



PORT OF OAKLAND

ENVIRONMENTAL
PROTECTION

99 AUG 17 PM 2: 27

August 16, 1999

Mr. Barney Chan
Alameda County Health Care Services Agency
Environmental Protection Division
1131 Harbor Bay Parkway, #250
Alameda, CA 94502-6577

**SUBJECT: Work Plan for Subsurface Investigation, Port USTs MF8/9/10
South Field, Oakland International Airport
STID #6409**

Dear Mr. Chan:

Enclosed you will find the report entitled "Work Plan for Subsurface Investigation" prepared by Harding-Lawson Associates, one of the Port of Oakland's "as-needed" consultants.

The Port of Oakland is ready to implement the work plan as soon as it receives approval from your office. Should you have any questions or need additional information, please contact me at 272-1118. Thank you for your on-going assistance and support on this project.

Sincerely,

Dale H. Klettke, CHMM
Associate Environmental Scientist
Environmental Health & Safety Compliance

enclosure

c (w/o encl): Neil Werner - EH & SC
c:\msoffice\winword\205776wp.hla



August 10, 1999

47858.2

Mr. Dale H. Klettke, CHMM
Port of Oakland
Environmental Health & Safety Compliance
530 Water Street, 2nd Floor
Oakland, California 94607

**Work Plan for Subsurface Investigation
Former USTs: MF-08, MF-09, & MF-10
South Airport Self-Fueling Facility, Taxiway 4
Metropolitan Oakland International Airport
Oakland, California**

Dear Mr. Klettke:

Harding Lawson Associates (HLA) presents this Work Plan to the Port of Oakland (Port) for a soil and groundwater investigation at the Metropolitan Oakland International Airport (MIOA) in Oakland, California (Plate 1). This investigation initiates site remediation as recommended in the *Underground Storage Tank Closure Report*, dated June 22, 1999. The objective of this project is to investigate the impact of petroleum hydrocarbons on soil and groundwater in the vicinity of the former underground storage tanks (USTs) and a former oil-water separator located adjacent to Taxiway 4.

BACKGROUND

On April 26, 1999, the Port of Oakland's contractor removed three underground storage tanks (USTs), MF-08, MF-09, and MF-10 from the airport. MF-08 and MF-09 consisted of adjacent 1,000-gallon diesel tanks, and MF-10 was a 5,000-gallon gasoline tank located approximately 45 feet to the north. Removal of the three USTs involved two separate excavations. Soil and groundwater samples taken from the excavations indicated that there had been a release of petroleum hydrocarbons at both sites. Total petroleum hydrocarbons as diesel (TPH-diesel), total petroleum hydrocarbons as gasoline (TPH-gas), benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl tertiary butyl-ether (MTBE) were detected in both soil and groundwater samples collected from the excavations.

At the excavation of the two diesel USTs, the analytical results indicated TPH-diesel and TPH-gas concentrations in soil samples as high as 39,000 and 3,000 milligrams per kilogram (mg/kg), respectively. Only low concentrations of the BTEX constituents were detected. Groundwater samples exhibited TPH-diesel and TPH-gas concentrations of up to 51 and 120 milligrams per liter (mg/l), respectively.

At the excavation of the gasoline UST, the analytical results indicated TPH-gas and TPH-diesel concentrations in soil samples as high as 4,300 and 6,200 mg/kg respectively. BTEX constituents were detected in soil samples up to 1.4 mg/kg for benzene, 87 mg/kg for toluene, 65 mg/kg for ethylbenzene, 540

August 10, 1999
47858.2
Mr. Dale H. Klettke
Port of Oakland
Page 2

Harding Lawson Associates

mg/kg for xylenes, and 5.5 mg/kg for MTBE. Groundwater samples exhibited TPH-gas and TPH-diesel concentrations of up to 42 and 1.7 mg/l, respectively; dissolved BTEX ranged from 0.27 to 8.9 mg/l and MTBE was detected at 15 mg/l.

Groundwater was measured at a depth of 3.5 to 4.0 feet. Both excavations were reportedly backfilled with pea gravel to a depth of 3 feet and capped with aggregate base rock.

APPROACH

HLA proposes to collect groundwater samples for chemical analyses from eight locations to evaluate the extent of hydrocarbon impact. The investigation will be conducted with a geoprobe (direct-push coring) rig. HLA will collect soil samples and groundwater samples from the geoprobe borings.

The Port has requested that HLA commence a remedial action at the site by conducting this investigation. The chemical analysis results will be used to evaluate the need for additional investigation or remediation activities. If groundwater has been significantly impacted, the Port may authorize HLA to install monitoring wells to continue monitoring groundwater conditions. If this investigation identifies only minimal impact outside the UST excavation, the Port may authorize additional remediation, such as soil excavation and off-haul or the injection of an Oxygen Releasing Compound (ORC) to enhance in-situ bioremediation.

does it follow?

This Work Plan outlines the following tasks:

- Collection of soil and groundwater samples around the diesel and gasoline UST excavations
- Preparation of a report summarizing the sampling activities and analytical results

Sign imp - wells + remed. slightly - wells.

Task 1 - Soil and Groundwater Sample Collection

HLA will mobilize a geoprobe rig to collect soil and groundwater samples from eight locations around the former UST excavations. The sample locations have been selected to assess the extent of contamination associated with the former USTs and with a former oil-water separator. The oil-water separator included a discharge line that extended through the area of interest. Five locations are in the vicinity of the former USTs and three locations are along the discharge line (Plate 2).

Analyses?

Prior to mobilizing, permits will be obtained from Alameda County Department of Public Works. After marking the proposed geoprobe location in white paint, HLA will contact Underground Service Alert to obtain clearance for underground utilities. HLA will confirm that the geoprobe locations are clear of underground utilities by contracting California Utility Surveys to conduct a survey of the proposed boring locations.

HLA will contract Gregg Drilling and Testing Company of Martinez, California (Gregg), a California-licensed drilling company to advance eight geoprobe sample cores. A 2-inch diameter rod will be pushed to approximately 3 feet below the depth at which groundwater is first encountered; anticipated to be a total

August 10, 1999
47858.2
Mr. Dale H. Klettke
Port of Oakland
Page 3

Harding Lawson Associates

depth of about 8 feet bgs. Soil samples will be collected continuously in 1-3/4-inch by 4-foot PVC liners from near-surface to the final depth. An HLA field engineer or geologist will direct the work, log the borings in accordance with ASTM D2487-85 Unified Soil Classification, and will periodically screen samples with a photo-ionization detector (PID).

What depth? Vadose or saturated sample?
One soil sample will be selected and preserved at each boring location. The basis for selection will include soil discoloration, odor, and organic vapor readings. The soil samples will be preserved by placing Teflon film at each end of the sample, covering the ends with plastic caps, sealing with paraffin or non-adhesive rubberized tape. All soil samples will be immediately sealed, labeled, placed in a cooler chilled with ice or Blue Ice, and delivered under chain-of-custody to Curtis and Tompkins, Ltd., a California state-certified laboratory, for chemical analyses under a direct contract with the Port. Soil samples will be analyzed for the following constituents:

- BTEX and MTBE in accordance with EPA Test Method 8260b
- TPH-gas in accordance with EPA Test Method 8015 modified
- TPH-diesel with silica gel cleanup and in accordance with EPA Test Method 8015 modified

After the borings reach the final depth, HLA will place a temporary PVC well casing in each of the borings. HLA will measure the water level with an electronic water sounder, and collect a groundwater sample through Teflon tubing using a peristaltic pump. We will pump the groundwater directly into laboratory-prepared sample containers. Enough groundwater will be removed to measure conductivity, pH, DO, and oxidation-reduction potential (REDOX). We will immediately seal, label, and place all groundwater samples in a cooler chilled with ice or Blue Ice to be delivered under chain-of-custody protocol. We will submit the samples to Curtis and Tompkins for analyses.

All boring and sampling equipment will be decontaminated with a phosphate-free detergent and rinsed with deionized water before use in at each sample location to avoid cross-contamination between borings. Following groundwater sample collection, Gregg drilling will remove the temporary PVC casings and backfill the borings with grout to near surface. The borings will be finished with appropriate material to match the surrounding surface.

Investigation derived waste will be stored in sealed 5-gallon buckets at a location specified by the Port pending the results of chemical analyses. One soil sample will be collected to characterize the waste. The Port waste disposal contractor will dispose of all investigation derived wastes.

Task 2 –Chemical Analyses and Report Preparation

The chemical laboratory will analyze the groundwater samples for the following constituents to evaluate hydrocarbon impacts and natural attenuation parameters:

- BTEX and MTBE in accordance with EPA Test Method 8260
- TPH-gas in accordance with EPA Test Method 8015 modified

August 10, 1999
47858.2
Mr. Dale H. Klettke
Port of Oakland
Page 4

Harding Lawson Associates

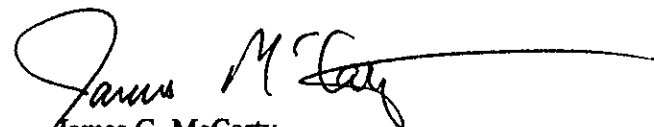
- TPH-diesel with silica gel cleanup and in accordance with EPA Test Method 8015 modified
- Ferrous Iron in accordance with EPA Test Method SM 3500
- Total Iron in accordance with EPA Test Method 6010
- Nitrate in accordance with EPA Test Method 300.0
- Sulfate in accordance with EPA Test Method 300.0
- Orthophosphates in accordance with EPA Test Method 365.2
- Total Organic Carbon in accordance with EPA Test Method 415.2

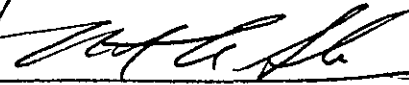
HLA will then validate the data and assess the precision, accuracy, completeness and overall quality of the data. HLA will prepare a letter report including, description of sample activities, a summary of the chemical analyses, a site plan, groundwater elevation data and gradient flow direction information, boring logs, and an evaluation of the data. The report will present conclusions on the extent of petroleum impact at the UST excavations and recommend a remedial scheme, if appropriate.

Please review this work plan and call with any questions or comments. We presume that you will send the work plan to Alameda County. Please inform us when you would like us to perform the investigation.

Yours very truly,

HARDING LAWSON ASSOCIATES


James G. McCarty
Project Engineer


Michael A. Sides, P.E.
Civil Engineer

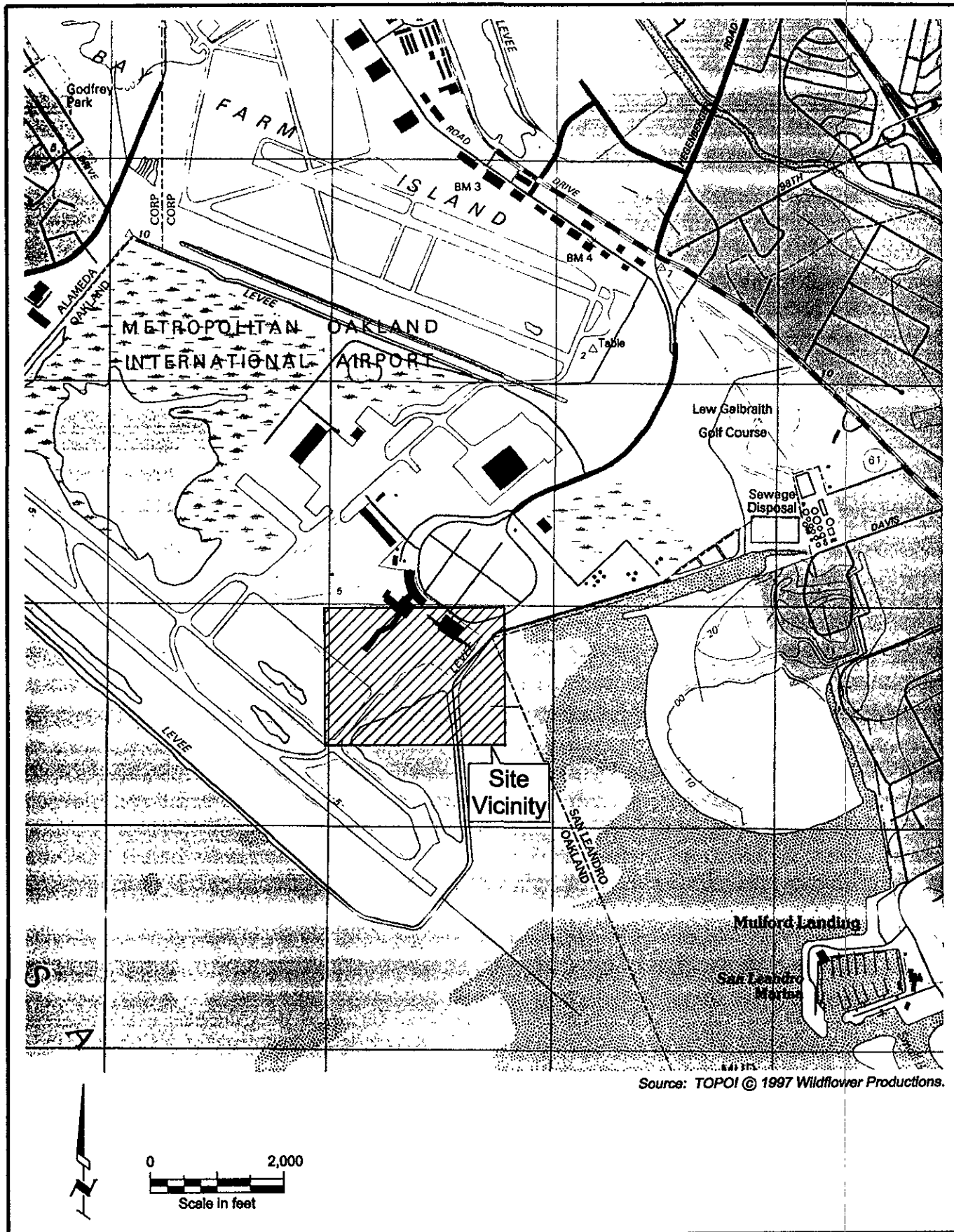
JGM/MAS/mlw/47858/037308L

3 copies submitted

Enclosures

Plate 1 – Site Location Map
Plate 2 – Site Plan





location.dwg

HLA
Harding Lawson Associates
Engineering and
Environmental Services

DRAWN: AJW
JOB NUMBER: 47858-1

Site Location Map
Work Plan, Taxiway 4
Oakland International Airport
Oakland, California

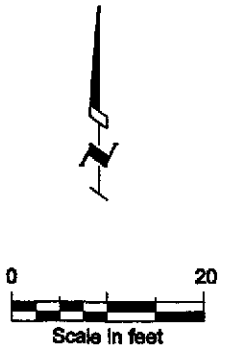
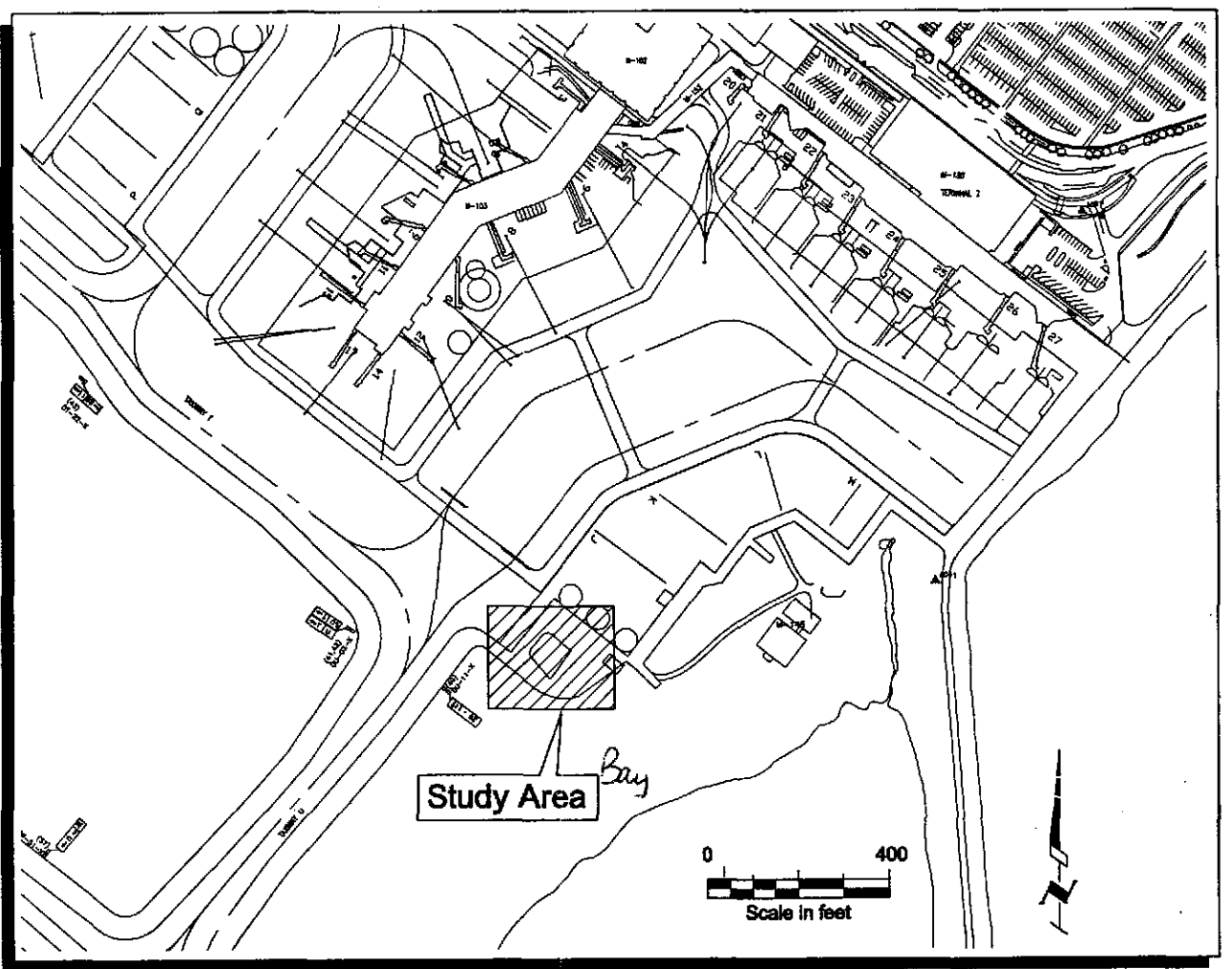
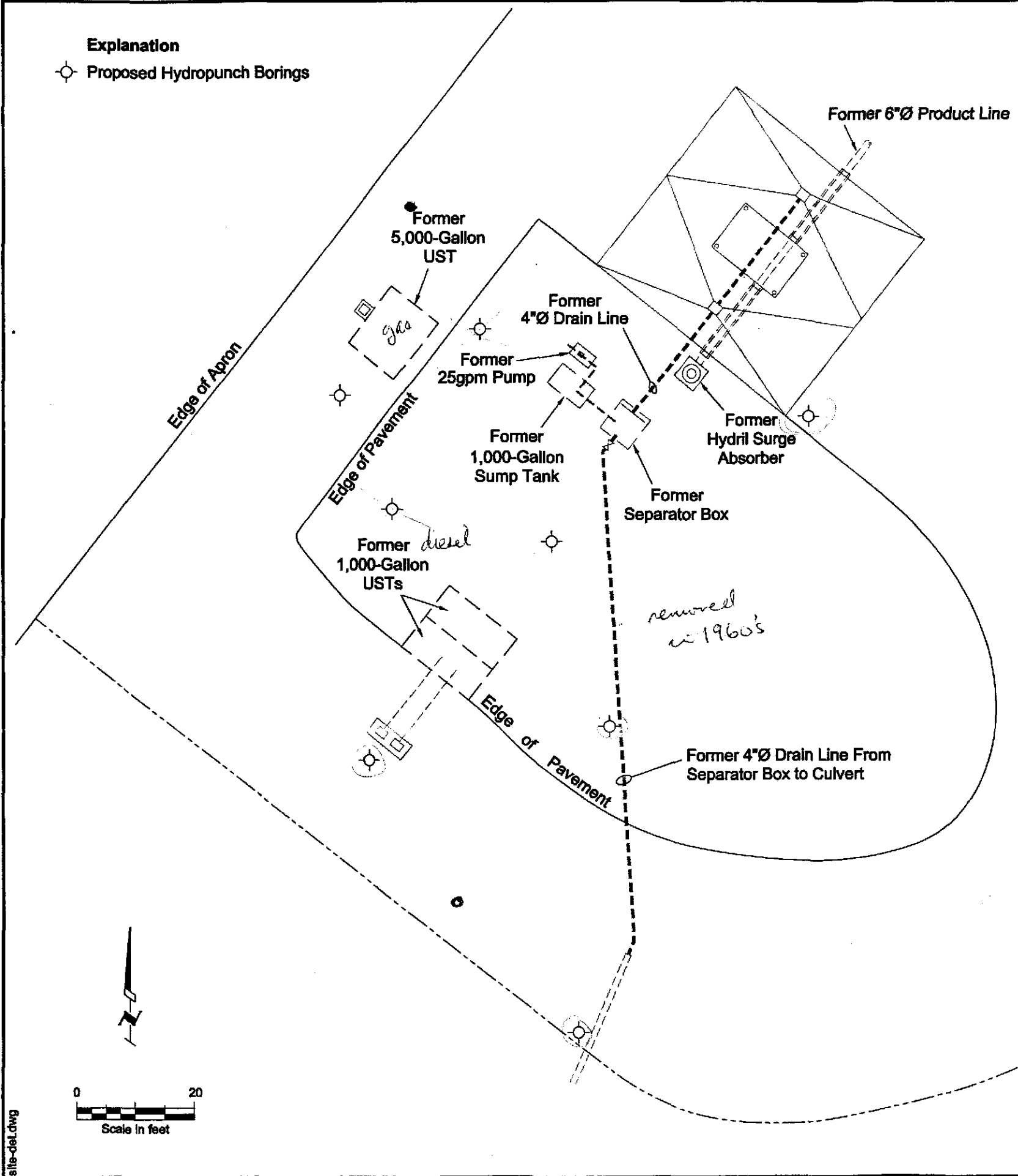
APPROVED
JGM

DATE
08/09/99

REVISED DATE
...

PLATE
1

Explanation
 ⦿ Proposed Hydropunch Borings



	Harding Lawson Associates Engineering and Environmental Services	Site Plan Work Plan, Taxiway 4 Oakland International Airport Oakland, California	PLATE 2
	DRAWN AJW	JOB NUMBER 47858-1	APPROVED JGM

s11a-dcl.dwg