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January 18, 1993
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62034.01A

Ms. Marla D. Guensler
Exxon Company, U.S.A.
P.O. Box 4032
2300 Clayton Road
Concord, California 94520

Subject: Addendum One to the Interim Groundwater Remediation Work Plan to Perform an Interim Remediation Environmental Investigation at the Former Exxon Station 7-3006, 720 High Street, Oakland, California.

Ms. Guensler:

As requested by Exxon Company, U.S.A. (Exxon), this letter is being prepared to serve as Addendum One to the Interim Groundwater Remediation Work Plan for the subject site. RESNA Industries Inc. (RESNA), formerly Applied GeoSystems (AGS), performed an environmental investigation related to the removal of four underground storage tanks (USTs) in April 1987 (AGS, May 13, 1987, July 10, 1987, and October 16, 1989), and an environmental investigation between September 1987 and May 1988 that included drilling nine exploratory borings (B-1 through B-9) around the former UST locations and installing groundwater monitoring wells MW-1 through MW-9 in the exploratory borings (AGS, August 5, 1988). AGS performed Supplemental Subsurface Investigations that included; drilling of eleven exploratory borings (B-10 through B-20) and the installation of groundwater monitoring wells MW-10 through MW-13 in exploratory borings B-10 through B-13 in November 1989 (AGS, January 30, 1990), and drilling of exploratory borings B-21 through B-32 and the installation of groundwater monitoring wells MW-14 and MW-15 in exploratory borings B-31 and B-32 in November 1990 (AGS, May 21, 1991). Quarterly monitoring was initiated by AGS in the second quarter of 1989 (AGS, October 16, 1989) and is ongoing. The locations of the borings, wells, and pertinent site facilities are shown on the Generalized Site Plan, (Plate 2). The results of these investigations are presented in the reports listed in the references section.

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Based on the findings of our previous site investigations, RESNA proposes the following work to be performed at this site:

Task 1: Install a floating product recovery system to remove floating product from monitoring wells MW-2 through MW-4 as an interim means of source removal and migration control, measure depth to water, product thickness (if applicable) and subjectively evaluate groundwater in each well on a monthly basis. This recommended work includes monthly visits to the site for product removal and to maintain the product skimmers.

Task 2: After acquiring the proper Alameda County Water District Well Construction Permits and encroachment permits from the City of Oakland, drill two exploratory borings (B-33 and B-34) downgradient of the former gasoline underground storage tanks to delineate further the vertical and lateral extent of gasoline and diesel hydrocarbons and the potential subsurface pathways beneath the site. Soil samples from the exploratory borings will be submitted for laboratory analysis for the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons as gasoline (TPHg), and total petroleum hydrocarbons as (TPHd). The exploratory borings will be drilled to a maximum depth of 20 feet below the ground surface (approximately 10 feet below first encountered groundwater, which is approximately 10 feet). Soil samples collected from each boring during drilling will be subjectively analyzed in the field by a RESNA geologist for the presence of gasoline and diesel hydrocarbons, using visual observations and an organic vapor meter (OVM). Subsequent to the completion of the borings, four-inch diameter polyvinyl chloride (PVC) groundwater monitoring wells (MW-16 and MW-17) will be constructed in the borings. The proposed boring locations are shown on Plate A, Proposed Boring/Well Location.

not necessary

offsite wells

After acquiring the proper Alameda County Water District Well Construction Permits, three borings (B-35 through B-37) will be drilled in the vicinity of the former USTs, to delineate further the lateral extent of gasoline and diesel hydrocarbons in soil and the potential subsurface pathways beneath the site. Soil samples from the borings will be submitted for laboratory analysis for the gasoline constituents BTEX and TPHg, and TPHd. Each exploratory boring will be drilled to first encountered groundwater (approximately 10 feet below the ground surface). Soil samples collected from the borings during drilling will be subjectively analyzed in the field by a RESNA geologist for the

presence of gasoline and diesel hydrocarbons, using visual observations and an OVM. Subsequent to the completion of the borings, four-inch diameter PVC vapor extraction wells (VE-1 through VE-3) will be constructed in the borings. The proposed locations for the borings are shown on Plate B, Proposed Boring/Well Locations.

Upon completion of the drilling, selected soil samples collected from each boring will be delivered with the chain of custody records to an Exxon approved state-certified contract laboratory. Subsequent to well installation, the well locations will be surveyed by a licensed surveyor for wellhead elevation and other site features for accurate site depiction.

Subsequent to the completion of the groundwater monitoring wells, the wells will be developed by surgeblock and bailing techniques until the wells are relatively free of sediments. Groundwater samples from the monitoring wells will be submitted to Exxon's contract laboratory for laboratory analysis for BTEX, TPHg, and TPHd.

Additionally, RESNA proposes re-developing groundwater monitoring wells MW-2 and MW-12 as an attempt to establish a better groundwater flow between the well and the aquifer. These wells may be used in the pump test and the groundwater extraction system.

Task 3: Perform a one-day vapor extraction test to evaluate the efficiency and practicality of vapor-extraction as a soil remediation alternative, and to select the most appropriate off-gas treatment alternative. Air samples from the vapor extraction test will be submitted for laboratory analysis for BTEX and TPHg.

*if effective
should install
add VE
wells*

which wells will be used in this test?

Task 4: Perform a step-drawdown and a 24-hour pumping and recovery test to evaluate sustainable pumping rates and capture radii for design of a groundwater remediation system. Water generated during testing will be stored in a Baker tank, and upon completion of the testing, the pump test equipment will be removed from the site.

Task 5: Upon completion of this part of the subsurface investigation, RESNA will prepare an Interim Remediation Investigation Report summarizing our methods, data, findings, and conclusions.

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Task 6: Upon completion of the drilling episode, RESNA will arrange for proper disposal of the soil cuttings, purge water, and pump test purge water.

RESNA is currently conducting a records search of the surrounding area limited to available information from the files of the Alameda County Health Agency (ACHA) Department of Environmental Health and the California Regional Water Quality Control Board (CRWQCB). The records search will focus on historical usage of the surrounding area, and any previous environmental work performed in the vicinity of the site. The results of the record search will be reported under a separate cover.

A Preliminary Time Schedule for the proposed work is presented on Plate C. Please call us at (408) 264-7723 or (800) 926-0815 if you have any questions regarding these recommendations.

Sincerely,
RESNA Industries Inc.



Marc A. Briggs
Project Geologist

Enclosures: Plate A: Proposed Boring/Monitoring Well Locations
Plate B: Proposed Borings/Vapor Well Locations
Plate C: Preliminary Time Schedule

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REFERENCES

- Applied GeoSystems. May 13, 1987. Letter Report for First Phase Soil Contamination Investigation, Exxon Station No. 7-3006, Oakland, California. Job No. 87042-1.
- Applied GeoSystems. July 10, 1987. Report of Excavation, Aeration, and Removal of Contaminated Soil Including Soil Sampling and Analyses, Exxon Station No. 7-3006, Oakland, California. Job No. 87042-2.
- Applied GeoSystems. August 5, 1988. Report of Subsurface Environmental Investigation, Exxon Station No. 7-3006, Oakland, California. Job No. 87042-5.
- Applied GeoSystems. July 8, 1989. Site Safety Plan, Exxon Station No. 7-3006, 720 High Street, Oakland, California. Job No. 87042-6S.
- Applied GeoSystems. October 16, 1989. Report on Subsurface Environmental Investigation, Exxon Station No. 7-3006, 720 High Street, Oakland, California. Job No. 87042-6.
- Applied GeoSystems. January 30, 1990. Report on Limited Environmental Investigation, Exxon Station 7-3006, 720 High Street, Oakland, California. Job No. 87042-6R.
- Applied GeoSystems. January 30, 1991. Letter Report on Ground-Water Monitoring for Fourth Quarter 1990, Exxon Station No. 7-3006, 720 High Street, Oakland, California. Job No. 87042-9.
- Applied GeoSystems. May 21, 1991. Report on Supplemental Subsurface Environmental Investigation, Exxon Station No. 7-3006, 720 High Street, Oakland, California. Job No. 87042-9R.
- Applied GeoSystems. October 10, 1991. Interim Groundwater Remediation Work Plan, Exxon Station No. 7-3006, 720 High Street, Oakland, California. Job No. 87042-9RAP.
- RESNA Industries, Inc. June 15, 1992. Letter Report on Groundwater Monitoring for First Quarter 1992, Exxon Station No. 7-3006, 720 High Street, Oakland, California. Job No. 87042-11.

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Exxon 7-3006, Oakland, California

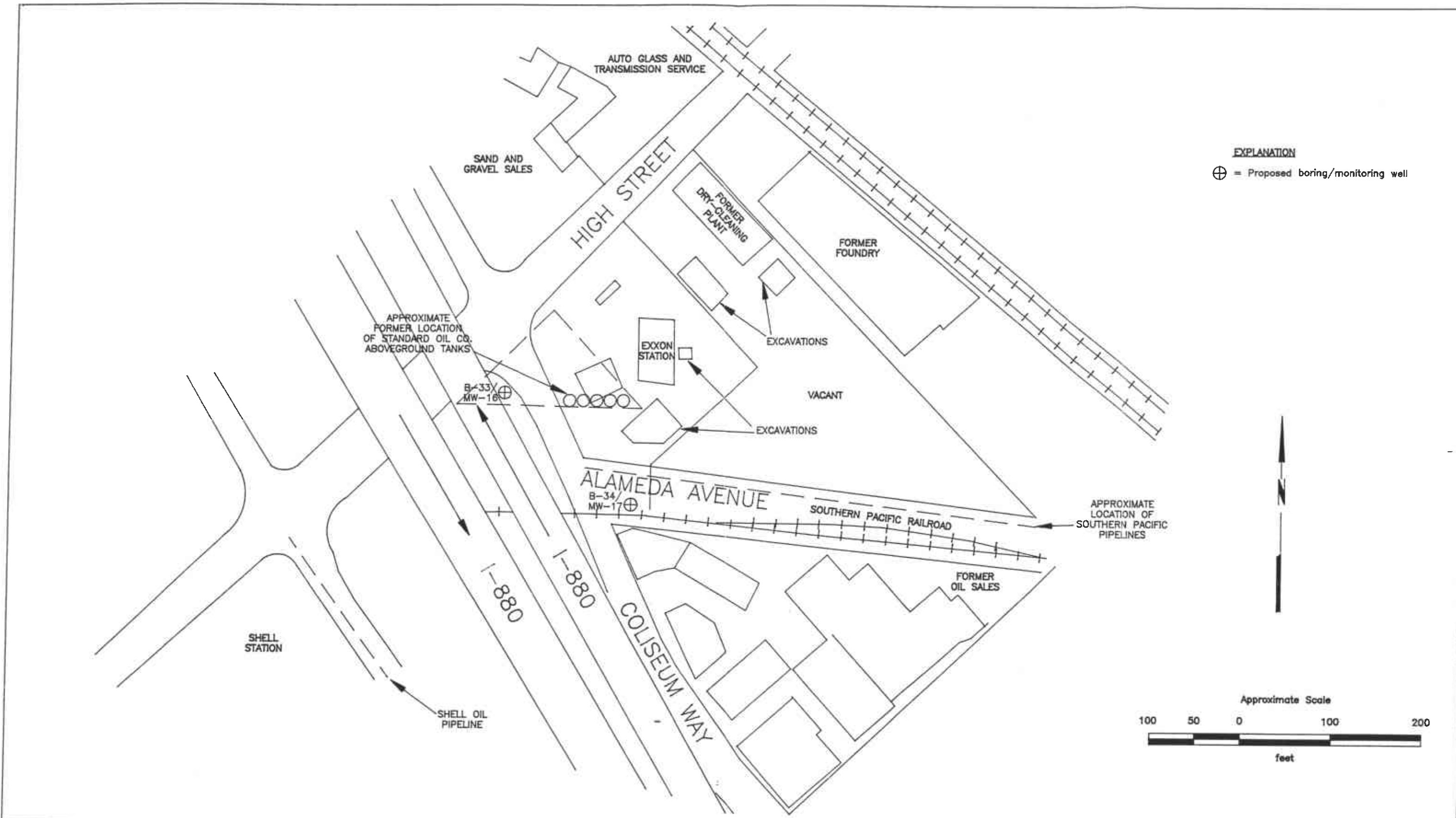
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REFERENCES

(continued)

RESNA Industries, Inc. October 21, 1992. Letter Report on Groundwater Monitoring for Second Quarter 1992, Exxon Station No. 7-3006, 720 High Street, Oakland, California. Job No. 87042-11.

RESNA Industries, Inc. November 9, 1992. Letter Report on Groundwater Monitoring for Third Quarter 1992, Exxon Station No. 7-3006, 720 High Street, Oakland, California. Job No. 87042-11.



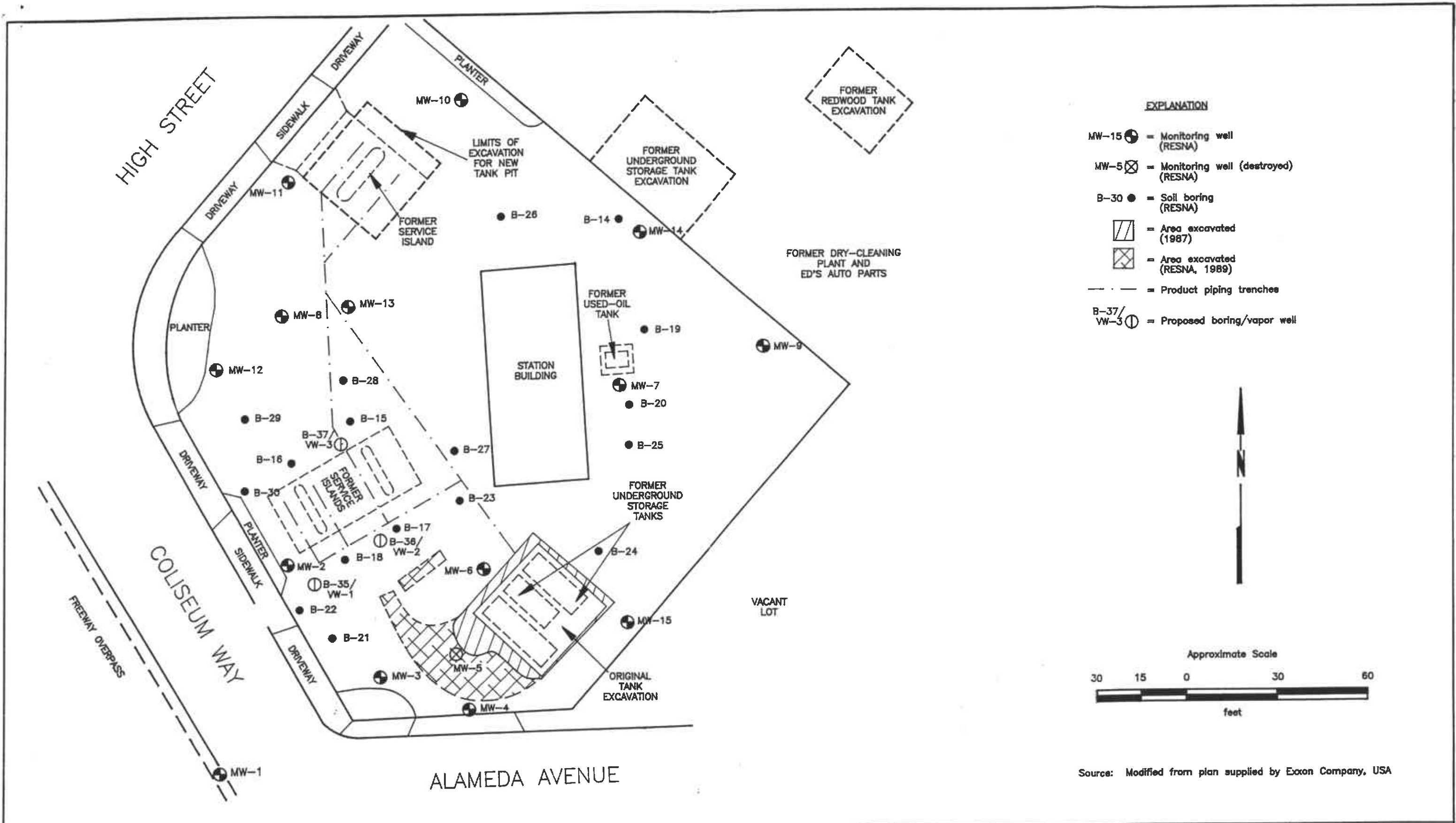
EXPLANATION
 ⊕ = Proposed boring/monitoring well

RESNA
 Working to Restore Nature

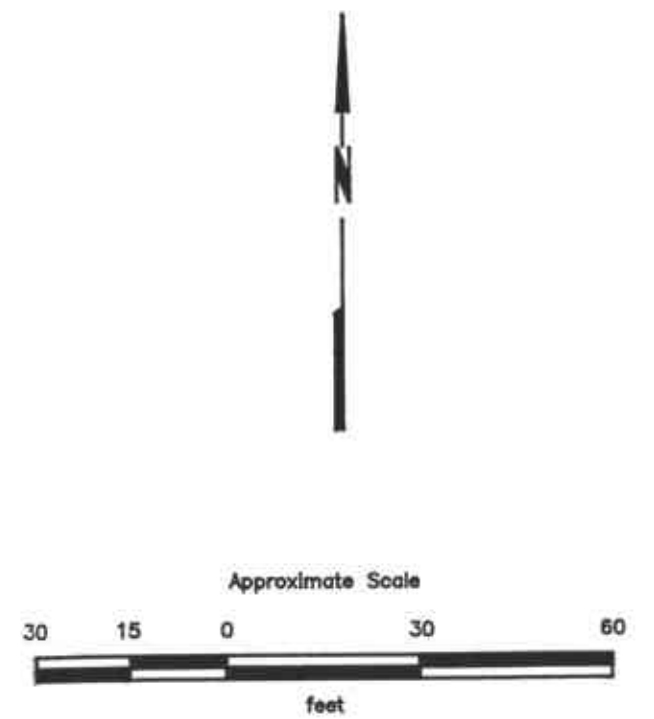
PROJECT 62034.01

PROPOSED BORING/MONITORING WELL LOCATIONS
 Exxon Station 7-3006
 720 High Street
 Oakland, California

PLATE
 A



- EXPLANATION**
- MW-15 (circle with cross) = Monitoring well (RESNA)
 - MW-5 (square with cross) = Monitoring well (destroyed) (RESNA)
 - B-30 (circle) = Soil boring (RESNA)
 - (diagonal hatching) = Area excavated (1987)
 - (cross-hatching) = Area excavated (RESNA, 1989)
 - (dashed line) = Product piping trenches
 - B-37/VW-3 (circle with cross) = Proposed boring/vapor well



Source: Modified from plan supplied by Exxon Company, USA

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PROPOSED BORING/VAPOR WELL LOCATIONS
Exxon Station 7-3006
720 High Street
Oakland, California

PLATE
B

1) Install Product Skimmers

OK

2) Permitting for offsite wells and vapor wells

should rec-scan

4) Vapor Extraction Test

3) Vapor well installation

5) Well Development

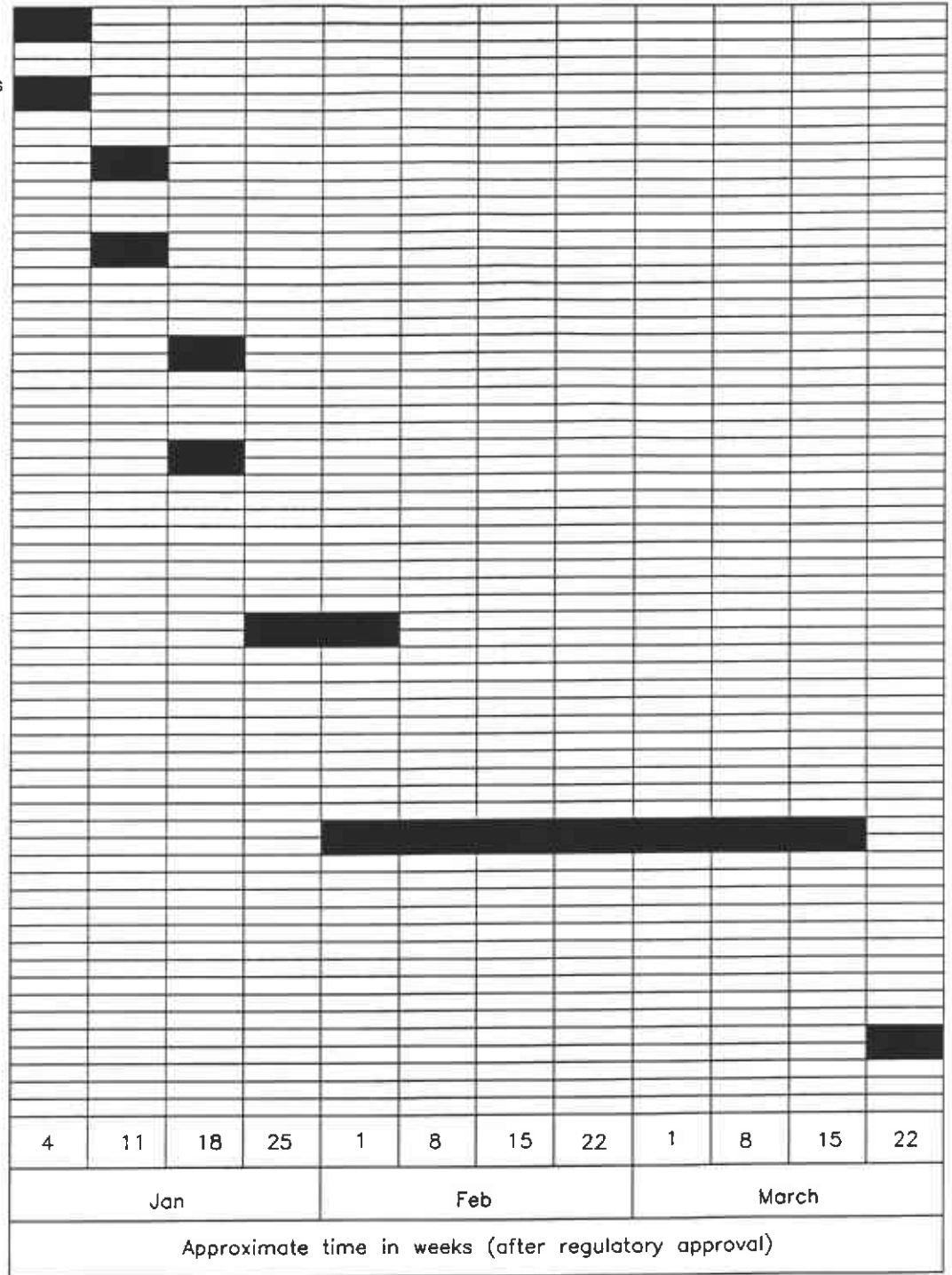
~~5) Vapor Extraction Test~~

7) Step-drawdown and pump test

about wells

8) Report preparation

9) Soil and water disposal



PRELIMINARY TIME SCHEDULE
Exxon Station 7-3006
720 High Street
Oakland, California

PLATE
C

PROJECT 62034.02