PROPOSED WORK PLAN

for

HMCC LOCATION #100877
525 WEST A. STREET
HAYWARD, CALIFORNIA

Submitted To:

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May 20, 1991

INTRODUCTION

At the request of Alameda County, Harken Marketing Company of California is submitting this work plan for continuing assessment to be conducted at 525 West A Street, Alameda County, Hayward, California.

BACKGROUND

The site was a former Mobil Station consisting of four (4) 10,000 gallon tanks which were removed on June 15, 1990. Prior to the removal of the tanks a fuel system leak was discovered in November 1986, as a result of discrepancy in inventory reconciliation. Converse Environmental Consultants California (CECC) conducted Phase I site assessment as an initial step in assessing the extent of gasoline contamination at the site. At that time, soil borings were drilled on the station property to 30 feet below ground surface. The borings were converted to monitoring wells MW-1 through MW-3. After completion of Phase I the extent of groundwater contamination off-site, the concentration of TPH and BTEX in off-site groundwater, volume of contaminated soil requiring remediation and potential threat of groundwater contamination to nearby groundwater with actual or potential beneficial use had not been assessed.

Phase II investigation was initiated in June 1987 to assess: 1) the potential threat of contamination of usable groundwater sources, as well as (2) the potential for off-site

migration of the groundwater contamination. During Phase II investigation three (3) additional monitoring wells MW-4 through MW-6 drilled to a depth of 30-31 feet were installed. The six (6) wells were purged and sampled at that time. However, in 1990 during the removal of the tanks and grading of the property, three (3) of the wells MW-2, MW-5, and MW-6 were destroyed. MW-1, MW-3 and MW-4 were damaged.

SCOPE OF WORK

Based on the results of Site I and Site II Phase Investigations, and recent investigation of the site by Harken's personnel, Harken Marketing Company of California proposed to:

1) Contract with a licensed geologist/contractor, licensed in the State of California, to perform the scopes of work outlined in the proposed work plan. The contractor will:

   - Provide Alameda County with a Site Safety Plan for the project
   - Properly close and abandon MW-2, MW-5, and MW-6 (Well location see Attachment I)
   - Reconstruct MW-1, MW-3 and MW-4, if possible (Well location see Attachment I)
   - Apply for all permits to abandon and install wells
   - Install three (3) new wells in the area where MW-2 and MW-6 originally located or install six (6) new wells depending on the possible reconstruction of MW-1, MW-3 and MW-4 at the site as located on the attached map
   - Purge and sample all wells
   - Complete a report of findings for Harken's record and copies to Alameda County and the Regional Water Quality Control Board.

REGIONAL HYDROGEOLOGY

The site lies within the San Leandro Cone, a low-gradient alluvial fan which originates at the mouth of Castro Valley and spreads westward onto the Bay Plain. This cone consist of alluvial sediments which overlie marine clay and terrigenous sand and silt of intertidal provenances.

The shallowest regional aquifer in area is a permeable, waterbearing alluvial sand, named the Newark aquifer. This aquifer is a series of laterally discontinuous saturated lenses of course to fine sediment 10 to 100 feet thick at depths less than 200 feet. There regional hydraulic gradient is westward, from the mouth of Castro Valley toward the San Francisco Bay. (Reference Phase II Investigation Report dated June 30, 1988 by CECC)

WELL INVENTORY

An inventory of wells within a 1/2-mile radius of the site compiled from available well logs and well permits in Alameda County Flood Control and Water Conservation District, Hayward Quadrangle Files.

The inventory consist of fifteen wells. Five within 1,500 feet of the site and 10 wells within 1,500 to 2,650 feet of the site. The wells within 1/2 mile of the site are categorized as shallow. Ten wells are classified as shallow, with five used for water supply, three for

groundwater monitoring and two for unspecified use. (Reference Phase II Investigation Report dated June 30, 1988 by CECC).

DRILLING AND SAMPLING

After receiving the necessary permits, plans are to drill and install three (3) to six (6) 4-inch diameter ground-water monitoring wells at the approximate locations shown on the attached site plan. Each well will be drilled to a depth of 30 feet.

During drilling of the wells, soil samples will be collected and monitored for the presence of hydrocarbon constituents. Soil samples will be collected through the 12-inch (OD) diameter hollow-stem augers at approximately 5 foot intervals using a split-barrel sampler equipped with clean brass sample liners. Before each use, the sampler will be cleaned by scrubbing with alconox and rinsing with distilled water. The soil samples will be retained in the 6-inch long brass liners, and immediately capped, labeled and sealed upon removal from the sampler. Logs of each boring will be included in the study report.

The lowermost sample tube from each sampling interval will be sealed at both ends with Teflon and plastic end caps to preserve sample integrity and reduce volatilization. Soil from the next tube will be monitored for volatile organic vapors using a photoionization detector (PID). The PID readings are used to indicate relative concentration levels of volatile organic compounds and are useful for selecting soil samples for laboratory analysis.

If the soil has evidence of hydrocarbon constituents other than in the general zone of fluctuating ground water, a soil sample from each borehole will be submitted for analysis of gasoline components and volatile aromatics using Modified EPA Method 8015 and 8020, respectively.

WELL CONSTRUCTION

The wells will be constructed with 4-inch OD Schedule 40 PVC screen and blank casing. Well joints will be flush threaded to provide adequate strength and smooth internal and external surfaces. The well screen will extend from approximately 5 feet above to approximately 5 feet below the existing water level (borehole bottom). Dry filter pack material consisting of #20 graded silica sand will be installed in the wells annular space from the bottom of the well to approximately 1 foot above the well screen. A 2-foot thick bentonite seal will be placed above the filter pack, and a cement/bentonite slurry mix complete the well to ground surface. A PVC slip cap will be placed over the well casing.

The wellhead will be completed with a water-resistant, locking, traffic-rated wellhead box approximately 1-inch above grade to prevent surface water from entering the well. The elevation of the top of the well casing with respect to an established site benchmark reference will be measured with surveying equipment. Construction logs of the as-build wells will be included in the report.

WELL DEVELOPMENT

After the wells are completed and the cement has had sufficient time to set, generally 12 hours, the wells will be developed by surging and bailing to clear sediment from the formation and filter pack. Prior to development, the water level and presence of possible free product will be measured using water detecting chalk and paste. Water-quality parameters (pH, temperature, electrical conductivity) will be measured during the bailing of the well. Development will be considered complete when water-quality parameters have stabilized and the well produces water relatively free of sediment. Approximately 3 to 5 well-volumes of ground water may be removed from each well during development. This water, as well as wash and rinse water used to clean sampling equipment will be stored on site in 55-gallon drums properly labeled as to their contents which will be removed and properly disposed of within (90) days.

WATER LEVEL MEASUREMENT AND SAMPLING

Following development, one ground-water sample from each well will be collected using a clean stainless-steel or teflon bailer following purging of 3 to 5 well-volumes of water from the well. Prior to purging, however, water levels will be measured and the possible presence of free gasoline product will again be measured. Sampling will occur after the water level has recovered to at least 85 percent of its pre-purged levels. The sample will be placed in laboratory-supplied containers, labeled, and stored under ice in a portable

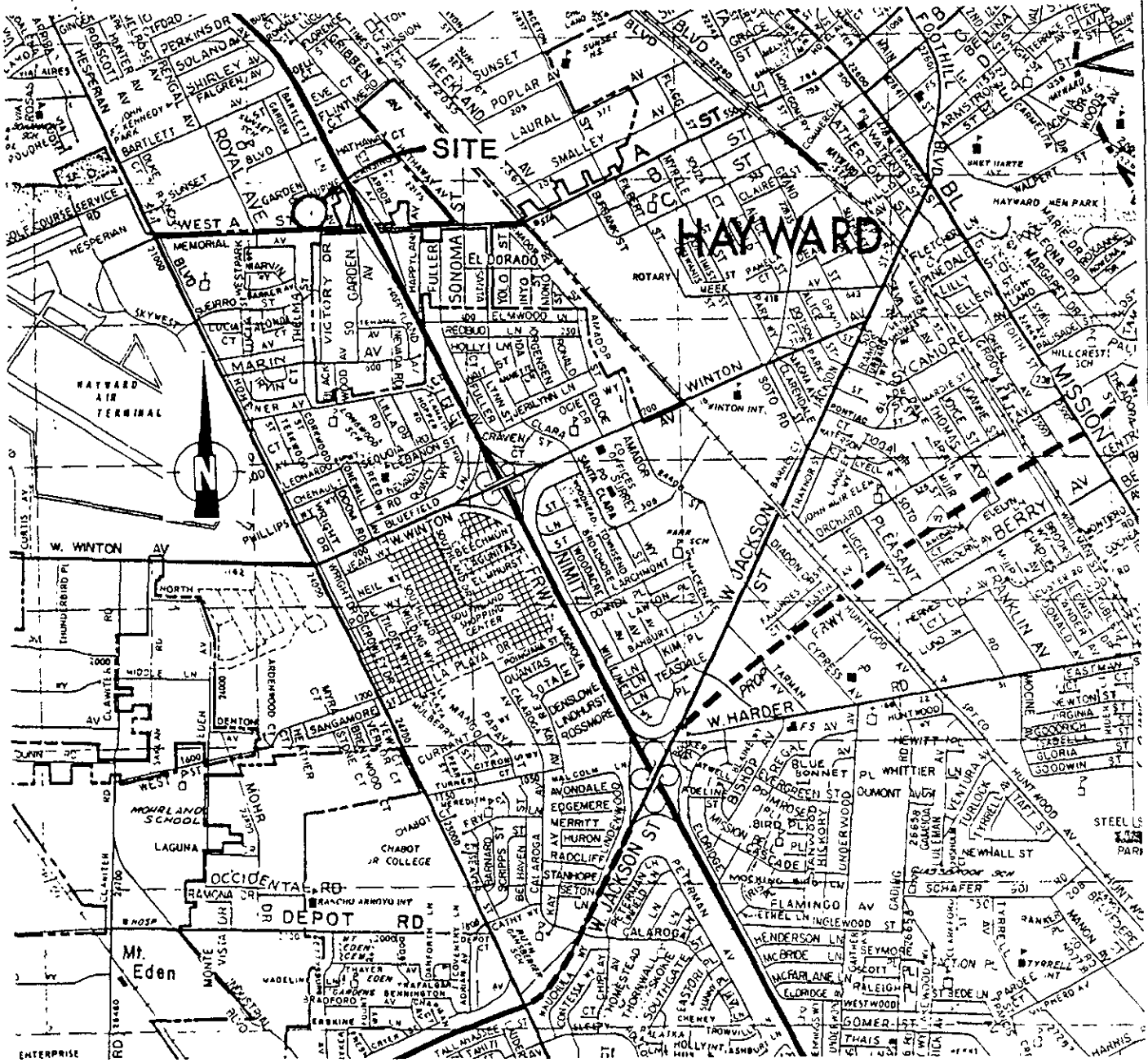
cooler for transport to a State-certified laboratory following chain-of-custody procedures. The sample will be analyzed for total petroleum hydrocarbons (TPH) using Modified EPA Method 8015, and benzene toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 602. To minimize cross contamination from one well to another, all sampling equipment, purging equipment, and measuring tape/equipment will be washed with Liquonix and double rinsed with potable water between wells.

REPORT

Upon completion of field activities and receipt of the laboratory results a report will be written by the registered geologist or certified engineering geologist employed by the contractor and licensed in the State of California will be forwarded to the Department of Environmental Health of Alameda County and the Regional Water Quality Control Board. The report will describe field observations and activities, soil conditions, and sampling results and boring logs.

APPROXIMATE WORK SCHEDULE

County approval of work plan		4-6 weeks
Selection of contractor		3-4 weeks
Permitting		1-2 weeks
Drilling/well installation		1-2 weeks
Sampling		2-3 weeks
Report preparation		4-6 weeks
TOTAL	Approximately	6 months duration



Source: Thomas Brothers Maps
Alameda County, 1972

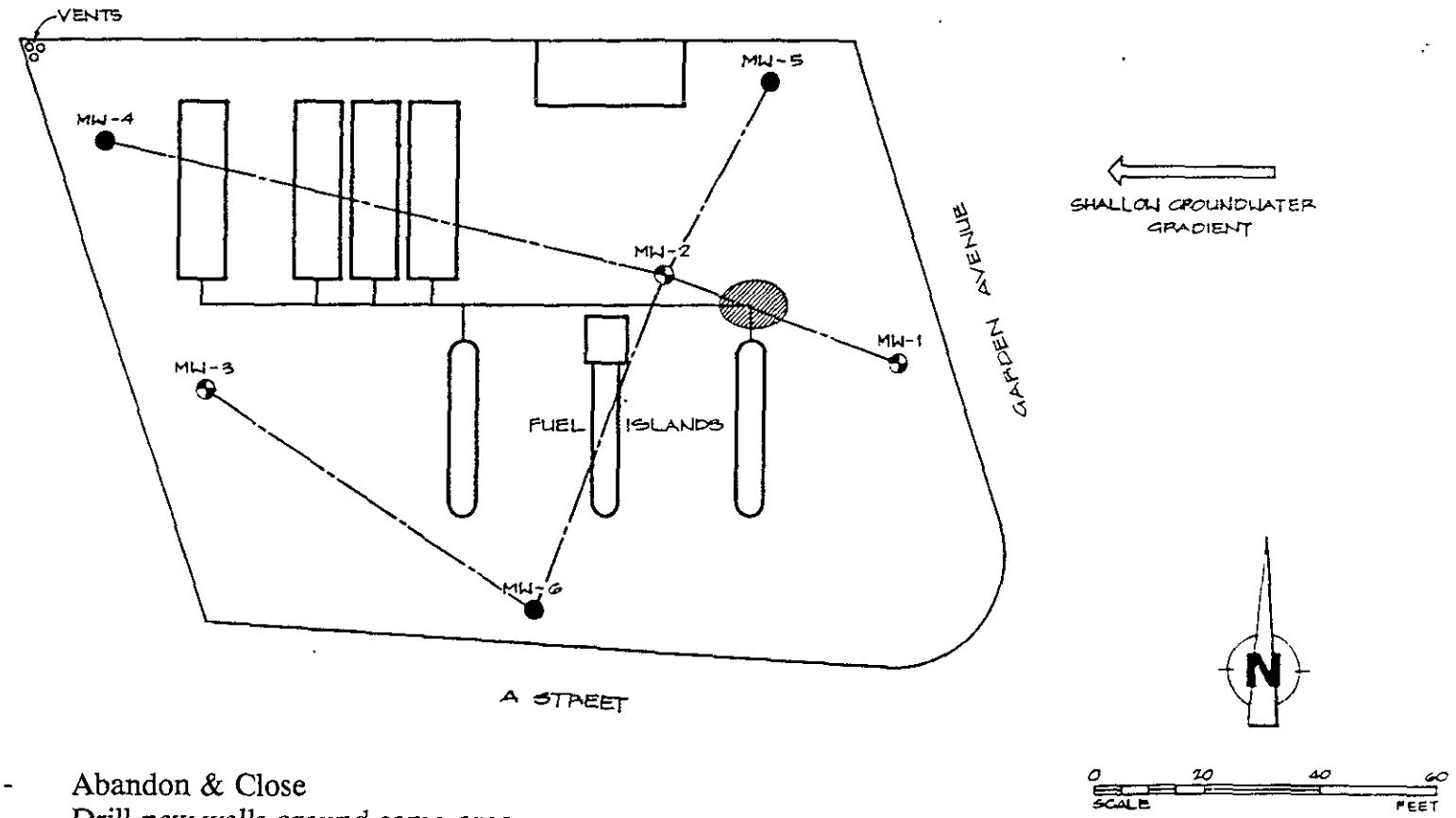
1000 0 1000FT.

SCALE

SITE LOCATION MAP

E-Z SERVE-MOBIL No. 1235
525 West A Street
Hayward, California

ATTACHMENT 1



Tanks removed 6/90

MW-2, MW-5, MW-6 - Abandon & Close
Drill new wells around same area

MW-1, MW-3, MW-4 - Reconstruct or drill new wells

SITE PLAN - LOCATION OF FENCE DIAGRAM SECTION

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HAYWARD, CALIFORNIA