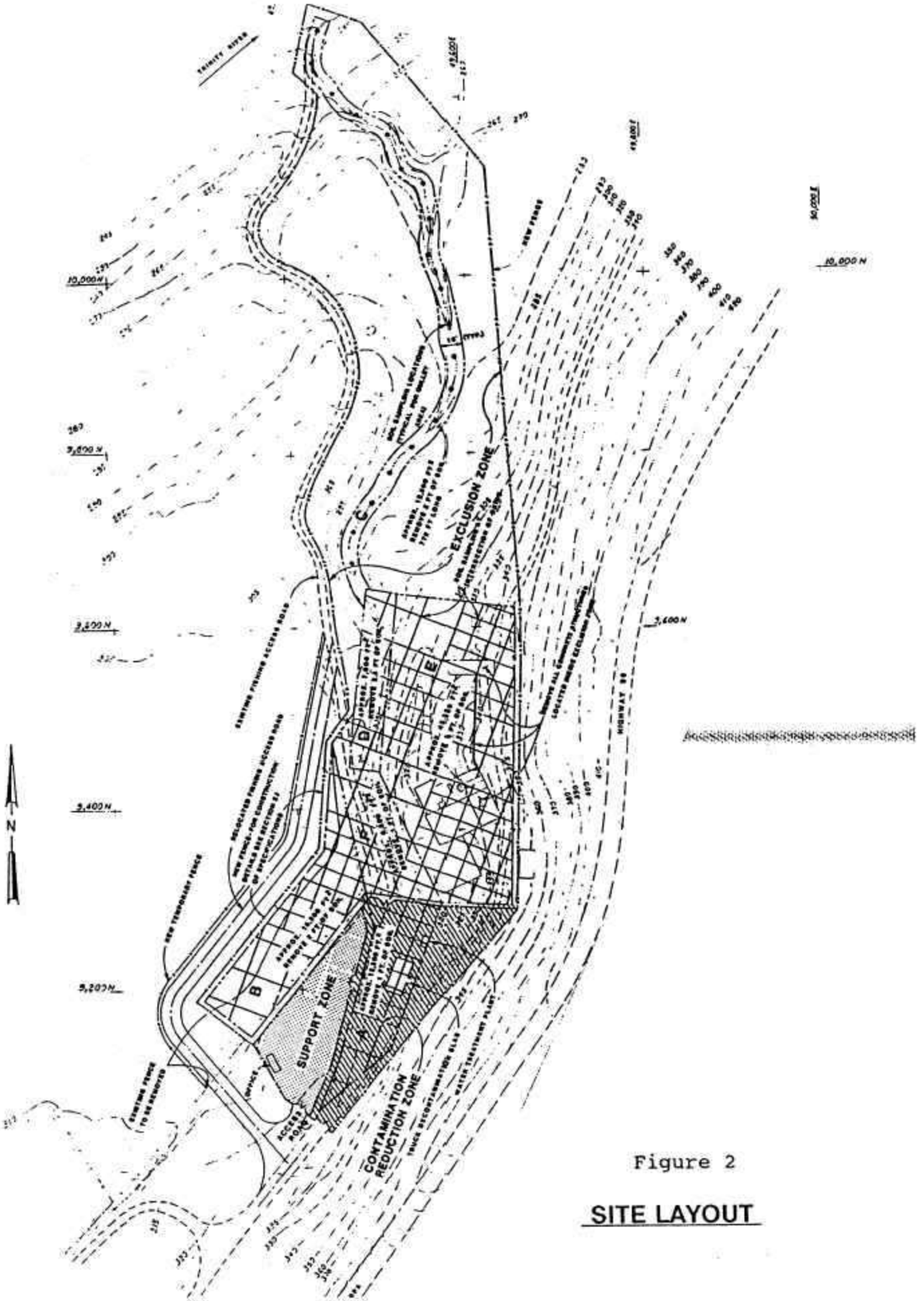


Figure 2

SITE LAYOUT

NOTE: The cleanup standards for various sites located nation-wide were compiled in an EPA accessible data-base. The range of cleanup standards for the contaminants found at Celtor are given in parentheses below the site-specific action levels.

Contaminant	Soil (ppm)	Water (ug/l)
Arsenic	100 (5 - 500)	50 (5 - 50)
Cadmium	25 (25 - 510)	10 (5 - 64)
Copper	2500 (25 - 2900)	1000 (11 - 3000)
Lead	500 (70 - 500)	50 (5 - 150)
Zinc	5000 (10 - 5000)	5000 (90 - 7000)
Mercury	20 (20 - 300)	N/A
Selenium	100 (100 - 2000)	N/A
Cyanide	200 ***	N/A

*** No information provided

Figure 3

CONTAMINANTS OF CONCERN

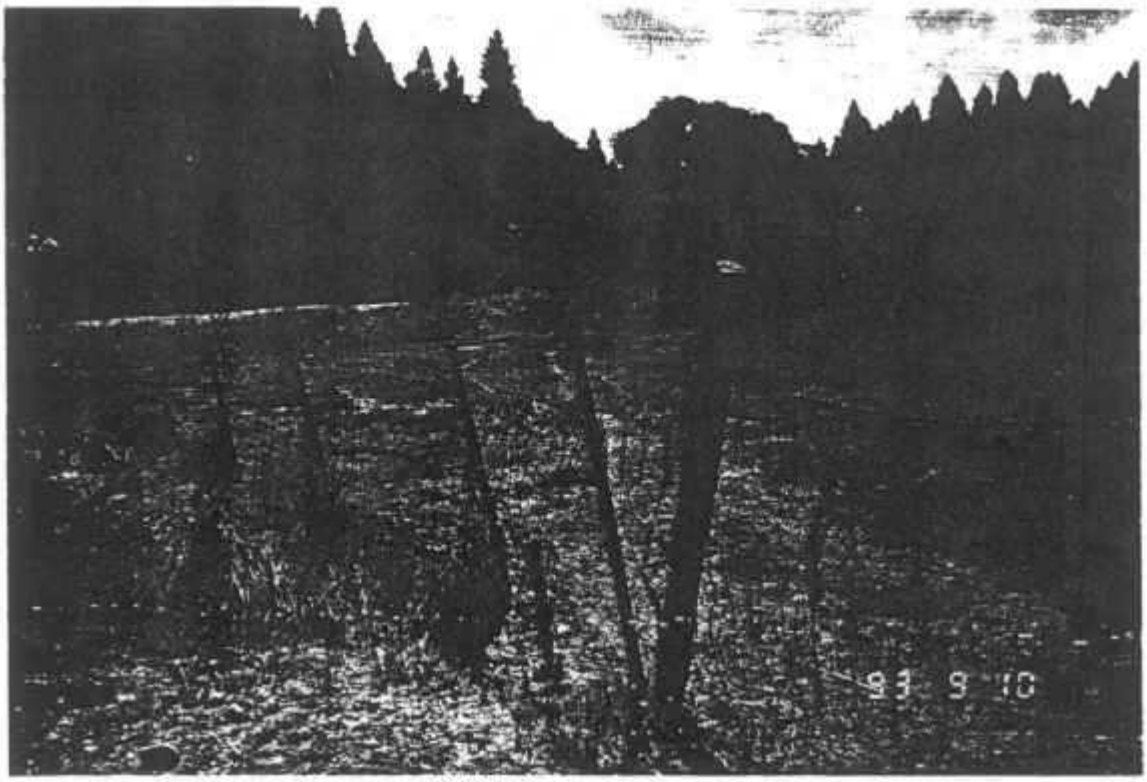
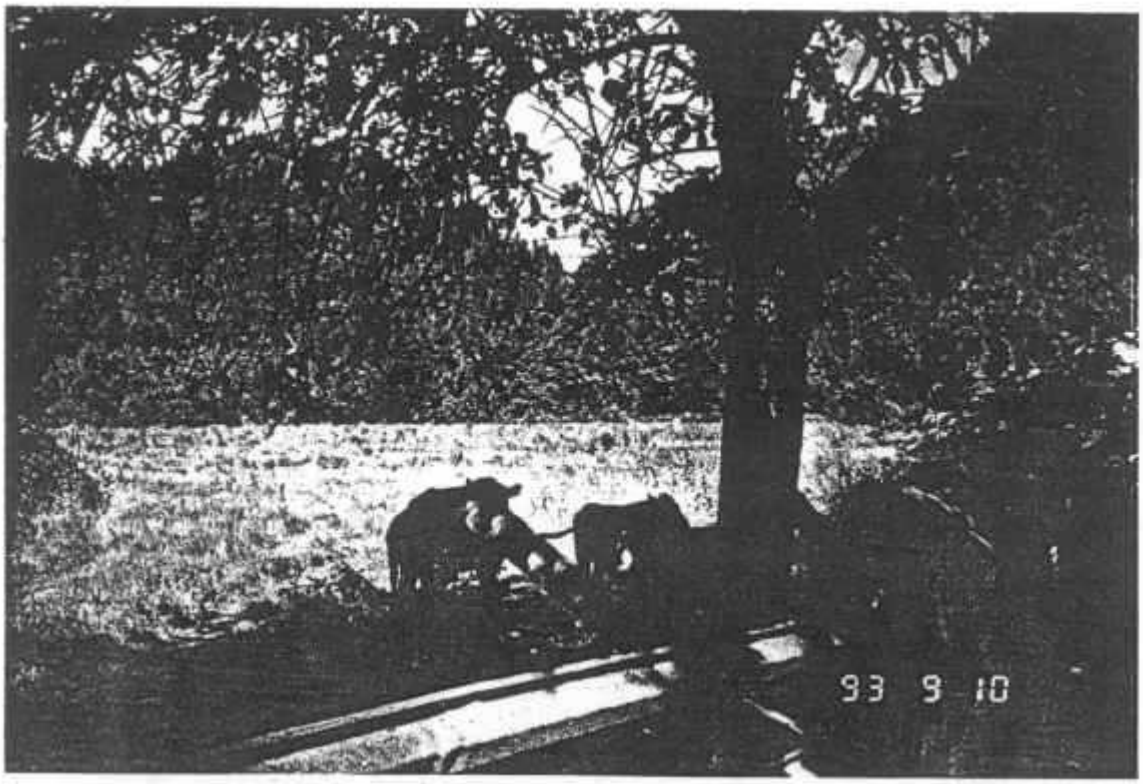
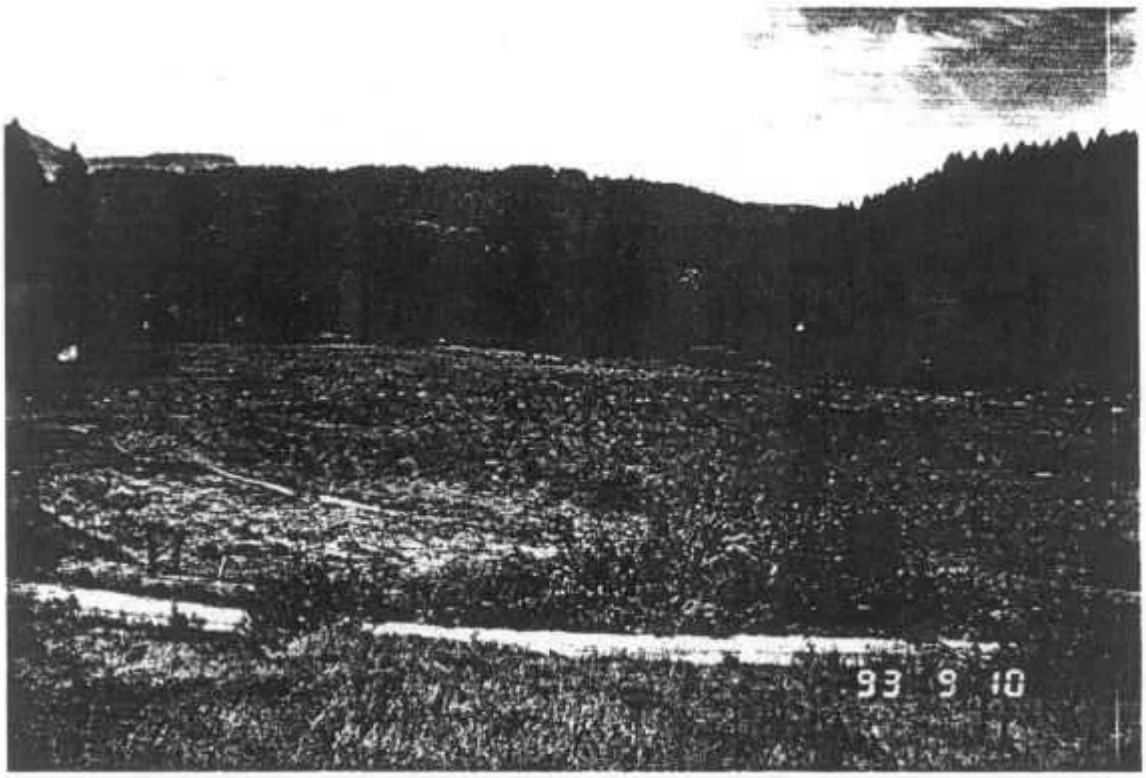


PHOTO 1





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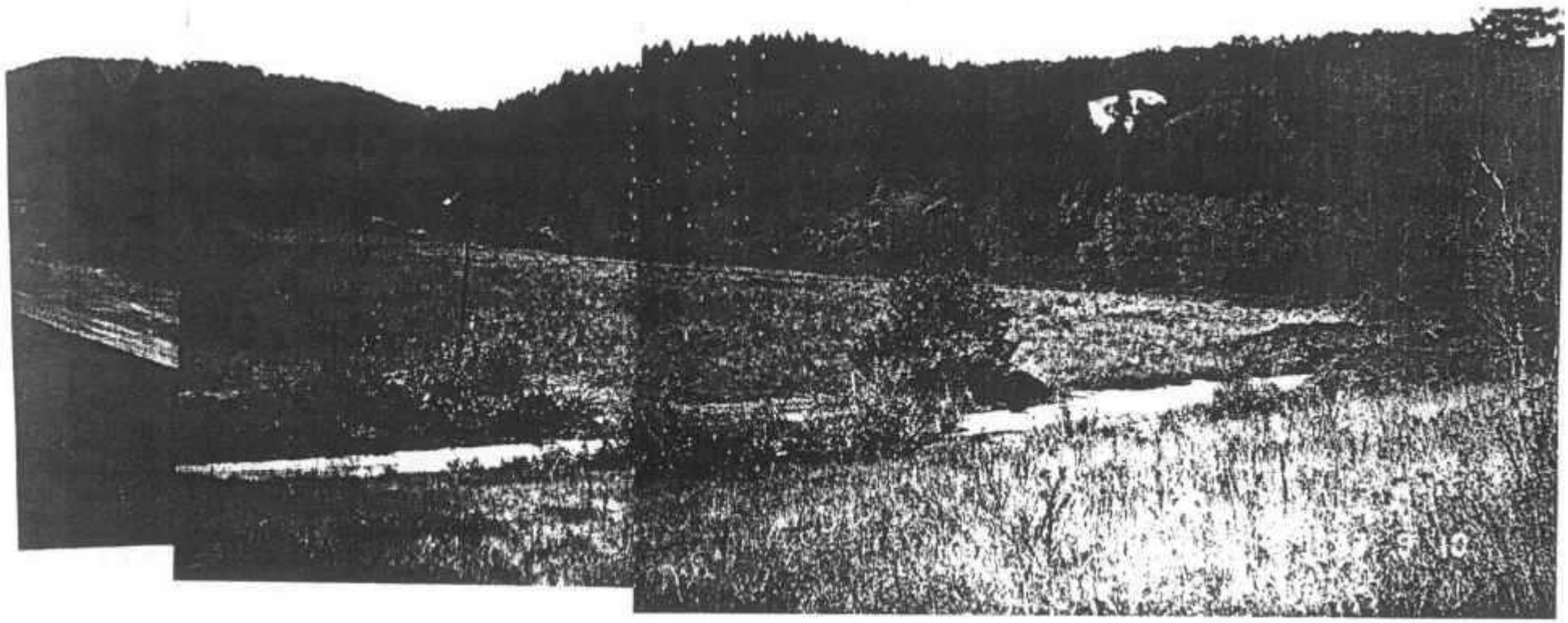

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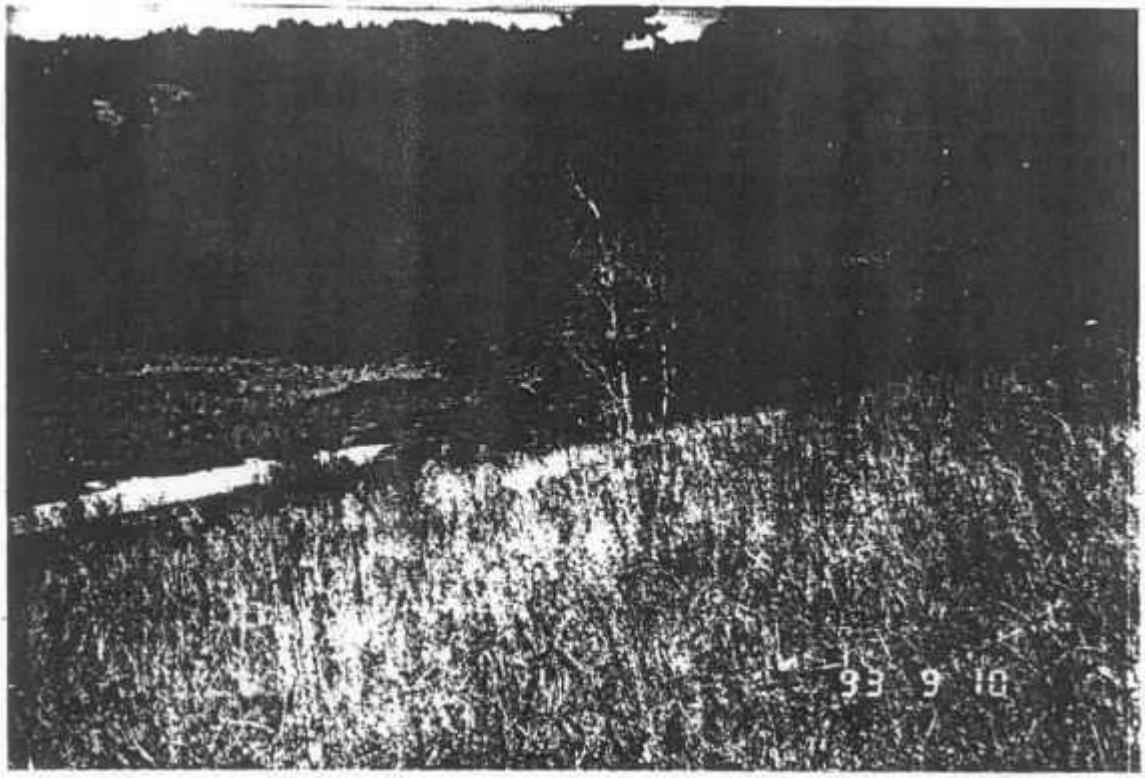
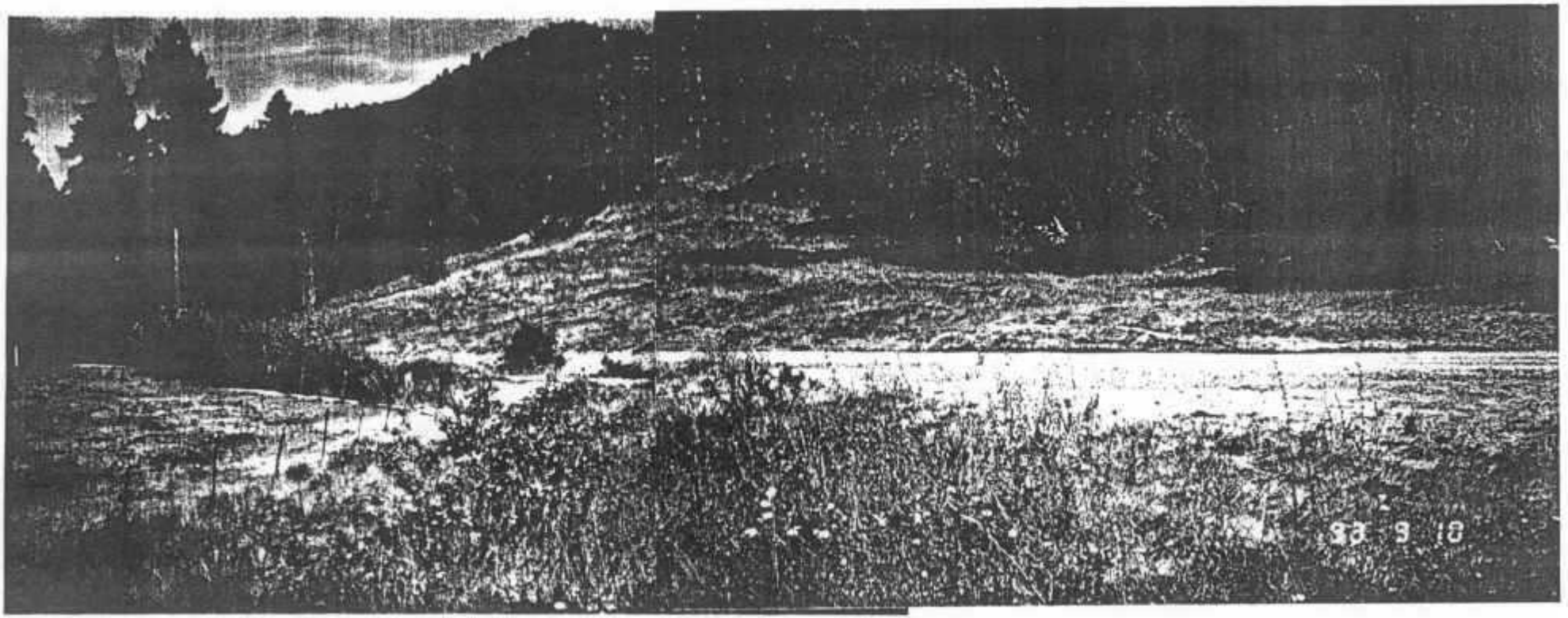


PHOTO 5

PHOTO 6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