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September 12, 1988

87157.5

Barnett-Range Corporation
P.O. Box 8189
Stockton, CA 95208-1489

Attention: Mr. Larry Malcolm, Project Manager

Subject: Interim Report
Environmental Engineering Services Summary
Mill Springs Park Apartments (Formerly Livermore Superblock)
Railroad Avenue between South P and South L Streets
Livermore, California

EXECUTIVE SUMMARY

Aqua Resources Inc. (ARI) has provided environmental consultation and engineering services in order to evaluate environmental concerns at the proposed Mill Springs Park Apartment Site. The site is located on Railroad Avenue, between South L and South P Streets, in Livermore, California. The site was known formerly as the Livermore Superblock. Environmental services provided by ARI included a limited historical review of site usage, three subsurface investigations, and collection and review of chemical analyses during soil removal.

Information obtained during the historical review indicated that the site previously contained railway trackage including a main railway line that ran generally east-west through the center of the site and several spur tracks off the main line. The railway trackage was removed during the mid 1970's; adjacent buildings were also removed during that time. Interviews with people familiar with the site indicated that the site was used for coal and sugar beet stockpiling, a cattle stockyard, and a furniture store while the

rail lines were in operation. Those interviewed knew of no other activities on the site.

Based on the limited site history and on the fact that old railroad right of ways are usually suspect for transient leakage from bulk carriers and diesel engines, ARI recommended that a subsurface investigation be performed. A preliminary subsurface investigation was performed, followed by two additional subsurface investigations. The two additional subsurface investigations were performed to better quantify the nature of potential contaminants and to define their horizontal and vertical limits.

Results of the investigations indicated that the only contaminants present were lead, over a limited area of the site, and soils containing asphaltic material over other portions of the site. Furthermore, the contaminants also appeared to be limited to the surface soils to depths generally between about 1 foot up to about 5 feet. However, because of the shallow depth of the contaminants, groundwater contamination was not considered likely. Likewise, because of the shallow depth of the contaminants, removal of contaminated soils was judged to be the most economical method of remediation. In addition, from discussion with the California Department of Health Services (CDHS), the Department does not consider asphaltic materials to be hazardous. The asphaltic character of these materials was determined by tests performed by Construction Materials Testing.

Based on the data obtained from the subsurface investigations, four areas (Areas A, B, C, and D) were designated for removal. Removal was performed by IT Corporation using a mechanical excavator. Excavated soils containing lead were placed in a sealable container for disposal to a Class I facility. Soil containing asphaltic and oily materials was stockpiled on site until disposal requirements were determined. Composite samples of the soils were obtained during removal to assist in determining disposal requirements.

Subsurface conditions encountered during the removal were generally as anticipated except in a portion of Area B where several abandoned underground oil lines and an underground concrete structure were encountered. The oil lines were observed not to be connected to any

existing or past underground storage facilities. Deeper removal was required in localized areas due to leakage from the oil lines. The localized leakage appeared to have resulted from corrosion of the oil lines.

Results of the chemical analyses indicate that the oil is fuel oil and that the fuel oil does not contain any PCB's. Likewise, based on observations made during removal and chemical analyses, some additional removal may be necessary from portions of the existing excavation base in Area B, and in the southwest portion of Area B, where additional lead containing soils were encountered.

Prior to performing additional removal, ARI recommends that additional subsurface exploration work be performed to determine the vertical extent of oil contamination at the three locations observed in Area B and to determine the horizontal and vertical extent of lead contamination also in Area B. We also recommend that the existing underground concrete structure be removed.

1.0 INTRODUCTION

This report summarizes environmental services provided by Aqua Resources Inc. (ARI) at the subject site through August, 1988, including pertinent information from previous letter reports to the client's attorney prepared by ARI.

This report summarizes our field observations, and presents results of chemical analyses regarding removal of lead-contaminated soil and soil containing asphaltic material at the subject site. This report also presents additional remedial action conclusions and recommendations based on field observations and chemical analyses presented herein. The limits of excavations performed are shown approximately on the attached plate 1-Excavation Limit Plan. Copies of the Chain of Custody forms and Certified Chemical Analysis reports are presented in Appendices A and B, respectively.

Our scope of services during soil removal included field staking the horizontal limits of planned excavation areas (Areas A, B, C, and D as shown on the contract excavation plan), full-time observation during soil removal, soil sampling for chemical analysis, reviewing chemical analyses, and preparing this report.

2.0 Site History

ARI previously completed an initial review and site history of the proposed Livermore Superblock Project. The approximately 11 acre site occupies the four block area on the southside of Railroad Avenue between South L and South P streets, Livermore, California.

The purpose of this review was to determine the potential for hazardous waste contamination at the site. ARI work effort to date consisted of:

- o Review of topographic and geologic data in our files
- o Review of aerial photographs
- o Field reconnaissance of site
- o Interview with local residents
- o Contact with various local and State environmental agencies

2.1 Summary of Topographic and Geologic Information, and Review of Aerial Photographs

The site lies in the middle of the old commercial district of the City of Livermore astride the abandoned trackage of Southern Pacific Railroad. While the site is essentially bare, it is completely surrounded by light commercial developments such as banks, theatre, car dealer, supermarket, restaurants, etc. The land surface slopes gently to the west and is composed of a very gravelly soil derived from stream alluvium. Depth of the alluvium to the first clay strata is approximately 14 to 20 feet.

A series of stereo air photos from the files of the California Division of Mines and Geology and the US Geological Survey were reviewed. The oldest set (1964) showed 3 track spurs off the main E-W line through the center of the site; a single spur on the south half extended to M Street while the double spur on the north half ended opposite N Street. Discoloration of the ground adjacent to both northern spurs suggested material storage sites. A number of structures located on the northeast quadrant of the site have been subsequently identified as the Kamp Furniture Store, coal bunker (?) and two

railroad line shacks. Subsequent photos (1973, 1974, 1984) indicated that the tracks had been removed (main line, 1976 ±) and structures reduced to foundation slabs.

2.2 Preliminary Field Reconnaissance

The site visit on November 4, 1987 verified conditions observed on the 1984 photos. Much of the site had been recently graded. Piles of excess material contained some clean asphalt and reinforced concrete rubble. The native soils appeared free of foreign matter with the exception of the railroad ballast found along the mainline alignment and grey sands near the line shack foundations. The surface was paved with asphalt on the South property line from behind the Kirpatrick Thrift Shop to the theatre (N to O Streets). A storm sewer, visible behind the theatre reportedly runs the entire length of the south property line. Three abandoned partially dismantled vehicles were parked west of the Groth Oldsmobile/GMC Truck dealership and M Street.

Field indication of potential hazardous waste contamination originating on the property were limited to a concrete tank cradle for an aboveground approximately 5,000 gallon tank (located near Railroad Avenue opposite M Street) and the railroad alignment itself. Old railroad right of ways are always a suspect for transient leakage from bulk carriers and diesel engines.

Field indications of potential offsite contamination migrating to the site were more significant. The enclosed storage yard of Groth Oldsmobile located on the west side of M Street contained discarded lead-acid batteries and open drums of lubricants and solvents. Puddles of oily drainage were observed extending north to the property line. The Groth dealership has reportedly been at this location for more than 20 years. A second area of concern was the adjacent storage yard to the west behind Kirpatrick's. This yard, however, was fully paved and clean at the time of the field reconnaissance.

2.3 Interviews

The history of the site was discussed with Mr. Joe Boatwright, age 51, site developer, who has a 40 year familiarity with the site; and Mr. Ed Rumstrom, age 70, Coldwell Banker realtor on L Street. Both described the railroad history land use for coal and sugar beet stockpiling, cattle pens and the furniture store. They knew of no other activities on the site.

Various groups within the following agencies were also contacted by phone for records of potential hazardous waste contamination on or near the site:

City of Livermore:

Planning

Public Works

Fire

Alameda County:

Environmental Health Services

Office of Emergency Services

State of California:

Regional Water Quality Control Board

Department of Health Services

Federal:

Environmental Protection Agency

Responses to date from these agencies were that they have no records of contamination on the site.

The Regional Water Quality Control Board reported two known fuel leaks in the vicinity, located 2 to 3 blocks southeast and southwest of the site, respectively. These leaks were judged unlikely to be a problem to the site.

2.4 Potential For Site Contamination

Based on the information collected, and our understanding of site usage at the time the site history was performed, there were definite but limited

potentials for hazardous waste contamination at the Livermore Superblock site. Principal potential sources appeared to be offsite contamination originating along First and L Streets and migrating down slope to the west through the gravelly soil onto the site. Direct on site contamination was also a possibility.

Based on the above we recommended that soil samples be taken at the following locations:

1. West of Groth Oldsmobile storage yard
2. West of Kirpatrick storage yard in N Street
3. West of concrete tank cradle opposite M Street
4. Adjacent to abandoned main track in vicinity of O Street

Based on the findings of this initial sampling, an additional investigation was recommended and completed during subsequent phases.

3.0 SITE INVESTIGATION SUMMARY

Three subsurface investigations of the site were performed. The purpose of the investigations was to determine the nature of the contaminants and the horizontal and vertical extent of contamination. The scope and results of each investigation are summarized below.

3.1 Phase I Investigation

Seven boring sites were selected based on the initial site visit; discussion with Berlogar Geotechnical Consultants, who have performed prior soil investigations on the site; and field interpretation of the drill logs at the site.

Seven 10-foot soil borings were made on December 18, 1987. Two drive samples were taken at each location, one at the top of a clay lense typically found on the site at a 3 to 6 foot depth, and the second at 10 feet. Samples were stored in an ice chest and accepted for transport by the Anatec Laboratory courier at the site using EPA approved sampling⁷¹¹ chain of custody procedures. Five samples judged to have the highest probability for contamination were selected for priority (2 day turn around) chemical analysis.

A Sample from the Kilpatrick Storage Yard had minor amounts of extractable hydrocarbon (71 ppm); but, at concentrations below the action level of 1000 ppm. Likewise toluene was detected in this sample at a level (5.7 ppb), very slightly above the detecting limit of 5.0 ppb. Extractable hydrocarbons were not detected in the remaining four samples, and volatile hydrocarbons were not detected in the five samples tested. Lead was detected in all samples at concentrations above detection limits of 20 ppm but well below the Title 22 Total Threshold Limit Concentration of 1000 ppm. It is probable that the detected lead values represent only the natural soil background concentrations.

3.2 Phase II Investigation

The second phase sampling on the site, as authorized by Barnett - Range Corporation on March 29, was performed in accordance with our letter dated March 28, 1988. The Phase II investigation included an additional field investigation for sample collection, and chemical analyses on selected samples. Results of laboratory chemical analyses are summarized below. Chemical analyses were performed by Anatec Laboratory certified by the California Department of Health Services.

Chemical analyses performed during the phase II investigation included analyses for Total Oil and Grease (O&G), heavy metals and Priority Pollutants. The highest O&G concentrations were detected at the shallow level (depths ranging from 8" to 1'-9"). At one sample location (TP-9A), O&G was detected at a depth of 4 feet.

Lead was detected at one site at 430 mg/kg (total) and 9.7 mg/l (soluble). Section 66699, Title 22, CAC, defines a waste as a hazardous waste when it contains lead and/or lead compounds in excess of its Total Threshold Limit Concentrations. Threshold Limit Concentration (TTLIC) for lead is 1000 mg/kg. Soluble Threshold Limit Concentration (STLC) is 5 mg/l. The sample concentration exceeded lead STLC, and as a consequence, soil at this sample location constituted a hazardous waste. EPA Methods 8270 and 8240 did not detect any Priority Pollutants (other than toluene) above their detection limits. In addition, no PCB's were detected.

During the Phase II investigation there was also no evidence (beyond one sample: TP-9A @ 4' where oil & grease = 2100 mg/kg) that oil & grease contamination was prevalent below a 3-foot depth. To confirm this samples were obtained from 6, 8, 10 and 12-foot depth at locations where the heaviest soil concentrations were observed (such as TP 9-A). A minimum of 3 locations were selected in the field for this purpose.

No information was available about possible contamination of groundwater at the site. The groundwater table in this area has been reported to be somewhere between 30 to 40 feet (unconfirmed) below the surface.

3.3 Phase III Investigation

The Phase III subsurface field investigation was done on April 26 and 27, 1988 at the request of Barnett-Range Corp. The purpose of this third investigation phase was to determine the extent and nature of hydrocarbons and heavy metals on the property. To facilitate this work, a simple grid system was staked in the field based on the results of prior investigations, visual field observations and a soil-gas vapor site survey; and all boring locations were referenced to that grid.

3.3.1 Sampling Program

To determine potential depth of contaminant vertical migration, three 15 foot deep holes were drilled on April 26 in the area which previously tested high for oil and grease, and lead. Drive samples were taken at 5 foot intervals under strict procedures to minimize sample and soil cross contamination; the auger was steam-cleaned prior to each entry and all holes were backfilled to 2 feet with bentonite slurry.

The shallow drilling program was performed on April 27 using 2 drill rigs. Fifty-seven (57) holes, typically 3 feet deep were made and 60 samples taken. Samples were taken either by standard drive procedures or by hand sampling directly from the auger flytes based on the field evidence of potential contamination as determined by the field engineer. All samples were recorded on a chain-of-custody form, and sent to a State Certified Laboratory for analyses. To maximize information from this program, boring locations were added or adjusted by the engineer based on indications of contamination at prior boring locations.

Initial field review of the boring logs suggested a pattern of isolated oil and grease contamination and broader areas of light contamination. This pattern was aligned with the apparent location of a railroad siding and, to a lesser extent, along the main track line.

3.3.2 Chemical Analysis Program

The Phase III chemical analysis program for the Livermore Superblock site had three components. The components, and the reason for their inclusion in the analysis program, are summarized below:

A. Hazardous substances: This part of the program was conducted to establish the presence or absence of hazardous substances in the samples tested. Consequently, testing was done using EPA methods 8240 and 8270, which provide a broad range of commonly encountered purgeable and extractable pollutants, EPA method 8080 for organochloride pesticides and PCB's, and CAC Title 22 Inorganic Persistent and Bioaccumulative Substances. These analyses provide a comprehensive testing program, in the opinion of the Duty Officers of the California Department of Health Services - Toxics Group. The results of the analyses performed in a five-sample composite of upper level (8" to 1-1/2') samples, follows:

- o All analytes tested below their respective EPA method detection limit for EPA-8240, with the single exception of toluene (80 ug/kg) which is below a level of concern.
- o All analytes tested below their detection limits for EPA - 8270. However, due to analyses interference caused by the sample chemistry, detection limits were 1000 times the respective EPA method detection limit (see discussion of tests results below).
- o All analytes tested below Title 22 Section 66699 Total and Soluble Threshold limit concentrations with the exception of lead (9.7 mg/L vs the regulatory limit of STLC 5.0 mg/L).

The above findings required us to locate the source of lead contamination for spot clean-up. Each of the five upper level samples from which the composite sample was composed, was analyzed individually for lead and arsenic. The five lower level (4' deep) samples were also analyzed to determine if lead contamination reached the lower level. The results of these additional analyses indicated that the source of contamination was at

the sample location known as TP-9A (2000 mg/kg versus the regulatory limit of TILC 1000 mg/kg).

Having determined the location, the next effort was directed to establish the aeral extent of lead contamination. Three sampling locations in the vicinity of TP-9A were selected for that purpose. All three showed negligible levels of lead, indicating that lead contamination at this location is not widespread, but confined to the TP-9A area.

B. Asphaltic pavement and asphalt-like substances: During the excavation of test pits, it became evident that the asphalt-like substances were confined to a well-defined black horizontal band located at depths ranging from 8" to 1-1/2' below the surface. Two samples of these materials were analyzed by Construction Materials Testing laboratory. One sample was determined by the Laboratory to have the consistency, composition and oil content typical of asphalt concrete. The second sample consisted of sand, a small amount of aggregate and apparently the same type of oil present in the asphalt concrete.

Since the California Department of Health Services considers waste oils, waste fuels and their soil mixtures to constitute a hazardous waste, but not asphalt rubble, it was important to determine whether the asphalt-like substances present were due to an old asphalt paving covered by dirt. Accordingly, samples were analyzed for total oil and grease.

Total oil and grease was determined to be present in samples taken at the site at concentrations up to 130,000 mg/kg (13% by weight). This high TOG content is generally associated with the asphaltic concrete and asphalt-like substances detected at the site as discussed previously. TOG concentrations were determined by EPA Method 413.1 (gravimetric).

The TOG testing program was intended to determine the extent of lateral and vertical TOG contamination. The Phase II Investigation indicated that TOG contamination was limited to the upper level samples, with the exception of the sample taken at TP-9A at 4 feet (2100 mg/kg). In the Phase III

Investigation, samples taken at the depths of 3.5, 5, 6.5, 10 and 15 feet deep showed no contamination above the method's detection limit (30 mg/kg).

The results of the TOG testing allowed us to determine the approximate areal extent of contamination. In addition, no vertical migration of TOG towards groundwater was detected by the samples taken at the site.

3.3.3 Assessment of the Site Conditions

Several areas at the site appeared to have been subjected in the past to surface treatment with a bituminous asphaltic compounds to provide a more stable traffic surface. The two samples tested by Construction Materials Testing, Inc. were believed typical of the materials encountered at this site:

sample #1 ("soft") which has an appearance of a "backup" asphalt

sample #2 ("hard") which has an appearance of asphaltic concrete

Our telephone inquiries with the California Department of Health Services confirmed that under Title 22 asphalt and/or pavement type material is not listed as hazardous waste.

3.3.4. Alternatives for Dealing with Contaminated Materials On-Site

Based on the results of soil sampling, we designated the contaminated areas as A, B, C, D. Area "A" represents a potential site where heavy metals could be present in concentrations exceeding California's TTLC's. It was assumed that an approximate soil volume of 5 feet by 5 feet by 4 feet deep from Area "A", had to be excavated and disposed of to Class I facility. This assumption was based on the fact that only one soil sample (a "hot spot") showed elevated concentration (2000 ppm) of lead. No other nearby samples showed lead or other metals' concentrations in excess of TTLC. However, that area was tested after removal of this estimated soil volume to ensure compliance with regulatory requirements.

Area "B" represented an area which was found to contain high levels of total oil and grease in asphaltic compounds in shallow depths (to about 2 feet below surface). Similarly, areas "C" and "D" appeared to contain similar materials although their areal limits were not well defined. The fate of these latter materials required careful analysis. Although it might be possible to leave these asphaltic materials in place, they may eventually constitute a long-term liability to the property owner.

3.3.5. Conclusions and Recommendations

The following conclusions and recommendations were made at the completion of Phase II & III site investigations:

Due to uncertainty as to whether or not it would be possible to excavate and dispose of all site materials containing asphaltic compounds to a Class III landfill, there was a need for additional assessment of this key issue. This could be accomplished by taking physical samples of these materials to a licensed hauler/landfill operator and obtaining a commitment that these materials can indeed be disposed of.

Leaving the materials in place would necessitate a full risk assessment of the future liabilities to the site developer if problems arise in the future. Since there was no evidence of vertical migration of these asphaltic compounds, their removal was not considered mandatory or urgent (except around TP-9A).

4.0 SUMMARY OF FIELD OBSERVATIONS DURING SOIL REMOVAL

4.1 General

The limits of Areas A, B, C, and D, as shown on the contract excavation plan, were field staked on Tuesday August 9, 1988. The excavation limits were determined by pacing and taping measurements from existing structures. The actual locations should be considered accurate only to the degree implied by the methods used. Locating existing active utilities within the planned excavation limits was the responsibility of the contractor.

Soil excavation was performed between August 10 and August 16, 1988 by IT Corporation, using a mechanical excavator (caterpillar 225). Lead-contaminated soil from Area A was placed in a metal container with a sliding top; soil excavated from the remaining areas was placed into end-dump trucks and stockpiled on site at a location selected by Barnett-Range. A detailed summary of field observations for each area is given below.

4.2 Area A

Area A was excavated on August 10, 1988 to the limits shown on the Excavation Location Plan. The excavation was about 5 feet long, 5 feet wide and about 5 feet deep. The area was initially saturated with clean water to reduce the potential for dust generation during excavation. After removal was completed, soil samples were obtained from each of the sidewalls and excavation base for additional Total Threshold Limit Concentration (TILC) and Soluble Threshold Limit Concentration (STLC) for lead. At two sample locations, the TILC exceeded 50 mg/kg (Samples A-1 and A-3 with reported TILC Concentrations of 90 mg/kg and 530 mg/kg, respectively).

A "wet" test was performed on the A-3 sample to determine the STLC; however, because the test would take about 5 days to perform, Barnett-Range elected to remove additional soil material at the two sample locations. This was performed, and the new excavation limits were sampled (Samples A2-1 and A2-2). The samples were submitted for TILC analysis for lead; results of the analysis indicate TILC values were less than 50 mg/kg.

Based on this and the solubility tests determined from the prior TMLC and STLC for sample A-3 (STLC of 9.9 mg/kg), no further removal was considered necessary. However, the additional removal was performed as a precaution. Subsequent additional testing of the soil samples from this removed material indicated STLC limits in excess of the allowable ones which justified the decision for the removal.

4.3 Area B

Area B was excavated between August 10 and August 16, 1988. The actual excavation limits were generally within the planned excavation limits. The width of the excavation was highly variable depending on observed conditions and ranged from 18 feet wide up to about 69 feet wide and had a finished length of about 317 feet. The excavation depth was also highly variable ranging from about 2.5 feet up to 13 feet deep. Most of the excavated areas extended only to 3 feet; however, deeper removal was required in 3 areas where contamination was observed to extend to deeper depths. The volume of material excavated from Area B is estimated to be about 2390 cubic yards. A composite sample of the excavated materials was obtained generally at 100 cubic yard intervals during removal.

Numerous buried structures were encountered within the excavated limits for Area B. These structures are described briefly below and their locations shown approximately on the Excavation Plan, Plate 1. The structures encountered included three (6-inch to 8-inch diameter) steel pipes running generally east-west. Two of these lines turn and run south under an existing paved area, while the third line terminates about 25 feet east of the east excavation limit. All three lines were observed to contain a viscous oil substance thought to be Fuel Oil. The lines were observed to be highly corroded with numerous corrosion holes through the pipe sidewalls. Visible soil contamination was observed along portions of the pipe alignments as the pipes were removed from the excavation. Two additional steel lines were observed; however, one appeared to be an abandoned gravity drain line while the other appeared to be an abandoned water line.

Two steel barrels and one wooden barrel were also encountered. The barrels could have been used as sumps; however, no lines were observed entering or

leaving the barrel structures. The soil surrounding the wooden sump was observed to be heavily contaminated; visible contamination was still present in a test pit excavated to a depth of about 13 feet at this location. No visible contamination was noted around the two steel barrels, although observation of barrel interiors suggested they may have contained oil at one time. The barrels appeared visually to be significantly intact with few visible corrosion holes.

A concrete structure was encountered under the existing paved area. The structure is about 30 feet square in plan dimension, and appears to extend to a depth of about 5 feet below the perimeter side wall. The interior of the structure is sloped. The perimeter wall is generally about .5 to 1 foot below the existing pavement grade. The structure appeared to have been backfilled with wood debris, sand, and gravel. The structure may have contained oil at one time as the concrete was stained but it did not have it now. The upper 2 to 3 feet of backfill did not appear visually to be contaminated; this material was removed and stockpiled. The remaining backfill material was left in place because of potential contamination and presence of free water in the bottom of the structure.

The western limits of the Area B excavation were adjusted based on field observation because the asphaltic material was no longer visible. Several test pits were excavated further west, but the asphaltic material was not observed. Further excavation of Area B was discontinued. However, at one test pit location southeast of Area A, a second area of suspected lead contamination was encountered. Chemical analyses confirmed the lead contamination.

4.4 Area C

Area C was excavated to the limits shown on the plan. The excavation was about 50 feet long, 30 feet wide, and extended to a depth of about 2.5 feet. Excavation to the designed 3 foot depth was judged unnecessary based on test pits excavated to this depth within the excavation limits. The volume of material excavated from this area is estimated to be about 167 cubic yards.

Composite sampling of the excavated material was also performed. A small 2 inch diameter pipe was encountered in a portion of the excavation; contents of the pipe were not observed. The line appeared to be an abandoned water line. The pipe appeared to terminate near the west end of the excavation.

4.5 Area D

The excavation limits of Area D were adjusted (excavation was moved south about 15 feet) based on conditions observed in Area C. The excavation was about 70 feet long and averaged about 25 feet wide. The asphaltic material appeared to pinch out on the east end of the excavation. Asphaltic material was not observed in test pits excavated to the north and east of the excavation. Volume of material removed from this excavation is estimated to be about 239 cubic yards. Composite sampling of the excavated material was also performed.

5.0 SAMPLE COLLECTION DURING SOIL REMOVAL

Sample collection for subsequent chemical analyses was performed in conformance with the Health and Safety Plan prepared earlier for this project. Level C protection (ie safety glasses, respirator, disposable gloves, suit and boot covers, etc.) was used in sampling areas of lead contamination (Area A only). Level D protection (safety glasses, boots, gloves, normal outer clothing, etc.) was used in areas containing asphalt-oil material (Areas B, C, and D).

Soil samples were obtained using a metal scoop. Samples were placed and sealed in clean glass sample jars (provided by lab). The sample containers were labelled and placed in an ice chest. The scoop was washed in clear water and rinsed with demineralized water after each sample collection. Samples were transported to the chemical laboratory either by ARI personnel or by courier. Formal Chain of Custody protocols were maintained at all times.

6.0 CHEMICAL ANALYSIS DURING SOIL REMOVAL

Chemical analysis during soil excavation was performed by Curtis and Tompkins Laboratories in Berkeley, California. Soil samples obtained from Area A were analyzed for TTLC using EPA method 7420; and for STLC using the Waste Extraction Test procedure (CAC Title 22, Section 66700) and EPA method 7420. Soil samples obtained from Areas B, C, and D were analyzed for Total Petroleum Hydrocarbons (TPH) using EPA Methods 3550 and 8015. A sample of the oil in the steel pipes was also obtained and analyzed for TPH and for Polychlorinated Biphenyls (PCB). Results of the chemical analyses are presented in the Certified Laboratory Reports presented in Appendix B.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Our conclusions based on review of field observations and results of chemical analyses to date are:

1. Excavation for Area A appears to have removed soil having lead concentrations exceeding regulatory allowable limits. However, the second suspect area may require removal.
2. Conditions encountered in Area B were significantly different from the anticipated conditions. Visible fuel oil contamination resulting from leaks from the corroded steel lines required deeper removal than originally anticipated at selected locations.
3. Contamination in Area B does not appear to extend beyond the existing horizontal excavation limits except at isolated locations based on visual examination of sidewalls and TPH test results. Portions of existing excavation base in Area B may require additional removal.
4. Contamination in Areas C and D does not appear to extend beyond the existing horizontal and vertical excavation limits based on visual examination of the excavation sidewalls and based on TPH test results.
5. The oil observed in the buried pipes is a fuel oil based on results of Gas Chromatographic typing techniques and does not to contain PCB's.
6. TPH concentration from composite samples of the stockpiled material indicate the materials should be acceptable to a Class III disposal facility.

Based on these conclusions we recommend the following:

1. Perform additional field sampling and analyses to determine the

horizontal extent and vertical extent of lead contamination in the second suspect area.

2. Perform additional field sampling (including drilling) to determine the vertical extent of oil contamination at the three suspect locations observed in the field. If there are indications of vertical migration towards groundwater, a monitoring well may have to be installed.
3. Remove the existing concrete structure and fuel oil lines and dispose of according to existing regulatory requirements.
4. Submit the results of existing chemical analyses to the Alameda County Department of Health, Hazardous Materials Division to confirm the stockpiled material can be sent to a Class III disposal facility.

* 1 hour

1. need close plan
2. stock pile
3. monitoring well - location
4. fuel oil
5.

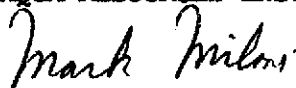
45 min

8.0 LIMITATIONS

The excavation limits were based on visual examination in the field. Soil samples obtained for chemical analyses represent conditions encountered at a specific point where taken. Chemical analyses were performed under the direction of others. Although a responsible effort has been made by ARI to test soil samples for likely contaminants in the areas that have been excavated, ARI cannot provide a guarantee either express or implied that other hazardous contaminants are not present at this site.

It has been a pleasure to provide you with this information. If you have any questions regarding the above, please do not hesitate to contact the undersigned.

Respectfully submitted,
AQUA RESOURCES INC.



Mark Milani, P.E.
Project Manager

cc: Addressee (2)

Alameda County Department of Environmental Health (1)
Division of Hazardous Materials
Attn: Ms. Lizabeth Rose

Attachments: Plate 1 - Excavation Limit Plan
Appendix A - Chain of Custody Forms
Appendix B - Certified Laboratory Reports

AQUA RESOURCES, INC.



CHAIN OF CUSTODY RECORD

SHIPMENT NO.: 1

PAGE 1 OF 1

DATE 8/10/02

PROJECT NAME: Livermore Superblock

PROJECT NO.: 87157.5

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	
A-1	N Sidewalk 1/2	Soil	S.S. Scoop	Glass Jar	ice chit	NONE	Lead /
A-2	W.S. Sidewalk 3'	Soil	S.S. Scoop	Glass Jar	ice chit	NONE	Lead /
A-3	S.S. Sidewalk 4 1/2'	Soil	S.S. Scoop	Glass Jar	ice chit	NONE	Lead /
A-4	S.S. Sidewalk 2'	Soil	S.S. Scoop	Glass Jar	ice chit	NONE	Lead /
A-5	Ex. Sidewalk 5'	Soil	S.S. Scoop	Glass Jar	ice chit	NONE	Lead /

Total Number of Samples Shipped: 5 Sampler's Signature: Mark Melon

Relinquished By: Signature <u>Mark Melon</u> Printed Name <u>Mark Melon</u> Company <u>Aqua Resources</u> Reason <u>Deliver to Curtis Tempkins Lab by [unclear]</u>	Received By: Signature <u>[unclear]</u> Printed Name <u>Scott Rittman</u> Company <u>Curtis + Tempkins</u>	Date <u>8/10/02</u>
		Time <u>10:15 a.m.</u>

Relinquished By: Signature _____ Printed Name _____ Company _____ Reason _____	Received By: Signature _____ Printed Name _____ Company _____	Date <u>1 1</u>
		Time _____

REMARKS:

Special Shipment / Handling / Storage Requirements:

AQUA RESOURCES, INC.

SHIPMENT NO.: 3



CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 8/11/88

PROJECT NAME: Livermore Superfund

PROJECT NO.: 87157.5

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	
B-1 3 feet	Area B 45' S NE East line road	Soil	S.S. Stop	Glass	Ice Chill	None	Hold
B-2 3 feet	Area B East side	Soil	S.S. Stop	Glass	Ice Chill	None	Hold
B-3 1 foot	Area B East side @ edge of pavement	Soil	S.S. Stop	Glass	Ice Chill	None	Hold
B-4 3 feet	Area B 45' W end	Soil	S.S. Stop	Glass	Ice Chill	None	Hold
B-5 3 feet	Area B East side	Soil	S.S. Stop	Glass	Ice Chill	None	Hold

Total Number of Samples Shipped: 5 | Sampler's Signature: [Signature]

Relinquished By: Signature: <u>[Signature]</u> Printed Name: <u>Mark Miller</u> Company: <u>Aqua Resources</u> Reason: <u>for pickup by courier to lab</u>	Received By: Signature: <u>[Signature]</u> Printed Name: <u>SCOTT R. TOWN</u> Company: <u>CURTIS-TOMPkins</u>	Date: <u>8/11/88</u> Time: _____
--	--	-------------------------------------

Relinquished By: Signature: _____ Printed Name: _____ Company: _____ Reason: _____	Received By: Signature: _____ Printed Name: _____ Company: _____	Date: <u>1/1</u> Time: _____
--	---	---------------------------------

REMARKS:

PICKED UP @ 1100
[Signature] 8/11/88

Special Shipment / Handling / Storage Requirements:

15368

AQUA RESOURCES, INC.

SHIPMENT NO.: 3



CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 8/12/88

PROJECT NAME: Livermore Superblock

PROJECT NO.: 87157.5

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	
B-6	Sta. 0400 25' N of South Ho. ^{Excav. 2-3'}	Soil	S.S. Scoop	Glass Jar	Ice chest	None	TPH
B-7	Sta. 0445, 15' N of S Excav. Ho., Exc. mat. 0-3'	Soil	S.S. Scoop	Glass Jar	Ice chest	None	TPH
B-8	Sta. 0485 25' N of S Excav. Ho. ^{Exc. mat. 0-3'}	Soil	Scoop	Glass Jar	Ice chest	None	TPH
B-9	Sta. 0489 28' N of Exc. Ho. ^{Exc. mat. 0-3'}	Soil	Scoop	Glass Jar	Ice chest	None	TPH
B-10	Sta. 1405, 5' N of S Exc. Ho. ^{Exc. mat. 0-3'}	Soil	Scoop	Glass Jar	Ice chest	None	TPH
B-11	Sta. 1435 15' N of S Exc. Ho. ^{Exc. mat. 0-3'}	Soil	Scoop	Glass Jar	Ice chest	None	TPH
B-12	Sta. 1465 5' N of S Exc. Ho. ^{Exc. mat. 0-3'}	Soil	Scoop	Glass Jar	Ice chest	None	TPH
B-13	Sta. 1495 10' N of Small Extension Ho. ^{Exc. mat. 0-3'}	Soil	Scoop	Glass Jar	Ice chest	None	TPH

Total Number of Samples Shipped: 8 | Sampler's Signature: [Signature]

Relinquished By: [Signature]
 Signature: [Signature]
 Printed Name: Mark Miller
 Company: Aqua Resources
 Reason: for courier to E-T to job

Received By: [Signature]
 Signature: [Signature]
 Printed Name: Scott R. Tompkins
 Company: Charles T Tompkins

Date: 8/12/88
 Time: 9:30

Relinquished By:
 Signature: _____
 Printed Name: _____
 Company: _____
 Reason: _____

Received By:
 Signature: _____
 Printed Name: _____
 Company: _____

Date: 1 1
 Time: _____

REMARKS: 48 hrs turnaround

** / Handling / Storage Requirements:

AQUA RESOURCES, INC.



CHAIN OF CUSTODY RECORD

SHIPMENT NO.: 4

PAGE 1 OF 2

DATE 8/12/88

PROJECT NAME: Livermore Superblock

PROJECT NO.: ~~877~~ 87157-5

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	
AZ-1	11-north	Soil		Glass			lead
AZ-2	11-south						
A 6		Soil					
B-14 *	75N, 0E						TPH
B-15 *	20S, 25W						
B-16 *	25S, 15E						
B-17 S	18N 4W						
B-18 B	38E, 0N						
B-19 B	45N 25E						
B-20 S	65N 22E						
B-21 B	25N 10W						
B-22 S	35N 20W						
B-23 S	18N 45W						
B-24 S	50N 70W						
B-25 B	78N 85W						
B-26 S	45N 100W	Soil					
B-27 B	60N 115W						
B-28 B	20S 25E						

Total Number of Samples Shipped: 18

Sampler's Signature: _____

Relinquished By:
 Signature: Hugh S. Wang
 Printed Name: Hugh S. Wang
 Company: AQUA RESOURCES, INC
 Reason: _____

Received By:
 Signature: [Signature]
 Printed Name: SCOTT RITTMAN
 Company: CA

Date: 9/12/88
 Time: 3:30

Relinquished By:
 Signature: _____
 Printed Name: _____
 Company: _____
 Reason: _____

Received By:
 Signature: _____
 Printed Name: _____
 Company: _____

Date: 1 1
 Time: _____

REMARKS:

* Composite

Special Shipment / Handling / Storage Requirements:

15375

AQUA RESOURCES, INC.

SHIPMENT NO.: 4



CHAIN OF CUSTODY RECORD

PAGE 2 OF 2

DATE 8/12/88

PROJECT NAME: Livermore Superfund

PROJECT NO.: 87157.5

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	
C-1 #	13N19E	Soil		Galaxy			PPH
C-2 #	60E25N	"		1			PPH

Total Number of Samples Shipped: 2 Sampler's Signature:

Relinquished By:
 Signature: Hugh Wong
 Printed Name: Hugh Wong
 Company: ARI
 Reason:

Received By:
 Signature: _____
 Printed Name: _____
 Company: _____

Date: / /
 Time: _____

Relinquished By:
 Signature: _____
 Printed Name: _____
 Company: _____
 Reason:

Received By:
 Signature: _____
 Printed Name: _____
 Company: _____

Date: / /
 Time: _____

REMARKS:

Composite

Special Shipment / Handling / Storage Requirements:

AQUA RESOURCES, INC.

SHIPMENT NO.: 5



CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NAME: Livermore Superblock

DATE 8/15/88

PROJECT NO.: 87157.5

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	
C-1S	0N16E	Soil		Glass			TPH
C-2S	16N0E						
C-3S	33N18E						
C-4S	18N48E						
C-5B	4N18E						
C-6B	23N20E						
D-1S	10S20W						
D-2S	0N4W						
D-3S	6N31E						
D-4S	20N12W						
D-5S	5N46W						
D-6B	12N20E						
D-7B	3N27W						
D-8S	20N37E						
B-1 B2-1*	35E15N						
Stat B2-3*	40E25N						
B2-4*	25N0E						
D-1*	15N20E						
D-2*	10N10E						

Total Number of Samples Shipped: 19

Sampler's Signature: [Signature]

Relinquished By:
 Signature: [Signature]
 Printed Name: Hugh S Wang
 Company: ARI
 Reason: _____

Received By:
 Signature: [Signature]
 Printed Name: Nancy Wilson
 Company: Curtis L. TEMPKINS

Date: 8/15/88
 Time: 5:20

Relinquished By:
 Signature: _____
 Printed Name: _____
 Company: _____
 Reason: _____

Received By:
 Signature: _____
 Printed Name: _____
 Company: _____

Date: 1/1
 Time: _____

REMARKS:

* Composite samples

Special Shipment / Handling / Storage Requirements:

AQUA RESOURCES, INC.

SHIPMENT NO.: 6



CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 8/16/88

PROJECT NAME: Livermore Superblock

PROJECT NO.: 87157.5

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	
B3-1 2'S 23 E F.P. 0-3' composite Clay W	Area B concrete pit	Soil	Strip	6 liter Jar	110 (dry)	None	TPH
B3-2 0-3' composite 53'E, 16'S Field Post		Soil	Strip	6 liter Jar	110 (dry)	None	TPH
B3-3 0-3' West Sidewalk 24'S, 2'E Field Post		Soil	Strip	6 liter Jar	110 (dry)	None	TPH
B3-4 0-3' South Sidewalk 32'S, 25'E Field Post		Soil	Strip	6 liter Jar	110 (dry)	None	TPH
B3-5 3' Excavation Below 16'S, 25'E Field Post		Soil	Strip	6 liter Jar	110 (dry)	None	TPH
B3-6 oil sample from 1 lip 140E, 32' W trans. Post		fluid	Strip	6 liter Jar	110 (dry)	None	TPH

Total Number of Samples Shipped: 6

Sampler's Signature: Mark Milan

Relinquished By:
Signature: Mark Milan
Printed Name: Mark Milan
Company: Agua Resources
Reason: Delivered to Lab for testing

Received By:
Signature: Harold Wilson
Printed Name: Harold Wilson
Company: Lucas Tompkins

Date
8/16/88

Time
2:10 PM

Relinquished By:
Signature: _____
Printed Name: _____
Company: _____
Reason: _____

Received By:
Signature: _____
Printed Name: _____
Company: _____

Date
1 1

Time

REMARKS:

Confirm Top of channel pit for B3-6 (oil sample)
with Digging Backhoe at ARE office
* indicates composite on Excavated material

Special Shipment / Handling / Storage Requirements:



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 15336
CLIENT: AQUA RESOURCES
PROJECT #: 87157.5
PROJECT LOCATION: LIVERMORE SUPERBLOCK

DATE RECEIVED: 08/10/88
DATE ANALYZED: 08/10/88
DATE REPORTED: 08/11/88

=====

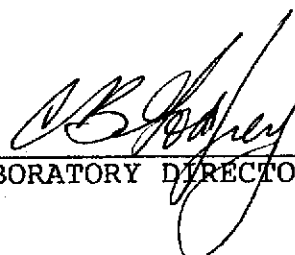
TOTAL LEAD ANALYSIS IN SOIL AND WASTE, EPA 7420

=====

C&T ID	SAMPLE ID	LEAD (mg/Kg)
15336-1	A-1	90
15336-2	A-2	33
15336-3	A-3	530
15336-4	A-4	6.0
15336-5	A-5	3.5

QA/QC SUMMARY

%RPD	27
%RECOVERY	99


LABORATORY DIRECTOR



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LAB NUMBER: 15419
 CLIENT: AQUA RESOURCES
 JOB ID: 87157.5, LIVERMORE SUPERBLOCK

DATE RECEIVED: 08/11/88
 DATE ANALYZED: 08/16/88
 DATE REPORTED: 08/18/88

Results of Analysis for Petroleum Hydrocarbons in Soils & Wastes

Method References: TPH: Total Petroleum Hydrocarbons, EPA 3550/8015

LAB ID	CLIENT ID	GASOLINE (mg/kg)	KEROSINE (mg/kg)	DIESEL (mg/kg)	OTHER (mg/kg)
15419-1	B-1 3'	ND(10)	ND(10)	ND(10)	35,000**
15419-2	B-2 3'	ND(10)	ND(10)	ND(10)	1,000**
15419-3	B-3 1'	ND(10)	ND(10)	ND(10)	*
15419-4	B-4 8'	ND(10)	ND(10)	ND(10)	46,000**
15419-5	B-5 3'	ND(10)	ND(10)	ND(10)	560**

*CONTAINS UNIDENTIFIABLE OIL NOT QUANTIFIABLE BY GC.

**QUANTITATION BASED ON LARGEST PEAKS WITHIN C12-C20 BOILING RANGE.

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference 9
 Spike: % Recovery 85


 LABORATORY DIRECTOR



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LAB NUMBER: 15368
 CLIENT: AQUA RESOURCES
 JOB ID: 87157.5, LIVERMORE SUPERBLOCK

DATE RECEIVED: 08/12/88
 DATE ANALYZED: 08/16/88
 DATE REPORTED: 08/18/88

Results of Analysis for Petroleum Hydrocarbons in Soils & Wastes

Method References: TPH: Total Petroleum Hydrocarbons, EPA 3550/8015

LAB ID	CLIENT ID	GASOLINE (mg/kg)	KEROSINE (mg/kg)	DIESEL (mg/kg)	OTHER (mg/kg)
15368-1	B-6	ND(10)	ND(10)	ND(10)	380**
15368-2	B-7	ND(10)	ND(10)	ND(10)	40**
15368-3	B-8	ND(10)	ND(10)	ND(10)	TRACE**
15368-4	B-9	ND(10)	ND(10)	ND(10)	*
15368-5	B-10	ND(10)	ND(10)	ND(10)	*
15368-6	B-11	ND(10)	ND(10)	ND(10)	*
15368-7	B-12	ND(10)	ND(10)	ND(10)	*
15368-8	B-13	ND(10)	ND(10)	ND(10)	*

*CONTAINS UNIDENTIFIABLE OIL NOT QUANTIFIABLE BY GC.

**QUANTITATION BASED ON LARGEST PEAKS WITHIN C12-C20 BOILING RANGE.

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference 19
 Spike: % Recovery 93


 LABORATORY DIRECTOR



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 15369
CLIENT: AQUA RESOURCES
JOB ID: 87157.5, LIVERMORE SUPERBLOCK

DATE RECEIVED: 08/12/88
DATE ANALYZED: 08/17/88
DATE REPORTED: 08/18/88

=====

EXTRACTABLE LEAD IN SOILS

=====

Method Reference:

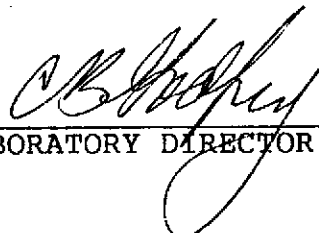
Extractable Lead: Waste Extraction Test, CAC Title 22, Section 66700
Analysis by EPA 7420

LAB ID	SAMPLE ID	EXTRACTABLE LEAD (mg/L)
15369-1	A-3	9.9

ND= NONE DETECTED; LIMIT OF DETECTION IS INDICATED IN PARENTHESES.

QA/QC SUMMARY:

	EXTRACTABLE LEAD
RPD %	2
SPIKE RECOVERY %	107


LABORATORY DIRECTOR



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LAB NUMBER: 15389A
 CLIENT: AQUA RESOURCES
 JOB #: 87157.5, LIVERMORE SUPERBLOCK

DATE RECEIVED: 08/15/88
 DATE ANALYZED: 08/17/88
 DATE REPORTED: 08/19/88

Results of Analysis for Petroleum Hydrocarbons in Soils & Wastes

Method References: TPH: Total Petroleum Hydrocarbons, EPA 3550/8015

LAB ID	CLIENT ID	GASOLINE (mg/kg)	KEROSINE (mg/kg)	DIESEL (mg/kg)	OTHER (mg/kg)
15389-1	C-1S	ND(10)	ND(10)	ND(10)	*
15389-2	C-2S	ND(10)	ND(10)	ND(10)	ND(10)
15389-3	C-3S	ND(10)	ND(10)	ND(10)	ND(10)
15389-4	C-4S	ND(10)	ND(10)	ND(10)	ND(10)
15389-5	C-5B	ND(10)	ND(10)	ND(10)	*
15389-6	C-6B	ND(10)	ND(10)	ND(10)	ND(10)
15389-7	D-1S	ND(10)	ND(10)	ND(10)	ND(10)
15389-8	D-2S	ND(10)	ND(10)	ND(10)	ND(10)
15389-9	D-3S	ND(10)	ND(10)	ND(10)	ND(10)
15389-10	D-4S	ND(10)	ND(10)	ND(10)	ND(10)
15389-11	D-5S	ND(10)	ND(10)	ND(10)	*
15389-12	D-6B	ND(10)	ND(10)	ND(10)	ND(10)
15389-13	D-7B	ND(10)	ND(10)	ND(10)	ND(10)
15389-14	D-8S	ND(10)	ND(10)	ND(10)	ND(10)
15389-15,16, 17,18, 19	COMPOSITE ID B2-1,3,4 D-1,2	ND(10)	ND(10)	ND(10)	730**

*CONTAINS UNIDENTIFIABLE OIL NOT QUANTIFIABLE BY GC.

**QUANTITATION BASED ON LARGEST PEAKS WITHIN C12-C20 BOILING RANGE.

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference 21
 Spike: % Recovery 119

Jim Wang for CBG
 LABORATORY DIRECTOR



LAB NUMBER: 15375
CLIENT: AQUA RESOURCES
JOB #: 87157.5, LIVERMORE SUPERBLOCK

DATE RECEIVED: 08/12/88
DATE ANALYZED: 08/17/88
DATE REPORTED: 08/19/88
PAGE 1 OF 2

Results of Analysis for Petroleum Hydrocarbons in Soils & Wastes

Method References: TPH: Total Petroleum Hydrocarbons, EPA 3550/8015

LAB ID	CLIENT ID	GASOLINE (mg/kg)	KEROSINE (mg/kg)	DIESEL (mg/kg)	OTHER (mg/kg)
15375-7	B-17S	ND(10)	ND(10)	ND(10)	2,900**
15375-8	B-18B	ND(10)	ND(10)	ND(10)	5,600**
15375-9	B-19B	ND(10)	ND(10)	ND(10)	13,700**
15375-10	B-20S	ND(10)	ND(10)	ND(10)	ND(10)
15375-11	B-21B	ND(10)	ND(10)	ND(10)	1,250**
15375-12	B-22S	ND(10)	ND(10)	ND(10)	*
15375-13	B-23S	ND(10)	ND(10)	ND(10)	*
15375-14	B-24S	ND(10)	ND(10)	ND(10)	*
15375-15	B-25B	ND(10)	ND(10)	ND(10)	*
15375-16	B-26S	ND(10)	ND(10)	ND(10)	*
15375-17	B-27B	ND(10)	ND(10)	ND(10)	*
15375-18	B-28B	ND(10)	ND(10)	ND(10)	ND(10)

15375-4,5,6	COMPOSITE ID B-14,B-15, B-16	ND(10)	ND(10)	ND(10)	1,700**
15375-19,20	C-1, C-2	ND(10)	ND(10)	ND(10)	ND(10)

*CONTAINS UNIDENTIFIABLE OIL NOT QUANTIFIABLE BY GC.

**QUANTITATION BASED ON LARGEST PEAKS WITHIN C12-C20 BOILING RANGE.

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference
Spike: % Recovery

1
94

LABORATORY DIRECTOR

LABORATORY NUMBER: 15375
CLIENT: AQUA RESOURCES
JOB ID: 87157.5, LIVERMORE SUPERBLOCK

DATE RECEIVED: 08/12/88
DATE ANALYZED: 08/15/88
DATE REPORTED: 08/19/88
PAGE 2 OF 2

=====

TOTAL LEAD ANALYSIS IN SOIL AND WASTE, EPA 7420

=====

LAB ID	SAMPLE ID	LEAD (mg/Kg)
15375-1	A2-1	2.5
15375-2	A2-2	44
15375-3	A6	650

QA/QC SUMMARY

%RPD	17
%RECOVERY	94



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LAB NUMBER: 15396
CLIENT: AQUA RESOURCES
JOB ID: 87157.5, LIVERMORE SUPERBLOCK

DATE RECEIVED: 08/16/88
DATE ANALYZED: 08/16/88
DATE REPORTED: 08/20/88

Results of Analysis for Petroleum Hydrocarbons in Soils & Wastes

Method References: TPH: Total Petroleum Hydrocarbons, EPA 3550/8015

Table with 6 columns: LAB ID, CLIENT ID, GASOLINE (mg/kg), Kerosine (mg/kg), DIESEL (mg/kg), OTHER (mg/kg). Rows 15369-1 to 15369-6.

*Contains unidentifiable oil not quantifiable by GC.
**Quantitation based on largest peaks within the C12-C20 boiling range.

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference 8
Spike: % Recovery 102

Handwritten signature over the text LABORATORY DIRECTOR



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 15446
 CLIENT: AQUA RESOURCES
 JOB ID: 87157.5, LIVERMORE SUPERBLOCK

DATE RECEIVED: 08/23/88
 DATE ANALYZED: 08/29/88
 DATE REPORTED: 08/30/88
 PAGE 1 OF 2

Results of Analysis for Petroleum Hydrocarbons/Oil & Grease

Method References: O&G: Oil and Grease, SMWW 503 A
 TPH: Total Petroleum Hydrocarbons, EPA 3550/8015

LAB ID	SAMPLE ID	GASOLINE (mg/Kg)	KEROSINE (mg/Kg)	DIESEL (mg/Kg)	OTHER* (mg/Kg)
15446-1	B-14	ND(10)	ND(10)	ND(10)	ND(10)
15446-2	B-15	ND(10)	ND(10)	ND(10)	320
15446-3	B-16	ND(10)	ND(10)	ND(10)	ND(10)
15446-4	B2-1	ND(10)	ND(10)	ND(10)	1,900
15446-5	B2-3	ND(10)	ND(10)	ND(10)	1,200
15446-6	B2-4	ND(10)	ND(10)	ND(10)	ND(10)
15446-7	D-1	ND(10)	ND(10)	ND(10)	ND(10)
15446-8	D-2	ND(10)	ND(10)	ND(10)	ND(10)

* Quantitation based on largest peaks within C11-C21 boiling range.

ND = Not Detected; Limit of detection indicated in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	TPH
Spike: % Recovery	4
	106



 LABORATORY DIRECTOR



LAB NUMBER: 15446-6
CLIENT: AQUA RESOURCES
JOB ID: 87157.5, LIVERMORE SUPERBLOCK
CLIENT ID: B3-6

DATE RECEIVED: 08-23-88
DATE ANALYZED: 08-27-88
DATE REPORTED: 09-02-88
PAGE 2 OF 2

=====
POLYCHLORINATED BIPHENYLS (PCB'S)
METHOD: EPA 608/8080
EXTRACTION METHOD: EPA 3580-WASTE DILUTION
=====

LAB ID	CLIENT ID	AROCLOR	CONCENTRATION (mg/Kg)	MDL (mg/Kg)
15446-6	B3-6	PCB 1016	ND	1.0
		PCB 1221	ND	1.0
		PCB 1232	ND	1.0
		PCB 1242	ND	1.0
		PCB 1248	ND	1.0
		PCB 1254	ND	1.0
		PCB 1260	ND	1.0

ND = NONE DETECTED; LIMIT OF DETECTION IS INDICATED IN LAST COLUMN.

QA/QC SUMMARY

%RPD	2
%RECOVERY	103