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July 27, ~~1998~~ 1999 **Project No. 3628**
LOP STID 922

Mr. Larry Seto
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Subject: **Project Summary/Revised Work Plan**
Rino Pacific Service Station
1107 5th Street
Oakland, California

Dear Mr. Seto:

W.A. Craig, Inc. (WAC) is pleased to present this project summary/revised work plan for a soil and groundwater investigation at the subject site. This letter is intended to respond to your request from the owner to summarize the present status of work completed at the Site. In addition, several minor changes to the Work Plan Addendum, dated August 27, 1998, are described and submitted for your review and approval.

PROJECT SUMMARY

The Rino Pacific service station (the Site) was built approximately 40 years ago and has been in operation as a fuel service station throughout this period. The Site location is presented on **Figure 1**. From approximately 1984 until February, 1999 four underground storage tanks (USTs) were in use at the Site: one 8,000-gallon UST containing unleaded gasoline, one 10,000-gallon UST containing unleaded gasoline, and two 12,000-gal USTs connected by a manifold that contained diesel fuel. All four USTs were of single-wall steel construction.

The former USTs were tightness tested in March of 1996, and passed. ~~However, in mid-1995 an~~ unauthorized release of gasoline occurred as a result of a leak in a fuel product line. The USTs associated with these leaking product lines were taken out of service. Two ~~product recovery~~ sumps were installed to recover free product floating on the groundwater table. The location of these product recovery sumps is ~~presented~~ on **Figure 2**.

In 1997, approximately ¼-inch of fuel was observed floating on the groundwater surface in the product recovery sumps. WAC recovered approximately 6.3 gallons of product using a skimmer device. By December 1998 the floating product thickness in the recovery sump was reduced to a sheen on the water.

On October 10, 1996 WAC drilled 7 exploratory boreholes and converted 3 of them to 2-inch diameter monitoring wells. The locations of monitoring wells MW-1, MW-2, and MW-3 are shown on **Figure 2**. The results of the site investigation, including soil boring logs and soil and groundwater analytical results are presented in a Subsurface Investigation Report dated January 17, 1997.

WAC performed quarterly groundwater monitoring on eight occasions from November 1996 through December 1998. The results of the quarterly monitoring events were reported in the WAC Groundwater Monitoring report dated January 29, 1999.

The groundwater level beneath the Site varies from 10 inches to 4 feet below grade. The direction of groundwater flow varies from southwest to southeast. This hydraulic gradient interpretation assumes hydrologic continuity between the onsite monitoring wells. The interpretations of gradient and flow direction on this site are significantly influenced by water levels reported for monitoring well MW-3. Monitoring well MW-3 is very slow to recover after purging, indicating either that the water-bearing zone at this location is of low permeability or the well screen is clogged with clay.

Diesel, gasoline and benzene concentrations in the monitoring wells remained relatively consistent from November 1996 through December 1998. Gasoline and benzene concentrations in monitoring wells MW-1 and MW-3 remained relatively constant during this period.

The following is a summary of the environmental activities performed at the site by Trinity Excavating and Engineering, Inc (TEE). of Santa Rosa, California. The work was performed between February 8, 1999 and May 5, 1999. The information was provided by TEE in a letter to the owner dated July 21,1999. The information has been copied verbatim.

2/8 through 2/10, 1999:	Excavated to tops of tanks and rinsed three gasoline and one diesel underground fuel tanks.
2/11/1999:	Removed tanks and disposed offsite (observed by Fire Inspector)
3/3 &3/4, 1999:	Removed approximately 2,100 tons of contaminated soil from excavation bottom and sides before sampling as directed by Fire Inspector. Collected excavation and stockpile samples. Removed water from pit as needed. Stored approximately 33,000 gallons of contaminated water in temporary storage tanks.
2/24 through 5/19, 1999:	Loaded, manifested and disposed off-site approximately 2,100 tons of contaminated soil.
2/1 through 5/6, 1999:	Provided and placed approximately 1,700 tons of backfill.
5/3 through 5/5, 1999:	Disposed of contaminated water (by Owner).

TEE excavated, transported and disposed of 2,002.5 tons of hydrocarbon contaminated soil as non-hazardous waste at the Forward Class II landfill near Stockton, California. An invoice summary of the soil loads hauled to Forward landfill is provided in **Attachment A**. In addition, 33,000 gallons of groundwater were pumped from the UST excavation and transported as non-hazardous liquid for treatment and disposal at the Seaport Environmental, Inc. facility in Redwood City, California. The non-hazardous waste manifests for the groundwater hauled to the Seaport Environmental facility is included as **Attachment B**.

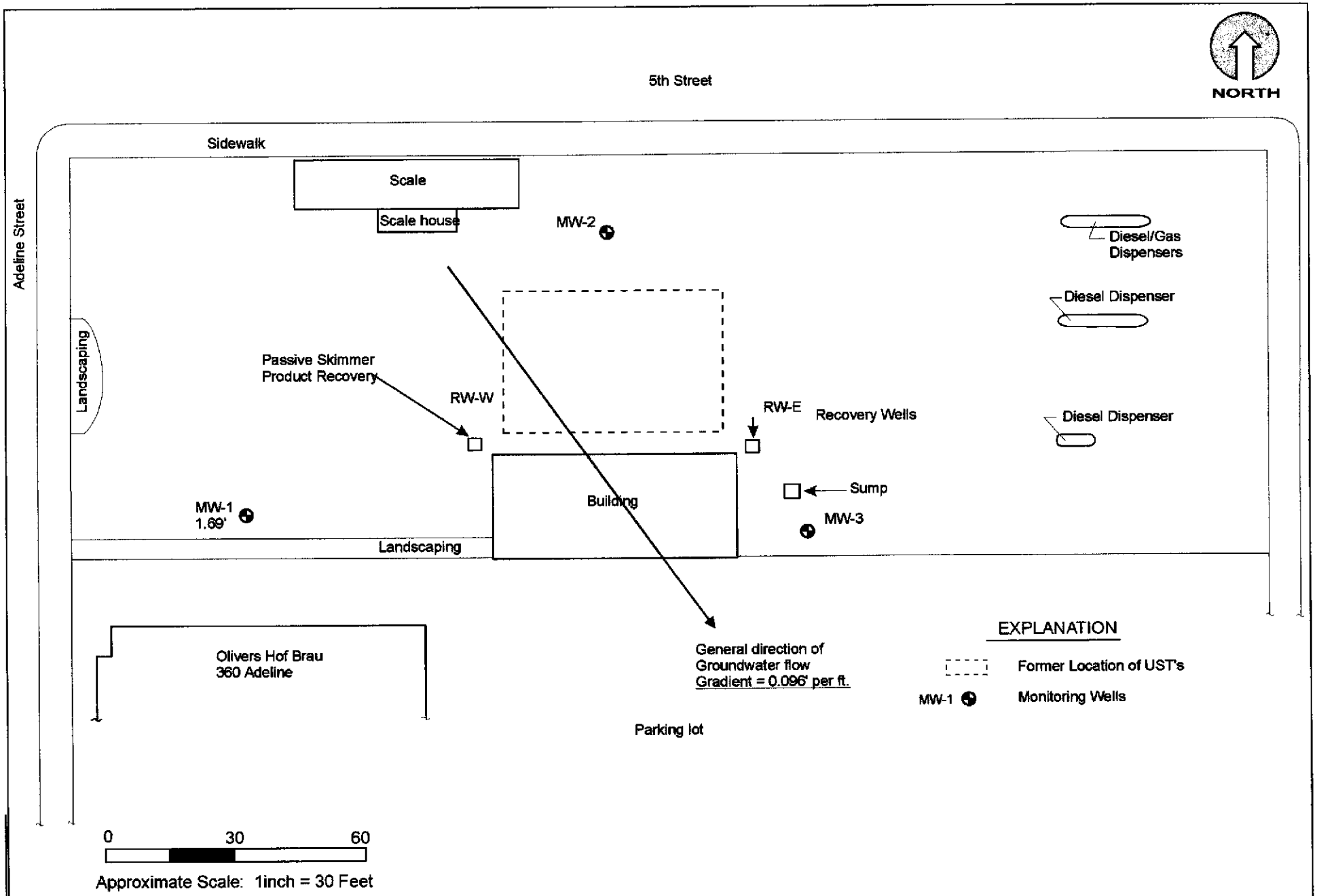
The former USTs were replaced with two 15,000-gallon double-walled USTs, product piping, and fuel dispensing systems in May 1999.

REVISED WORK PLAN

The scope of services proposed herein will be performed to obtain further information on the site soil and groundwater quality. WAC will submit quarterly monitoring reports presenting the results of groundwater monitoring. The fourth quarterly monitoring report will recommend further investigative or remedial actions, if necessary, to close the site. The locations of the proposed boreholes and monitoring wells are presented on **Figure 3.**

The scope of work proposed for this investigation includes the following:

- Obtaining appropriate permits and notifications prior to drilling;
- Advancing four exploratory boreholes (EB-8 through EB-11);
- Collecting three soil samples per borehole for laboratory analysis; → a minimum of one will be submitted to lab
- Constructing 6 groundwater monitoring wells (MW-4 through MW-9);
- Developing the 6 new monitoring wells;
- Sampling the 6 new monitoring wells and the 2 existing monitoring wells; → 3?
- Analysis of soil samples for total petroleum hydrocarbons as diesel (TPH-d) using EPA Method 8015 (modified); total petroleum hydrocarbons as gasoline (TPH-g) using EPA Method 8015 (modified); and benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl tert-butyl ether (MTBE) using EPA Method 8020;
- Analysis of groundwater samples on a quarterly basis for one year (4 events) for total petroleum hydrocarbons as diesel (TPH-d) using EPA Method 8015 (modified); total petroleum hydrocarbons as gasoline (TPH-g) using EPA Method 8015 (modified); and benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl tert-butyl ether (MTBE) using EPA Method 8020;
- Preparation of quarterly monitoring reports for submittal to the ACDEH and RWQCB.



Checked by:

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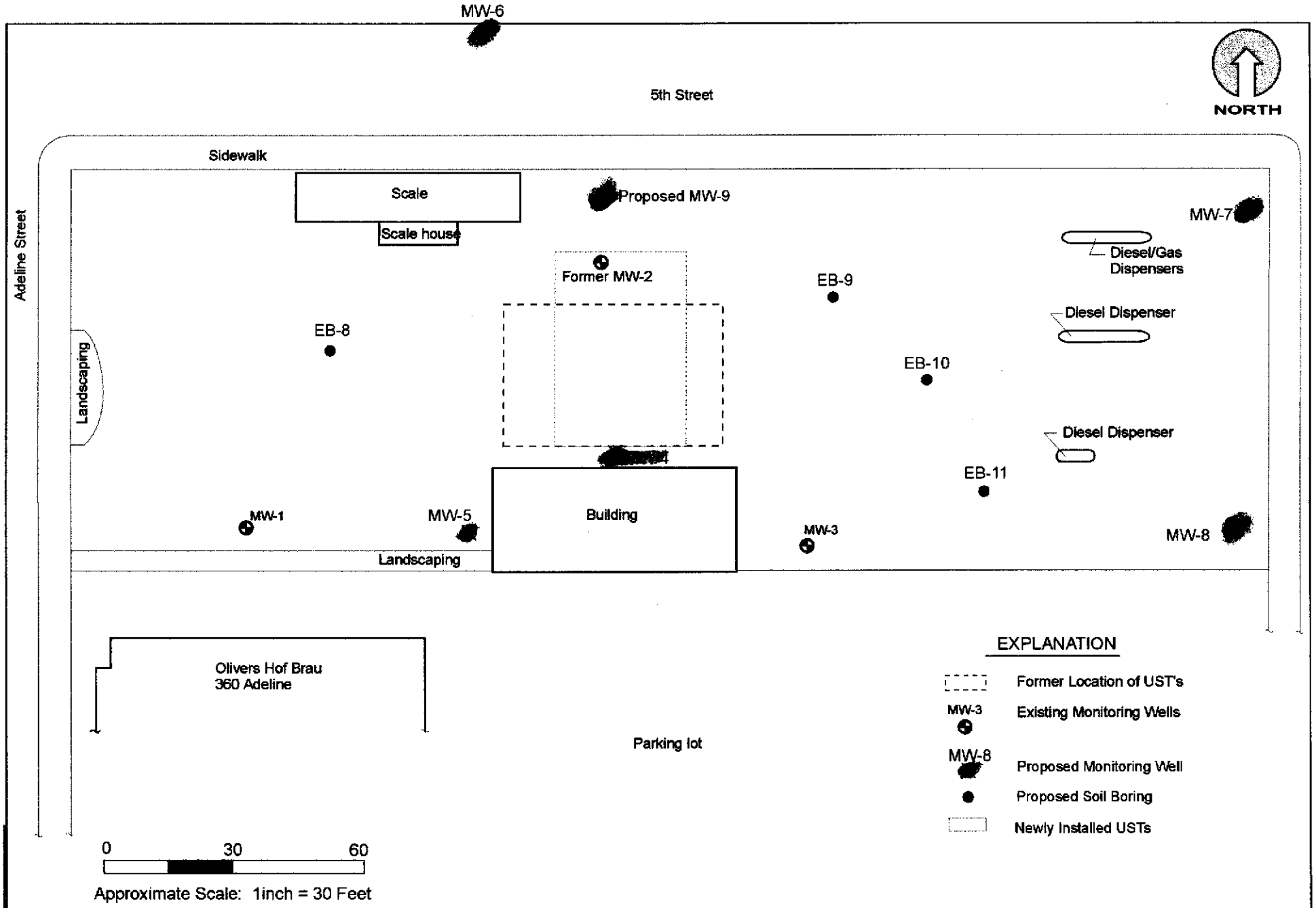
Project # 3628
July 1999

Site Plan
Rino Pacific
1107 5th Street
Oakland, CA

Figure 2



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July, 1999

Site Exploration Plan
Rino Pacific
1107 5th Street
Oakland, CA

Figure 3

Drilling and Soil Sampling

The exploratory soil borings and well installations will be permitted as required by the City of Oakland Department of Public Works. WAC will obtain the services of a California Certified, C-57 licensed contractor for the drilling services.

In a change from the Work Plan Addendum dated August 27, 1998, the four exploratory soil borings will not be drilled using a truck-mounted drill rig. Instead, the borings will be advanced using a truck-mounted, direct push, Geoprobe. The change was made to reduce the time, cost and the volume of soil cuttings produced. A 1-meter long steel probe lined with clear acetate tubing will be used to collect contiguously soil samples. Samples will be collected from the tubing in 4 to 6 inch sections cut from the acetate tubing and then sealed with Teflon lined plastic caps.

Boreholes will be logged in the field by a WAC staff geologist and will be checked by a registered California geologist. Soil samples will be collected every five feet up to a maximum of three samples per boring (three soil samples and one groundwater sample). A log of the subsurface conditions will be prepared in the field during drilling. Soils encountered during drilling will be logged in accordance with the Unified Soil Classification System. The drilling and sampling equipment will be decontaminated prior to use by steam cleaning or using a laboratory grade detergent solution with a tap water or deionized water rinse.

Soil samples will be collected at five-foot intervals or when changes in soil type or where contaminated soil is observed or detected by photoionization detector (PID) screening or by visual or olfactory observations. Grab groundwater samples will be collected from boreholes at the first presence of groundwater. Samples retained for chemical analysis will be delivered, under chain of custody control, to a state certified analytical laboratory.

The boreholes will be drilled to groundwater or to a maximum depth of 25 feet, if groundwater is not encountered. Borings will be drilled to the first encountered water and will be sealed by grouting to the ground surface with a neat cement grout.

All soil cuttings from the drilling operations will be contained in 55-gallon, DOT-approved, steel, drums and stored at the site. Decontamination rinsate will be collected and contained in appropriately labeled, 55-gallon, DOT-approved, steel, drums and stored at the site.

Monitoring Well Construction

The groundwater monitoring wells will be constructed using two-inch, flush threaded, schedule-40, PVC, well casing. The wells will be constructed through the hollow-stem augers, with materials placed from the bottom of the borehole to the ground surface. The screened interval of the well will be factory slotted with a 0.010-inch slot size. The well screen will be installed to approximately 10 to 15-feet below the first encountered groundwater, or as conditions warrant. The screened section annulus will be packed with clean graded sand to a level approximately one foot above the screened interval. Approximately one foot of hydrated bentonite pellets will be placed above the sand as a sealing material. The well will be sealed from the bentonite seal to the ground surface using a Portland cement/bentonite grout mixture. No glues or other solvents

will be used in the construction of the wells. The wells have not been designed to provide optimum flow but should provide hydraulic connection between the water-bearing zone and the well.

The wellheads will be protected from vandalism using a locking expansion-plug cap and will be housed within traffic-rated boxes to protect the wells from traffic and surface water runoff. The well sealing material (grout) will be allowed to set for a period of 72 hours prior to development, sampling, or other work that may be performed on the well.

Well Development

The wells will be developed to remove sediment from the wells and provide hydraulic communication with the water-bearing zone by intermittent surging, bailing and/or pumping. Field parameters, including color, odor, free phase liquid, turbidity, specific conductance (EC), temperature, and pH will be intermittently monitored during the development of the wells. Development will continue until field parameters stabilize and the water is relatively clear and free of silt and sand.

Surveying of Wells and Borings

A California licensed surveyor will survey the location of the 4 exploratory borings and the 6 monitoring wells. The surveyor will measure the relative elevations of the top of casing for the 6 monitoring wells. These elevations will be tied into mean sea level if a nearby elevation benchmark can be located. The horizontal coordinates of the 4 exploratory borings and the 6 monitoring wells will be measured with respect to a permanent onsite monument, such as the corner of the building. The horizontal coordinates will be used to locate borings on wells on site maps. The monitoring well elevations will be used to establish groundwater elevations and gradients in future quarterly monitoring reports.

Groundwater Sample Collection - Monitoring Wells

Water level measurements will be obtained from the monitoring wells prior to sampling. The wells will be purged of a minimum of three well-casing volumes prior to sampling. The wells will be purged using a disposable polyethylene bailer. Should the well become completely evacuated during purging, samples will be collected after the well has recovered to 80 percent of its initial water level. Field parameters will be intermittently monitored during the purging of the well (as described in well development).

Groundwater samples will be decanted from the bailer into laboratory supplied containers, approved for the analyses required. The samples will be immediately sealed, labeled and placed in a refrigerated storage for delivery to the laboratory. The samples will be labeled in such a manner as to maintain client confidentiality. Samples will be delivered under chain of custody control to an analytical laboratory that is certified by the State of California to perform the requested analyses.

Rationale for Sampling Locations

Monitoring wells MW-4 and MW-5 are proposed to be installed at locations downgradient of the underground tank area and recovery well RW-W. Monitoring well MW-6 is proposed at an upgradient (presumably - based on past groundwater gradients for the site) to assess the extent of the unusually high MTBE concentrations consistently reported for groundwater samples from monitoring well MW-2. Monitoring wells MW-7 and MW-8 are located approximately downgradient of the fuel dispensing areas near the eastern margin of the site. Monitoring well MW-9 will be placed as near as possible to the former location of MW-2. It is WAC's understanding that MW-2 was destroyed during recent over-excavation activities at the site and MW-9 will be installed to replace MW-2.

Exploratory borehole EB-8 is located in the west-central portion of the site to further characterize the extent of soil and groundwater quality conditions in this area. Exploratory boreholes EB-9, EB-10, and EB-11 are located in areas between the former UST and dispenser systems to assess soil and groundwater in this area.

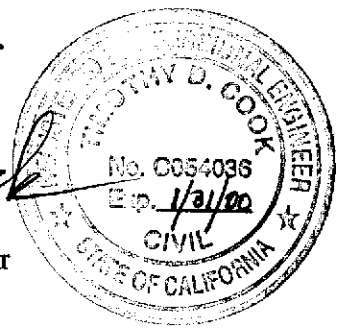
Schedule

Approval of this Work Plan Addendum, encroachment permitting, well installation and borehole permitting, and scheduling of subcontract services is anticipated to be completed in approximately five weeks. The drilling, well installation, well development, and well sampling activities should be completed in approximately ten working days (allowing for 72 hours curing of the well sealant and sampling 48 hours after well development). The results of soil sample analyses should be completed within 14 days of sample collection. Groundwater sample analytical results from the monitoring wells would be available approximately 20 days after completion of the installation of the new monitoring wells. The results of the additional investigative work would be presented in a report approximately three weeks after completion of the receipt of the final laboratory analytical results. WAC estimates this scope of work could be completed in approximately 12 weeks, although additional time may be required for pre-approval of the investigation costs by the Underground Storage Tank Cleanup Fund.

If you have any questions or comments in regard to this Project Status/Revised Work Plan, please contact me at (707) 693-2929.

Sincerely,

W. A. Craig, Inc.



Tim Cook P.E.
Principal Engineer

TDC/BM:bm
cc: Mr. Reed Rinehart, Rino Pacific, Inc.