GROUNDWATER MONITORING WELL INSTALLATION WORKPLAN QUALITY TUNE-UP 14901 EAST 14TH STREET SAN LEANDRO, CALIFORNIA

PREPARED FOR:
The City of San Leandro
835 East 14th Street
San Leandro, California 94577

PREPARED BY:
Ninyo & Moore
Geotechnical and Environmental Sciences Consultants
1956 Webster Street, Suite 400
Oakland, California 94612

November 18, 2005
Project No. 401007002

November 18, 2005
Project No. 401007002

Mr. Toyin Fawehinmi
City of San Leandro
Engineering and Transportation Department
835 East 14th Street
San Leandro, California 94577

Subject: Groundwater Monitoring Well Installation Workplan
Quality Tune-Up
14901 E. 14th Street
San Leandro, California

Dear Mr. Fawehinmi:

This workplan describes field and report preparation activities for groundwater monitoring well installation for the Quality Tune-Up property at 14901 East 14th Street (site) in the City of San Leandro, County of Alameda, California.

We appreciate the opportunity to be of service to the City of San Leandro on this project. If you have any questions or comments regarding this work plan, please contact the undersigned at your convenience.

Sincerely,
NINYO & MOORE

Kris M. Larson, P.G.
Senior Project Environmental Geologist

Phyllis E. Flack, P.G., P.E.
Senior Geologist

KML/PEF/jms

Distribution: Addressee (1)

TABLE OF CONTENTS

Page

Tables

Figures

1. INTRODUCTION AND BACKGROUND

Ninyo & Moore performed an Initial Site Assessment of this property in September, 2004, (Ninyo & Moore, September 2004) and a Limited Phase II Environmental Site Assessment (ESA) of the site in June 2005. A summary of the site history and former subsurface investigations findings are provided below.

1.1. Site Description

The site is located at 14901 E. 14th Street, between 150th Avenue and Hesperian Boulevard, in the City of San Leandro, California (Figure 1) and consists of an approximately 980 square meter (10,556 square feet), triangular-shaped parcel. The site contains one single-story structure covering approximately 84 square meters (900 square feet) occupied by Quality Tune-Up, an automobile service and smog inspection facility (Figure 2).

1.2. Site History

The site was occupied by a gasoline station from as early as 1948 until early 1980. Quality Tune Up and Smog Check Center, the current site occupant, moved to the location in 1981. Four underground storage tanks (USTs) were used for gasoline and waste oil storage on-site. The table below summarizes UST usage.

Table 1 – Historical Site Underground Storage Tank Usage

CONTENTS	CAPACITY (Liters)	CAPACITY (Gallons)	REMOVAL DATE
Gasoline	37,854	10,000	1997
Gasoline	37,854	10,000	1997
Gasoline	18,927	5,000	1997
Waste Oil	1,893	500	1997

1.2.1. Subsurface Investigations and Underground Storage Tank Removal

Subsurface investigation activities, performed in 1993 by Hageman Aguiar, Inc. (HA), included advancement of four soil borings (B-1 through B-4) to a depth of 4.6 meters

(15 feet) below ground surface (bgs) in the vicinity of the former USTs. Groundwater was encountered at approximately 4 meters (13 feet) bgs. Soil samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-G) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) constituents. Maximum concentrations of TPH-G at 180 milligrams per kilograms (mg/kg); benzene at 230 micrograms per kilograms (µg/kg); toluene (320 µg/kg); ethylbenzene (560 µg/kg); and total xylenes (1,400 µg/kg) were reported in soil samples collected near the soil/groundwater interface in the vicinity of the USTs. Petroleum hydrocarbons were not reported above laboratory reporting limits in soil samples collected at less than 1.5-meters (5-feet) bgs.

Based on the results of the 1993 soil sampling event, HA conducted an additional sampling event in January 1997, in the vicinity of USTs, underground piping, and existing pump islands. Six borings (GP-1 through GP-6) were advanced to depths of approximately 4.6 meters (15 feet) bgs. The following describes maximum concentrations reported in soil samples for TPH-G (29 mg/kg), benzene (41 µg/kg), toluene (8.0 µg/kg), ethylbenzene (12 µg/kg), and total xylenes (31 µg/kg). Methyl tertiary-butyl ether (MTBE) was also analyzed; however, concentrations were not reported above laboratory reporting limits.

Grab groundwater samples were collected from three (GP-1W, GP-4W, and GP-6W) of the six borings. The highest constituent concentrations reported from the groundwater samples included TPH-G at 210,000 micrograms per liter (µg/L), benzene at 200 µg/L, toluene and ethylbenzene at 180 µg/L, and total xylenes at 420 µg/L. MTBE was not reported above laboratory reporting limits in groundwater samples collected on site. Groundwater flow direction was evaluated to be toward the south-southeast during the sampling event.

The USTs were removed in 1997 and were described to be in good condition during removal. Soil samples collected from the UST excavation and soil stockpile subsequent to UST removal contained low concentrations of petroleum hydrocarbons. For this reason regulatory officials indicated that additional over-excavation would not be required.

There was no indication that the UST-associated dispenser piping was removed during the UST removal and excavation activities. Approximately 230 cubic meters/300 cubic yards of imported fill material and engineered base rock were used to backfill the UST excavations.

Further soil and groundwater sampling occurred during the Limited Phase II ESA conducted by Ninyo & Moore in October 2004, when nine borings (NM-1 through NM-9) were advanced on site. Grab groundwater samples were collected from every boring, and soil samples were collected from borings NM-3, NM-4, NM-7, and NM-9 at approximately 0.6 meter and 1.5 meters (2 and 5 feet) bgs and at the soil water interface (approximately 4.6 meters/15 feet bgs).

Maximum constituent concentrations for groundwater samples collected included 20,000 µg/L for TPH-G, 5.5 µg/L for MTBE, 60,000 µg/L for total petroleum hydrocarbons as diesel (TPH-D), and 27,000 µg/L for total petroleum hydrocarbons as motor oil (TPH-MO). The highest groundwater petroleum hydrocarbon concentrations were reported in samples NM-7 and NM-8, located adjacent to and downgradient of a former pump dispenser island, and NM-3, located adjacent to the former 18,927-liter (5,000-gallon) gasoline UST.

The highest concentrations of constituents reported in soil samples collected during the October 2004 sampling event included TPH-G and MTBE at 180 mg/kg and 150 µg/kg, respectively. The constituents were reported in a sample collected from boring NM-3 at a depth of 4.9 meters (16 feet) bgs. The highest concentration of TPH-MO reported was from boring NM-4 at a depth of 0.6 meters (2 feet) bgs at 53.0 mg/kg. TPH-D and BTEX were not detected above their respective laboratory reporting limits.

1.3. Groundwater

Localized groundwater flow is toward the southwest, and depth to static groundwater in borings advanced during the October 2004 sampling event ranged from 3.7 to 3.9 meters (12 to 13 feet) bgs.

2. OBJECTIVE

The objective of this groundwater monitoring well installation workplan will be to evaluate the scope of services needed to further evaluate soil and groundwater contamination reported during a limited Phase II ESA, prepared by Ninyo & Moore in June 2005 (Ninyo & Moore 2005). Ninyo & Moore's proposed scope of services for the soil and groundwater evaluation and well installation workplan will be in general accordance with the scope of services established in the Ninyo revised workplan proposal dated October 27, 2005, and the Professional Services Agreement, prepared by the City of San Leandro in November 2005 (City of San Leandro, November 2005).

3. SCOPE OF SERVICES

Tasks included for this groundwater monitoring well installation workplan are described below.

3.1. Permitting

A drilling permit application will be obtained from the Alameda County Public Works Agency (ACPWA) Water Resources Section. Because drilling activities will not extend beyond the private property boundary of the subject site, encroachment permits are not required.

3.2. Site Access and Coordination

Ninyo & Moore will acquire a site access agreement from the current property owner if the site is not owned by the City. A copy of this agreement will be kept on-site during drilling activities. Ninyo & Moore will also contact the property owners prior to field activities to schedule dates for the groundwater monitoring well installation.

3.3. Site Specific Health and Safety Plan

Ninyo & Moore will prepare a Site Specific Health and Safety Plan (SSHSP) describing potential health and safety issues that may arise during field activities. The SSHSP will include a description of the site; on site organization and coordination; physical and chemical hazard evaluation; communication procedures; personnel decontamination procedures; the field team leader, field team members and emergency contacts; and a map and directions to the nearest hospital from the site. Field team members and personnel visiting the site during field activities will be required to sign the signature page of the SSHSP after a tailgate meeting discussing the SSHSP has been completed.

3.4. Utility Clearance

A hollow stem auger rig will be used to install five groundwater monitoring wells on site. The proposed well locations will be marked in white paint prior to field activities. Underground Service Alert (USA) will be contacted after the groundwater monitoring well locations are marked, and USA will contact local utility companies to identify subsurface utilities in the vicinity of the proposed well locations. A private utility locating service will also be used to identify the location of subsurface utilities, structures or debris (including former UST piping). The well locations will be moved if subsurface utilities, structures or debris are observed in the vicinity of the proposed well locations.

3.5. Soil and Groundwater Sampling

Five groundwater monitoring wells (MW-1 through MW-5) will be installed, using a hollow stem auger rig, during this investigation as shown on Figure 2. Prior to well installation, soil samples will be collected from borings MW-1 through MW-5 at depths of 5 feet bgs, 10 feet bgs, and at the soil/groundwater interface. Groundwater monitoring wells will be installed in the borings after the samples have been collected.

Three of the five groundwater monitoring wells will be located adjacent to former Ninyo & Moore borings NM-2 (MW-1), in the vicinity of NM-3 and NM-4 (MW-2), and NM-8 (MW-3) (Figure 2). MW-1 will be installed near NM-2 and at the northeastern edge of the

property to monitor potential contamination migrating to the site from an off-site source. MW-2 will be located within the vicinity of borings NM-3 and NM-4 and a former UST because of elevated TPH-G, TPH-D and TPH-MO concentrations reported in groundwater samples collected from those borings during the October 2004 sampling event. Monitoring well MW-3 will be installed adjacent to MW-8 and a former pump island due to the elevated concentrations of TPH-G and TPH-D reported during the October 2004 sampling event. Monitoring wells MW-4 and MW-5 will be installed near the intersection of Hesperian Boulevard and 150th Avenue to evaluate groundwater quality downgradient of the removed USTs.

Hollow stem auger samples will be collected in split spoon samplers containing three brass tubes. Two of the tubes will be used for field screening and chemical analysis. The sample tubes selected for chemical analysis will be covered with Teflon tape and plastic caps, labeled with the project name, location, boring number, sample depth, sampling date/time, and sampler's initials, placed in a cooler with ice, and transported via courier to a California certified analytical laboratory for analysis. Chain-of-custody documentation will be completed and will accompany the soil samples to the analytical laboratory.

Soil sample field screening will be performed with a hand-held photoionization detector (PID) to evaluate the presence and relative concentration of organic vapors in the retained samples. Field screening will be accomplished by placing soil samples into sealed plastic bags. After an appropriate time period has elapsed for vapor build-up, the bags will be penetrated by the probe tip of the PID to allow measurement of organic vapors in parts per million. The results of the field screening measurements will be recorded on the boring logs. PID measurements will also be taken in the breathing air space during drilling and well installation to monitor concentrations of volatile organics for worker safety.

A lithologic description of the soils will be described on detailed boring logs in general conformance with the Unified Soil Classification System (USCS). Soil sampling operations will be coordinated by a field geologist under the direction of a Ninyo & Moore California Licensed Professional Geologist.

Soil sampling equipment will be cleaned between sampling intervals with an Alconox and water solution, followed by tap water and deionized water rinse. Soil cuttings and decontamination water will be placed in labeled, 55-gallon steel drums for temporary storage at the site pending analysis.

Select soil samples will be analyzed for the following constituents of concern (COCs): TPH-G, TPH-D and TPH-MO using EPA Method 8015M; VOCs, including BTEX and MTBE using EPA Method 8260B; SVOCs using EPA Method 8270C and LUFT 5 Metals using EPA Method 6010B. Each of the three soil samples collected from borings MW-2 and MW-3 will be analyzed because of their proximity to source contamination. Only soil samples collected from the soil/groundwater interface in borings MW-1, MW-4 and MW-5 will be analyzed because the borings are not adjacent to source contamination. The table below references each boring/monitoring well location and the planned COC analyses for soil samples.

Table 2 – Soil Sample Constituents Of Concerns

BORING NO. (Figure 2)	ANALYTES				
	TPH-D/TPH-MO	TPH-G	VOCs	SVOCs	LUFT 5 METALS
MW-1**	X	X	X		
MW-2*	X	X	X		
MW-3*	X	X	X	X	X
MW-4**	X	X	X		
MW-5**	X	X	X		

NOTES:
* Soil samples collected from depths of 5 ft, 10 ft and the soil/groundwater interface to be analyzed for COCs.
** Soil samples collected from the soil/groundwater interface only to be analyzed for COCs.

3.6. Groundwater Monitoring Well Installation and Development

Five groundwater monitoring wells will be installed on site using a hollow stem auger rig. The wells will be installed to between 15 feet bgs and 25 feet bgs, depending on groundwater levels and litholgic conditions encountered during the time of installation. The wells will be screened for 10 vertical feet using 2-inch diameter, 0.01 inch slot schedule 40 PVC screen. A screw type PVC end cap will be placed at the bottom of the screen. The remainder

of the well casing will be composed of blank schedule 40 PVC. Well construction will be completed by pouring # 2/12 Monterey Sand into the well annulus to approximately 1 foot above the screened PVC, adding one foot of hydrated bentonite chips above the sand, and finishing the well with grout (neat cement) to the surface, which will be used as the sanitary seal. Locking, traffic rated monitoring well boxes will installed within the top 6 inches of the subsurface. A representative from the City of San Leandro Department of Environmental Health (SLDEH) will be notified 24-hours in advance when the sanitary seal will be constructed in each well. A Well Completion Report will be prepared by the drillers and submitted to the Department of Water Resources (DWR) subsequent to well installation.

The groundwater monitoring wells will be developed by surging, pumping and bailing the wells using a surge block, submersible pump and stainless steel bailer. The wells will be surged approximately 50-strokes with a surge block within the screened portion of the well to remove sediment in the sand pack, after which the wells will be bailed to remove sand accumulation in the well bottom. Subsequent to the surging and bailing, the wells will be purged approximately 10 casing volumes of groundwater to further remove sediments in the well. Groundwater parameters, including pH, temperature, and electrical conductivity will be measured during well purging.

Purged groundwater will be stored in labeled, steel 55-gallon drums. Drums containing soil cuttings, rinsate and purge water will be removed from the site using a certified waste removal company after receipt of analytical laboratory results.

3.6.1. Groundwater Monitoring Well Sampling Methodology and Analysis

Groundwater samples will be collected no less than 72 hours subsequent to well development well by lowering a disposable Teflon bailer into each well and transferring the bailer contents to the appropriate containers. The groundwater sample containers will be labeled with the project name, location, boring number, sample depth, sampling date/time, and sampler's initials. The sample containers will be placed into a cooler containing ice for transport to a California certified laboratory for chemical analysis.

Chain-of-custody documentation will be completed and will accompany the groundwater samples to the laboratory. Groundwater samples will be analyzed as follows: TPH-G, TPH-D and TPH-MO using EPA Method 8015M; VOCs, including BTEX and MTBE using EPA Method 8260B; SVOCs using EPA Method 8270C and LUFT 5 Metals using EPA Method 6010B. The table below references each well location and the corresponding sample analysis.

Table 3 – Groundwater Monitoring Well Soil And Groundwater Sample Analytical Methods

WELL NO. (Figure 2)	ANALYTES				
	TPH-D/ TPH-MO	TPH-G	VOCs	SVOCs	LUFT 5 METALS
MW-1	X	X	X		
MW-2	X	X	X		
MW-3	X	X	X	X	X
MW-4	X	X	X		
MW-5	X	X	X		

3.6.2. Well Survey

The groundwater monitoring wells will be surveyed by California licensed surveyors using NAD 83 and NGVD 29 coordinates for northings, eastings and elevations. The coordinates will be in geodetic format to seven decimal places. Groundwater monitoring well elevations will be measured at the ground surface and top of the well casings (at a notch placed by the surveyors on the north edge of the casing).

3.7. RWQCB Geotracker Database

According to the San Francisco Bay Regional Water Quality Control Board (RWQCB) Enforcement of Electronic Submittal of Information (ESI) Regulatory Deadlines (RWQCB 2005), the following information will be uploaded to the RWQCB Geotracker database subsequent to the monitoring well installation on site.

- Soil and groundwater sample analytical results;
- Coordinates of groundwater monitoring wells for which data is reported in Electronic Deliverable Format (EDF), accurate to within 1 meter;

- The surveyed elevation relative to a geodetic datum of any permanent monitoring well;
- A boring location figure showing the location of all sampling points referred to in the report;
- The depth to the screened interval and the length of the screened interval for any permanent monitoring well;
- Boring logs, in Portable Document Format (PDF); and
- A complete copy of the report, in PDF format, which includes the signed transmittal letter and professional certification.

3.8. California Environmental Agency State Water Resources Control Plan Water Quality Underground Storage Tank Cleanup Fund

Ninyo & Moore will complete and submit documentation to assist the City with reimbursement from the Cal EPA UST Tank Fund when the City secures ownership of the site. Ninyo & Moore will complete the Claim Application form and assist with completing additional documents required by the UST Fund.

3.9. Report Preparation

A Groundwater Monitoring Well Installation Report will be prepared upon completion of the field activities and receipt of laboratory analyses. The report will summarize the results of the field work and include tables of soil and groundwater analytical test results, and present figures showing the distribution and constituent concentrations in soil and groundwater. The report will present findings, conclusions, and recommendations for additional work, as warranted, and will also include appendices presenting boring logs, well construction diagrams and certified analytical laboratory reports. A copy of the report will be submitted to the SLDEH.

4. COST ANALYSIS

The tables below includes project costs for the groundwater monitoring well installation (Table 4) and four quarterly groundwater monitoring sampling events (Table 5).

Table 4 – Groundwater Monitoring Well Installation Cost Analysis

TASK NO.	TASK	STAFF/HOURS	RATE	TOTAL
1	Project Coordination and Background Review/SSHSP/Permit Acquisition	Sr. Staff Env. Geologist - 8 Hrs. Permits	$109.00/Hr Lump Sum	$545.00 $1,725.00
Subtotal - Task 1				**$2,270.00**
2	Site Reconnaissance/Utility Clearance	Sr. Staff Env. Geologist - 8 Hrs Subcontractor cost (utility locator) - 3 Hrs	$109.00/Hr $125.00/Hr	$545.00 $375.00
Subtotal - Task 2				**$920.00**
3	Subsurface Evaluation and Groundwater Monitoring Well Installation	Sr. Project Env. Geologist - 6 Hrs Sr. Staff Env. Geologist - 22 Hrs Subcontractor costs, including coring, drilling and drums - 14 Hrs Equipment Costs Drum Disposal (Five Drums of non Hazardous waste)	$127.00/Hr $109.00/Hr $500.00/Hr $500.00 $1,150.00	$762.00 $2,398.00 $7,000.00 $2,000.00 $1,150.00
Subtotal - Task 3				**$13,310.00**
4	Laboratory Analysis	Laboratory Subcontractor	$3,500.00	$3,500.00
Subtotal - Task 4				**$3,500.00**
5	Groundwater Monitoring Well Development	Sr. Staff Env. Geologist - 10 Hrs. Well Developer - 10 Hrs Drum Disposal (Three Drums, Non-hazardous Waste)	$109.00/Hr $225.00/Hr $700.00	$1,090.00 $2,250.00 $700.00
Subtotal - Task 5				**$4,040.00**
6	Groundwater Monitoring Well Survey	Surveyors - 10 Hrs	$300/Hr	$3,000.00
Subtotal - Task 6				**$3,000.00**
7	Groundwater Monitoring Well Report Preparation/Geotracker Upload	Principal Engineer - 1 Hr. Sr. Project Env. Geologist - 8 Hrs Sr. Staff Env. Geologist - 60 Hrs Technical Illustrator - 4 Hrs Data Processing - 4 Hrs	$139.00 $127.00 $109.00 $69.00 $44.00	$139.00 $1,016.00 $6,540.00 $276.00 $176.00
Subtotal - Task 7				**$8,147.00**
TOTAL				**$35,187.00**

Table 5 – Quarterly Groundwater Monitoring Cost Analysis (Four Quarters)

TASK NO.	TASK	STAFF/HOURS	RATE	TOTAL
1	Project Coordination and Background	Sr. Staff Env. Geologist - 4 Hrs.	$109.00/Hr	$436.00
Subtotal - Task 1				**$436.00**
2	Quarterly Groundwater Monitoring (Four Quarters)	Sr. Project Env. Geologist - 4 Hrs Sr. Staff Env. Geologist - 40 Hrs Equipment Costs/Drum Disposal (Four Drums, Non-hazardous Waste.	$127.00/Hr $109.00/Hr $1,000.00	$508.00 $4,360.00 $1,000.00
Subtotal - Task 2				**$5,868.00**
3	Laboratory Analysis (Four Quarters)	Laboratory Subcontractor	$6,923.00	$6,923.00
Subtotal - Task 3				**$6,923.00**
4	Report Preparation/Geotracker Upload/UST Fund Reimbursement (Four Quarters)	Sr. Project Env. Geologist - 12 Hrs Sr. Staff Env. Geologist - 90 Hrs. Technical Illustrator - 4 Hrs Data Processing - 4 Hrs	$127.00/Hr $109.00/Hr $69.00 $44.00	$1,524.00 $9,810.00 $276.00 $176.00
Subtotal - Task 4				**$11,786.00**
TOTAL				**$25,013.00**

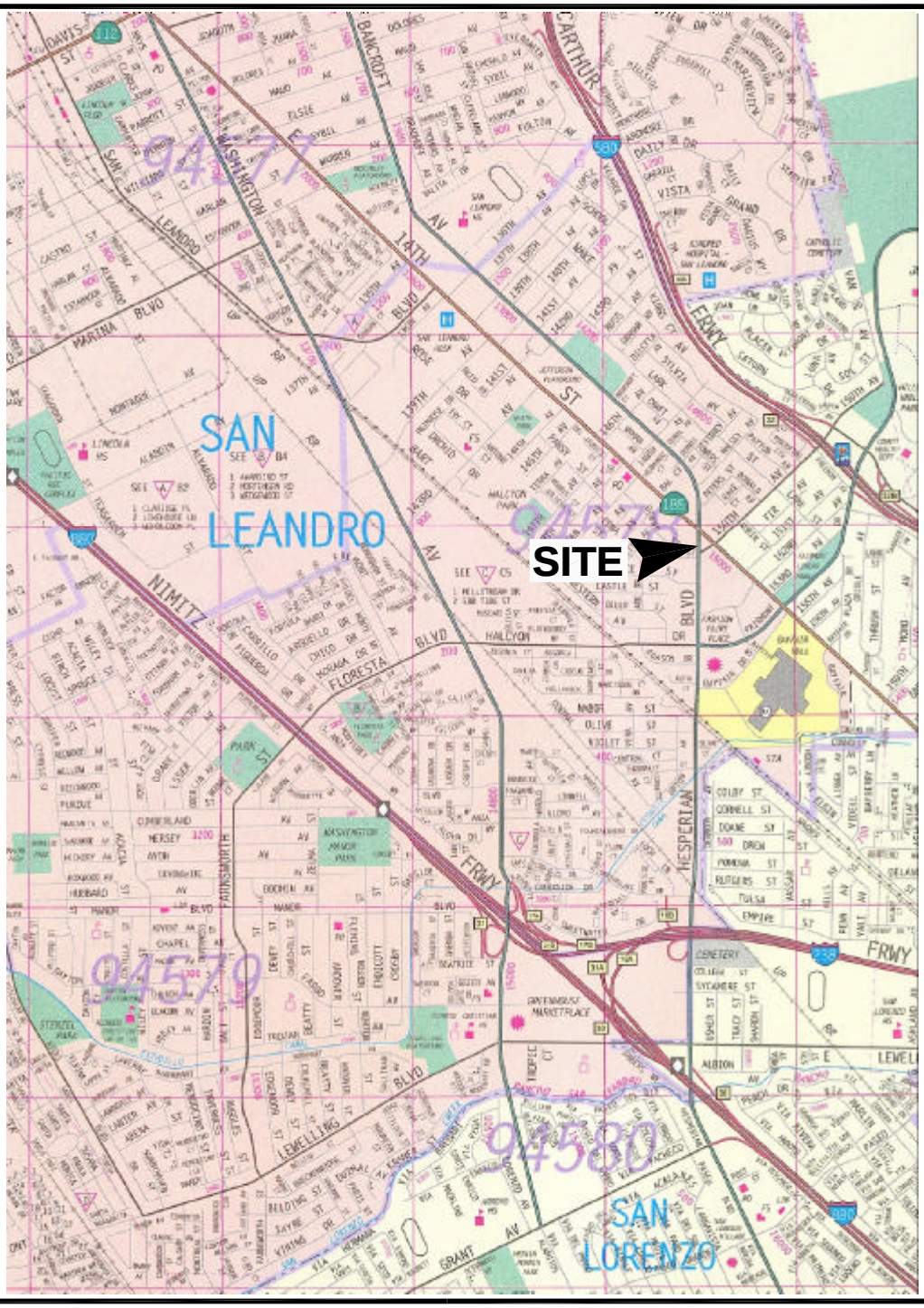
5. REFERENCES

Ninyo & Moore, 2004, Draft Initial Site Assessment, Quality Tune Up, 14901 East 14th Street, San Leandro, California: dated July 20.

Hageman Aguiar, Inc., 1993, Report of Limited Soil Investigation: dated October 26.

Hageman Aguiar, Inc., 1997, Report of Additional Subsurface Investigation: dated January 6.

San Francisco Bay Regional Water Quality Control Board (RWQCB), 2005 Enforcement of Electronic Submittal of Information (ESI) Regulatory Deadlines, dated August 30.



REFERENCE: 2004 THOMAS GUIDE FOR ALAMEDA AND CONTRA COSTA COUNTIES, STREET GUIDE AND DIRECTORY.

NORTH

0 579 1158

APPROXIMATE SCALE IN METERS

0 1900 3800

APPROXIMATE SCALE IN FEET

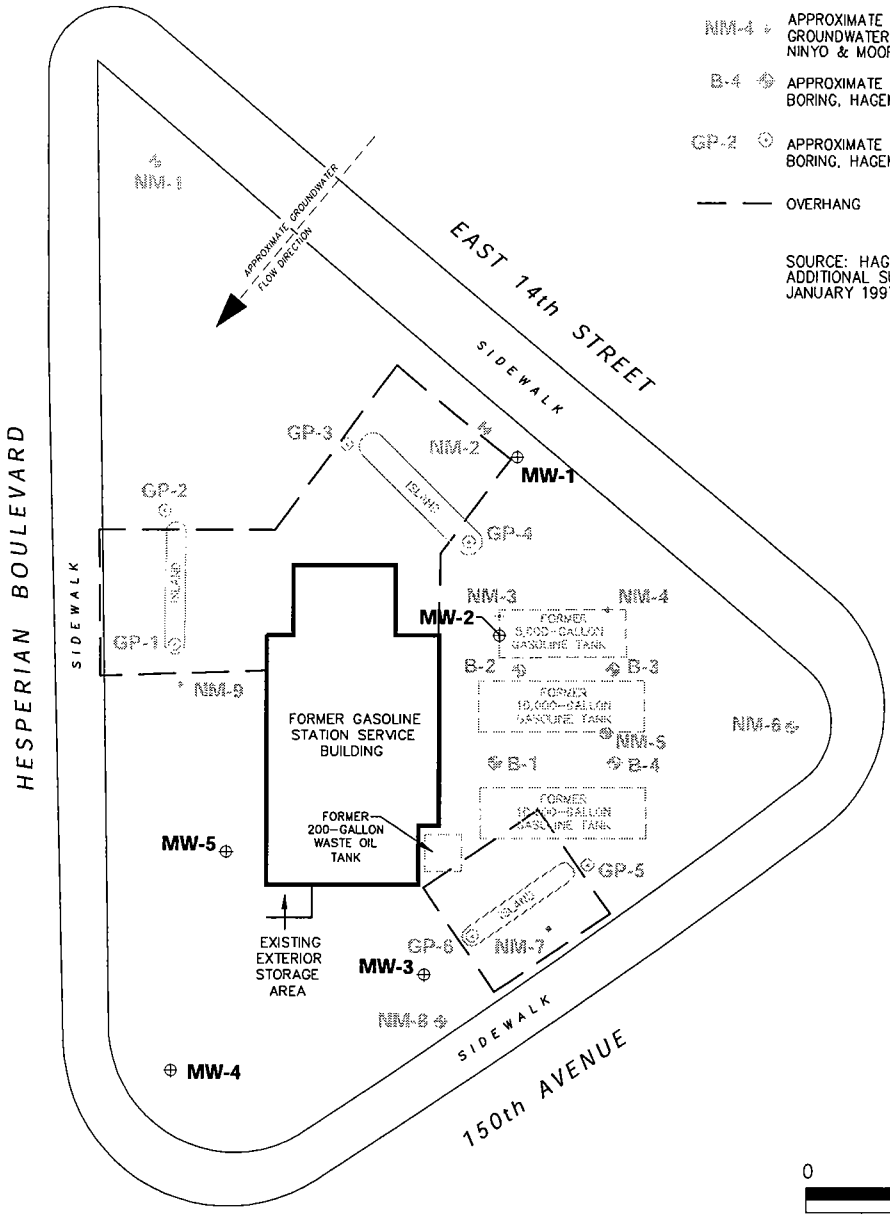
Ninyo & Moore

401007 – A4.DWG

SITE LOCATION MAP

QUALITY TUNE UP
14901 E. 14th STREET
SAN LEANDRO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
401007002	11/2005	1



NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

401007-A2.DWG

Ninyo & Moore

PROPOSED GROUNDWATER MONITORING WELL LOCATION MAP

QUALITY TUNE UP
14901 E. 14th STREET
SAN LEANDRO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
401007002	11/2005	2